



Basic Assessment for the Proposed
Construction and Operation of Electrical
Grid Infrastructure to support the juwi Kap
Vley Wind Energy Facility, near Kleinsee,
Northern Cape Province

A landscape photograph showing a dry, hilly area with sparse vegetation under a clear sky. The image is framed by a large, stylized, curved shape that resembles a speech bubble or a stylized 'C' shape, with a blue outer border and a white inner border. The text "DRAFT BASIC ASSESSMENT REPORT" is overlaid on the image in a large, white, sans-serif font.

DRAFT BASIC ASSESSMENT REPORT

April 2018

CSIR Report number:
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Prepared for:
Kap Vley Wind Farm (Pty) Ltd - a subsidiary of
juwi Renewable Energies (Pty) Ltd

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BASIC ASSESSMENT PROCESS

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

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REPORT DETAILS

Title:	Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province
Purpose of this report:	This Basic Assessment (BA) Report forms part of a series of reports and information sources that have been compiled during the Environmental Impact Assessment (EIA) and BA processes for the proposed Kap Vley Wind Energy Facility (WEF) and associated electrical infrastructure (132 kV Transmission line). The purpose of this BA Report is to: • Present the proposed project and the need for the proposed project; • Describe the affected environment at a sufficient level of detail to facilitate informed decision-making; • Provide an overview of the BA process being followed, including public consultation; • Assess the predicted positive and negative impacts of the proposed project on the environment; • Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project; and • Provide an Environmental Management Programme (EMPr) for the proposed project. This BA Report is being made available to all Interested and Affected Parties (I&APs), Organs of State and stakeholders for a 30-day review period. All comments submitted during the 30-day review of this BA Report will be incorporated into a finalised BA Report, as applicable and where necessary. The finalised BA Report will then be submitted to the National Department of Environmental Affairs (DEA), in accordance with Regulation 19 (1) of the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations (as amended), for decision-making in terms of Regulation 20 of the 2014 NEMA EIA Regulations.
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GLOSSARY

AC	Alternating Current
BA	Basic Assessment
BGIS	Biodiversity Geographic Information System
BID	Background Information Document
CA	Competent Authority
CBA	Critical Biodiversity Area
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DC	Direct Current
DMR	Department of Minerals Resources
DOE	Department Of Energy
DOT	Department of Transport
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPSA	Environmental Assessment Practitioner Association of South Africa
EIA	Environmental Impact Assessment
EIP	Environmental Implementation Plan
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
ERM	Environmental Resources Management (PTY) Ltd
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Protection Areas
GG	Government Gazette
GIS	Geographical Information Systems
GN	Government Notice
GN R	Government Notice Regulation
Ha	Hectare
HWC	Heritage Western Cape
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
IDP	Integrated Development Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
MW	Megawatts
NC	Northern Cape
NCPAES	Northern Cape Protected Area Expansion Strategy

NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA)
NFEPA	National Freshwater Ecosystems Protected Areas
NHRA	National Heritage Resources Act (Act 25 of 1999)
NPAES	National Protected Expansion Strategy
NWA	National Water Act (Act 36 of 1998)
O&M	Operation and Maintenance
PES	Present Ecological State
PPA	Power Purchasing Agreement
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
PSSA	Palaeontological Society of South Africa
PV	Photovoltaic
REDZs	Renewable Energy Development Zones
REC	Recommended Ecological Category
REF	Renewable Energy Facility
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SIP	Strategic Infrastructure Project
SKA	Square Kilometre Array
TOR	Terms of Reference
WEF	Wind Energy Facility
WUL	Water Use License
WULA	Water Use License Application

Summary of where requirements of Appendix 1 of the 2014 NEMA EIA Regulations (as amended, GN R326) are provided in this BA Report

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BA REPORT</u>
Objective of the basic assessment process 2) The objective of the basic assessment process is to, through a consultative process- a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context; b) identify the alternatives considered, including the activity, location, and technology alternatives; c) describe the need and desirability of the proposed alternatives; d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine- (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (ii) the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; and e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to- (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.	Yes	Legislation and Policy - Section A (8) Alternatives - Section A (6) Need and Desirability – Section A (7)
Scope of assessment and content of basic assessment reports 3) (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include: (a) details of:	Yes	Section A (1), Section A (2) and Appendix A

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BA REPORT</u>
(i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;		
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Yes	Sections A (1), Section A (4), Section B (1), and Appendix B
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Yes	Section A and Appendix B
(d) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken including associated structures and infrastructure;	Yes	Section A
(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;	Yes	Section A (7 & 8) and Appendix D
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;	Yes	Section A (1) and Section A (7)
(g) a motivation for the preferred site, activity and technology alternative;	Yes	Section A (6)
(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;	Yes	Refer to Section A (6) of the BA Report for a description of the alternatives considered, and a justification for the inapplicability of certain alternatives.
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Yes	Refer to Section C of the BA Report for a description of the Public Participation Process undertaken.

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BA REPORT</u>
		Supporting Public Participation Documents are included in Appendix E of this BA Report.
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Yes	Refer to Section C and Appendix D of this BA Report for a description of the issues raised by I&APs during the Public Participation Process.
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Yes	Refer to Section A (6) of the BA Report for a description of the alternatives considered. Refer to Section B for a description of the affected environment. Refer to Section D that describes the potential impacts relating to the different environmental attributes. The specialist studies included in Appendix E (E1-E10) of this BA Report also include a description of the environment relating to the alternatives for the proposed distribution line and third party substation.
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Yes	Refer to Section A (6) of the BA Report for a description of the alternatives considered, and a justification for the inapplicability of certain alternatives. Note that a complete impact assessment is included in Section D of this BA Report, with specialist studies included in Appendix E, which also includes relevant mitigation measures. The impact assessment methodology is also included in Section D of this BA Report. The specialists assessed three alternatives of the proposed powerline routing.
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Yes	
(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;	Yes	
(viii) the possible mitigation measures that could be applied and level of residual risk;	Yes	
(ix) the outcome of the site selection matrix;	Yes	
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Yes	
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	Yes	Section A (6)
(i) a full description of the process undertaken to identify, assess and rank the impacts the	Yes	Section D and Appendix E

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BA REPORT</u>
activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; 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;		
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Yes	Section D and Appendix E
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Yes	Section D and Section E
(l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Yes	Section D and Section E, and Appendix B, Appendix E and Appendix G (EMPr)
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Yes	Section D and Section E, and Appendix E and Appendix G (EMPr)
(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;	Yes	Section D and Section E, and Appendix E and Appendix G
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Yes	Appendix E
(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	Yes	Section E of this BA Report and the Relevant Sections of the Specialist Studies in Appendix E of this BA

<u>Appendix 1</u>	<u>YES / NO</u>	<u>SECTION IN BA REPORT</u>
of that authorisation;		Report
(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;	No	Not Applicable
(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 interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Yes	Appendix A
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	No	Not Applicable
(t) any specific information that may be required by the competent authority; and	No	Not Applicable
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	No	Not Applicable
2) Where a government notice <i>gazetted</i> by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such a notice will apply.	No	Not Applicable



Basic Assessment for the Proposed Construction
and Operation of Electrical Grid Infrastructure to
support the juwi Kap Vley Wind Energy Facility,
near Kleinsee, Northern Cape Province



DRAFT BASIC ASSESSMENT REPORT

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SECTION A: INTRODUCTION, PROJECT DESCRIPTION AND LEGISLATIVE REVIEW

A.1 Introduction

A.1.1 Background and Environmental Authorisation Process

Juwi Renewable Energies (Pty) Ltd (hereinafter referred to as “juwi”), through its project company Kap Vley Wind Farm (Pty) Ltd, proposes to construct and operate the Kap Vley Wind Energy Facility (WEF) and associated electrical infrastructure 30 km south-east of Kleinsee in the Northern Cape (see Figure A1.1). The proposed Kap Vley WEF will connect to Eskom’s Gromis Substation located on the remainder of the Farm Dikgat 195, or closer to the new proposed Eskom substation for which the location still needs to be finalised, via a 132 kV powerline. juwi is also proposing the development of electrical infrastructure to connect the abovementioned Kap Vley WEF to the Gromis or proposed Eskom Substation, and to ensure that the electricity generated by the proposed WEF feeds into the national grid. The associated powerline to support the proposed Kap Vley WEF is the subject of this Basic Assessment (BA) process. Electrical infrastructure will be constructed within a 200m wide assessed electrical infrastructure corridor.

In terms of National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the NEMA Environmental Impact Assessment (EIA) Regulations, as amended, promulgated in Government Gazette 40772 (GN R324, R325, R326 and R327), a full Scoping and EIA process is required for the construction of the proposed Kap Vley WEF. An Application for Environmental Authorisation (EA) was prepared and submitted to the National Department of Environmental Affairs (DEA) for the proposed Kap Vley WEF Scoping and EIA project. The Application for EA was acknowledged by the DEA on 21 September 2017, and the reference number DEA Reference: 14/12/16/3/3/2/1046 was assigned to the Kap Vley WEF project.

A separate Scoping Report was prepared and released to Interested and Affected Parties (I&APs), as well as submitted to DEA for decision-making in terms of Regulation 22 of the amended 2014 NEMA EIA Regulations. DEA acknowledged receipt and accepted the Scoping Report in a letter dated 12 February 2018. An EIA Report was then compiled for the proposed Kap Vley WEF. The Draft EIA Report has been released for a 30-day commenting period. Subsequent to the 30-day comment period, the Final EIA Report for the Kap Vley WEF will be compiled (with the inclusion of comments raised by I&APs during the 30-day review period), and submitted to the DEA for decision-making in terms of Regulation 24 of the amended 2014 NEMA EIA Regulations.

The proposed transmission line and associated infrastructure will include a 132 kV transmission line, an on-site substation (which was included and assessed in the EIA process for the proposed Kap Vley WEF), and the use of existing service and access roads for maintenance purposes. In terms of the NEMA and the 2014 NEMA EIA Regulations, as amended, promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017, a BA is required for the construction of the proposed transmission line and electrical infrastructure. An Application for EA has been lodged with the DEA with the submission of the Draft BA Report for the transmission line project. As part of this BA process, three transmission line alternatives have been considered (see Figure A1.1), referred to as:

1. Alternative 1- Transmission Line
2. Alternative 2- Transmission Line
3. Alternative 3- Transmission Line

The Draft BAR and the Draft EIA Report have been concurrently submitted to the DEA as the competent authority (CA) for decision-making in terms of Regulation 19 (1) and Regulation 24 respectively of the 2014 NEMA EIA Regulations as amended.

The proposed transmission line and electrical infrastructure will be constructed within a single electrical infrastructure corridor.

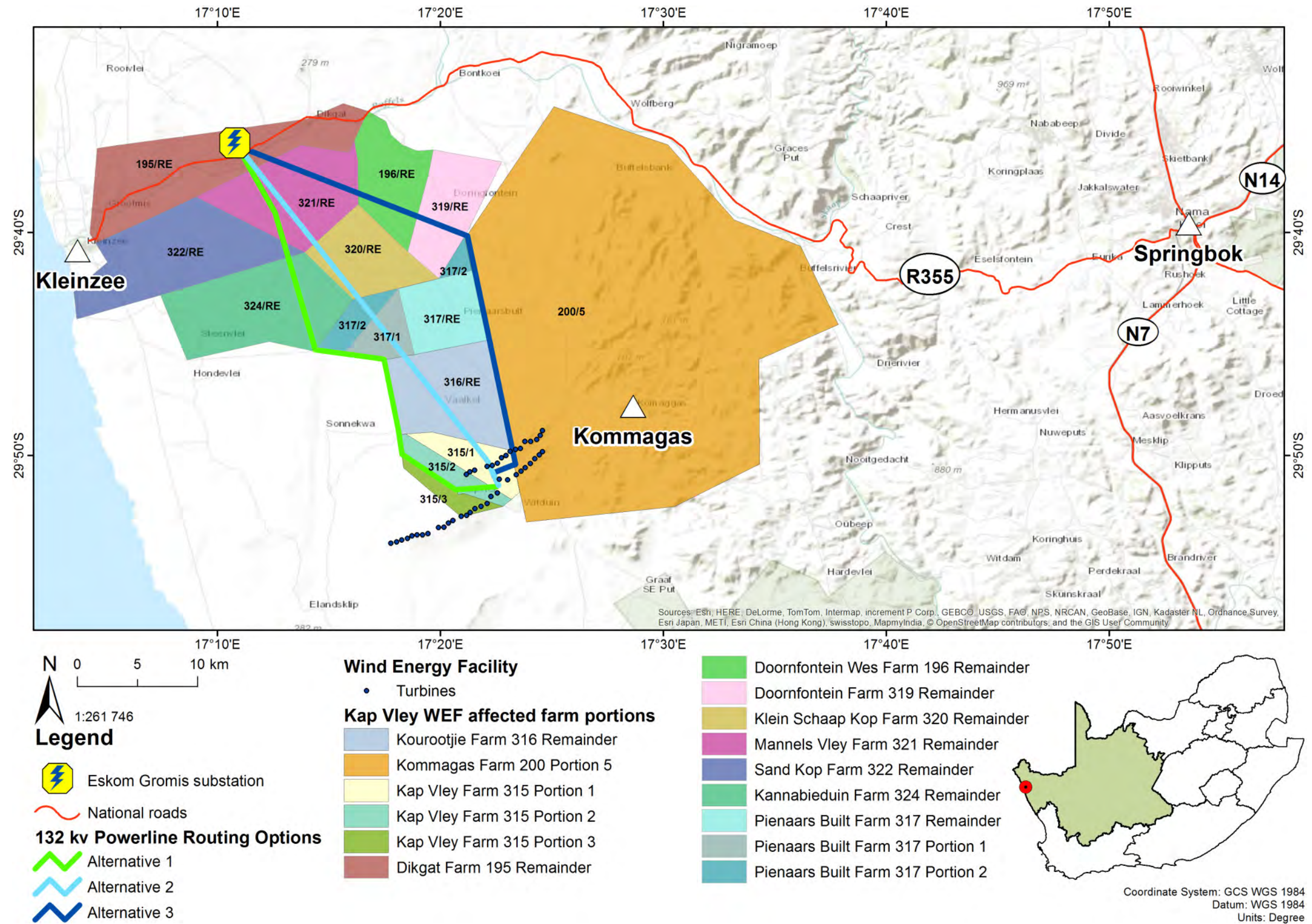


Figure A1.1. Locality Map of the proposed 132kV Transmission line connectivity options (showing affected farm portions)

A.2 Project team

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations (as amended, GN R326), juwi has appointed the CSIR to undertake the separate BA process required for the proposed project; in order to determine the biophysical, social and economic impacts associated with undertaking the proposed activity. Minnelise Levendal is the Environmental Assessment Practitioner (EAP) for this BA process. Paul Lochner serves as a Technical Advisor for the proposed project.

A.2.1 Team

Paul Lochner (Technical Advisor and Quality Assurance (EAPSA) Certified:

Paul is the manager of the Environmental Management Services (EMS) Group at CSIR and has 22 years of experience in environmental assessment and management studies, primarily in the leadership and integration functions. This includes SEAs, EIAs, BAs and EMPs. In July 2003, he obtained certification as a registered EAP with the Interim Certification Board for EAPs of South Africa (EAPSA). He has been extensively involved in renewable energy projects over the last few years. He was the Project Leader for the Electrawinds BA and EIA project at the Coega Industrial Development Zone (IDZ), and was the Project Leader for the EIA for the Mainstream Kouga Wind Energy Project (Phase 1) at Jeffrey's Bay. Phase 1 of this project was granted EA by the Eastern Cape Government in March 2009. He was part of the CSIR team that prepared the EIA and EMP for the Eskom wind energy demonstration facility at Klipheuwel (Western Cape), which was approved by the Western Cape provincial government. Paul was the Project Leader for the SEA for the location and placement of wind and solar energy projects in South Africa, i.e. the REDZs. He has also recently led EIAs for Solar PV projects in the Free State and Northern Cape for Mainstream Renewable Energy, Solaire Direct and Mulilo Renewable Project Developments. He has also authored several Guidelines for national and provincial government, such as the Guideline for EMPs published in 2005 by the Western Cape government.

Minnelise Levendal, Pri. Sci. Nat. registered, 117078 (EAP): Minnelise is a Senior EAP in the EMS group of the CSIR and has a Master's degree in Botany. She has 15 years of experience in Environmental Management (which includes nine years working as an EAP). Before she joined the CSIR she was employed at the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) where she assessed EIAs, BAs and EMPs. Minnelise is currently managing various EIAs for wind and solar renewable energy projects in South Africa. Minnelise was the CSIR project manager for the 100 MW Ubuntu Wind Energy Facility near Jeffrey's Bay (Environmental Authorisation granted in June 2012), as well as the 50 MW Banna Ba Pifhu Wind Energy Facility proposed by WKN Wind current near Humansdorp in the Eastern Cape (Environmental Authorisation granted in July 2014). She was the project manager of ten BAs for wind monitoring masts in South Africa as part of the National Wind Atlas Project of the Department of Energy. Environmental Authorisation from the national Department of Environmental Affairs for all the ten masts was obtained in 2010. She was also the Project Leader for seven Solar Photovoltaic facilities near Kenhardt in the Northern Cape in 2016 for Mulilo Renewable Project Developments. Minnelise is the Project Manager of the Special Needs and Skills Development Programme of DEA which provides *pro bono* environmental assessments (BAs) to applicants with special needs (i.e. financial constraints).

The BA team also includes various specialists that have been appointed to undertake specialist studies to contribute to the BA process. These specialist studies are included in Appendix E of this BA Report. The team which is involved in this BA process is listed in Table A2.1 below.

Table A2.1. The BA Team

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Environmental Management Services (CSIR)		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Minnelise Levendal	CSIR	EAP (<i>Pr. Sci. Nat.</i>)
Specialists		
Simon Todd	Simon Todd Consulting	Ecology Impact Assessment (Terrestrial Ecology including fauna and flora); Ecological Offset study
Bernard Oberholzer and Quinton Lawson	Bernard Oberholzer Landscape Architect and BOLA	Visual Impact Assessment
Luanita Snyman van der Walt <i>External Reviewer: Dr Liz Day</i>	CSIR <i>External Reviewer: Freshwater Consulting</i>	Dry and Ephemeral Watercourses Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)
John Pether	Private, sub-contracted by ASHA Consulting (Pty) Ltd	Desktop Palaeontological Impact Assessment
Andrew Pearson and Anja Albertyn	ARCUS	Bird Impact Assessment
Jonathan Aronson		Bat Impact Assessment
Johann Lanz	Private	Soils and Agricultural Potential Assessment
Surina Laurie <i>External Reviewer: Elena Broughton</i>	CSIR <i>External Reviewer: Urban-Econ Development Economists</i>	Socio-Economic Impact Assessment
Morné de Jager	Enviro-Acoustic Research	Noise Impact Assessment
Christo Bredenhann	WSP Group Africa (Pty) Ltd	Transportation Impact Assessment

It should be noted that the Heritage Impact Assessment specialist study (Appendix E.6 of this BA Report) is an integrated report including Palaeontology, Archaeology and Cultural Landscape.

A.3 Project Applicant

juwi Renewable Energies (Pty) Ltd (juwi) is part of the international juwi Group, one of the world's leading companies in the area of renewable energy. juwi focuses on Solar Energy and Wind Energy and works with landowners, project developers, technology providers, regulators and investors to source and develop renewable energy projects. juwi acts as the project interface, coordinating the research and studies, the site identification, the project structure, environmental impact assessments, selecting the strategic partners, arranging financing, ensuring bid compliance and bidding under the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and reaching financial closure.

The applicant for this project is the juwi owned project company, Kap Vley Wind Farm (Pty) Ltd.

A.4 Project description

juwi proposes to construct and operate the Kap Vley WEF and associated transmission infrastructure 30 km south-east of Kleinsee in the Northern Cape (see Figure A1.1). The proposed Kap Vley WEF will be connected to the Eskom Gromis Substation, or the new proposed Eskom substation for which the location still needs to be finalised, via a 132 kV powerline.

Following the construction phase, the proposed transmission line and associated electrical infrastructure will either be transferred to Eskom or remain in the ownership of the project owner.

A.4.1 Proposed infrastructure

The proposed transmission line and associated infrastructure will include the following:

- **A 132 kV transmission line** with concrete foundations and tower structures (i.e. pylons) within the 200m wide assessed corridor. The line will consist of either self-supporting suspension structures or guyed monopoles at a maximum height of 32 m. The span length is estimated to be 100 - 200 m. The registered servitude for the 132 kV power line will be approximately 40 m wide. Associated transmission infrastructure at the Eskom Gromis Substation or new proposed Eskom Substation will be constructed in order to ensure that the substation is capable of receiving the additional electricity that is generated by the proposed Kap Vley WEF. This infrastructure includes, but is not limited to, feeder bays, Busbars, transformer bays and extension to the platform at the Eskom Gromis Substation or the new proposed Eskom Substation.
- **An on-site substation** (with a transformation capacity of 22/33 kV to 132 kV and up to 300 MW). The on-site substation building with communication tower is expected to extend approximately 32 m in height, with a maximum footprint of 1 hectare (ha). It is important to note that all high voltage infrastructure leading up to the Point of Connection (i.e. Kap Vley WEF's section of the proposed collector/on-site substation) have been considered as part of the EIA process for the WEF. High voltage infrastructure extending from the Point of Connection (i.e. Eskom's section of the proposed collector/on-site substation) up to the line bay at the Eskom Gromis Substation or the proposed new proposed Eskom Substation may be handed over to Eskom and has been assessed separately as part of this BA process. As noted above, the on-site substation was included and assessed as part of the EIA process for the proposed Kap Vley WEF.
- **For powerline maintenance, existing service and access roads** will be utilised as much as possible for maintenance purposes. Where no existing access is present, due to the low traffic anticipated, access will be provided in the form of jeep tracks, as opposed to formalised roads.

A.4.2 Connectivity alternatives

As part of this BA, three connectivity alternatives are considered, namely:

1. **Alternative 1- Transmission Line**
2. **Alternative 2- Transmission Line**
3. **Alternative 3- Transmission Line**

A description of each alternative is summarised in Table A4.1 below.

Table A4.1. Description of the Kap Vley Transmission Alternatives

	Kap Vley Alternative 1	Kap Vley Alternative 2	Kap Vley Alternative 3
Line length	39 km	34 km	40 km
Farm portions affected	Kap Vley 315/1	Kap Vley 315/1	Kap Vley 315/1
	Kap Vley 315/2	Kourootjie 316/rem.	Komaggas 200/rem. of portion 5
	Kap Vley 315/3	Pienaars Bult 317/1	Kourootjie 316/rem.
	Kourootjie 316/rem.	Pienaars Bult 317/2	Pienaars Bult 317/2
	Pienaars Bult 317/1	Klein Schaap Kop 320/rem.	Pienaars Bult 317/rem.
	Pienaars Bult 317/2	Mannels Vley 321/rem.	Doornfontein 319/rem.
	Kannabieduin 317/rem.	Dikgat 195/rem.	Doornfontein Wes 196/rem.
	Sand Kop 322/rem.		Mannels Vley 321/rem.
	Mannels Vley 321/rem.		Dikgat 195/rem
	Dikgat 195/rem.		
Foundation	Concrete	Concrete	Concrete
Pylon	Tower	Tower	Tower
Tower type	Self-supporting suspension structures or Guyed monopoles	Self-supporting suspension structures or Guyed monopoles	Self-supporting suspension structures or Guyed monopoles
Height	32 m	32 m	32 m
Span length	100 - 200 m	100 - 200 m	100 - 200 m
Servitude width	40 m	40 m	40 m
Onsite substation with Feeder bays, Busbars and Transformers	2.3 ha	2.3 ha	2.3 ha

Each of these alternative connectivity options are proposed within a 200 m wide electrical infrastructure corridor. These corridors were considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities will be avoided in the final siting and location of the proposed transmission line. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout or revisions to the layout occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the BA phase. This is based on the understanding that the specialists have assessed the larger corridor and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a “box” in which the project components can be constructed at whichever location (within the boundary of the corridor) without requiring an additional assessment or change in impact significance.

A.4.3 Water, Sewage, Waste and Electricity Requirements

▪ Water Usage

In terms of water usage, water will be used during the construction phase mainly for earthworks, domestic purposes, dust control and re-vegetation watering processes. During the construction phase, water will be sourced from the local municipality or trucked to site. The exact details of water requirements will be confirmed during the detailed engineering phase. At this stage, no

water is planned to be abstracted from or discharged to any surface water systems. During the operational phase of the proposed Transmission Line, water requirements are not applicable.

▪ **Sewage or Liquid Effluent**

The proposed project will require sewage services during the construction phase. Low volumes of sewage or liquid effluent are estimated. Liquid effluent will be limited to the ablution facilities during the construction phase. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction phase, which will be regularly serviced and emptied by a suitable contractor on a regular basis. The waste water will be transported to a nearby Waste Water Treatment Works for treatment. Due to the remote location of the project site, a conservancy tank or septic tank system could be used on site, which is expected to be serviced by the municipality. Due to the remote locality of the farm, sewage cannot be disposed in the municipal waterborne sewage system. During the operational phase of the proposed Transmission Line, sewage generation is not applicable.

▪ **Solid Waste Generation**

The quantity of waste generated will depend on the construction phase, which is estimated to be approximately 12 months. It is estimated that approximately 1000 KG of waste will be generated every month during the construction phase. During the construction phase, the following waste materials are expected:

- Packaging material, such as the cardboard, plastic and wooden packaging and off-cuts;
- Hazardous waste from empty tins, oils, soil containing oil and diesel (in the event of spills), and chemicals;
- Building rubble, discarded bricks, wood and concrete;
- Domestic waste generated by personnel; and
- Vegetation waste generated from the clearing of vegetation.

Solid waste will be managed via the Environmental Management Programme (EMPr) (Appendix G of the BA Report), which incorporates waste management principles. General waste will be collected and temporarily stockpiled in skips in a designated area on site and thereafter removed, emptied into trucks, and disposed at a registered waste disposal facility on a regular basis by an approved waste disposal contractor (i.e. a suitable contractor). Any hazardous waste (such as contaminated soil as a result of spillages) will be temporarily stockpiled (for less than 90 days) in a designated area on site (i.e. placed in leak-proof storage skips), and thereafter removed off site by a suitable service provider for safe disposal at a registered hazardous waste disposal facility. Waste disposal slips and waybills will be obtained for the collection and disposal of the general and hazardous waste. These disposal slips (i.e. safe disposal certificates) will be kept on file for auditing purposes as proof of disposal. The waste disposal facility selected will be suitable and able to receive the specified waste stream (i.e. hazardous waste will only be disposed of at a registered/licenced waste disposal facility). The details of the disposal facility will be finalised during the contracting process, prior to the commencement of construction. Where possible, recycling and re-use of material will be encouraged. Waste management is further discussed in the EMPr (Appendix G of this BA Report). During the operational phase of the proposed transmission line, waste generation is not applicable.

▪ **Electricity Requirements**

Any electricity required during the construction phase will be generated through the use of on-site generators. During the operational phase, the transmission line will not have any electricity requirements as the project itself will transmit and distribute electricity.

The Applicant will also ensure that adequate waste disposal measures are implemented by obtaining waste disposal slips for waste removed from site (in line with the EMPr).

A.4.4 Overview of the Project Development Cycle

The project can be divided into the following three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and, where applicable, has therefore been assessed by the specialist studies (Appendix E1-10 of this BA Report).

A.4.4.1 Construction Phase

The construction phase will take place subsequent to the issuing of an EA from the DEA and the issuing of a (Power Purchase Agreement (PPA) from the Department of Energy (DoE] or alternative. The construction phase for the proposed project is expected to extend for approximately 12 months.

The construction phase will involve the transportation of personnel, construction material and equipment to the site, and personnel away from the site. In terms of site establishment, a laydown area will be required at the outset of the construction phase, as well as dedicated access routes from the laydown area to the working areas. Haul roads for construction traffic (for the delivery of concrete, road materials and other construction materials) will be required. The laydown area will be located within the area assessed as part of the EIA process. It is expected that the laydown area will be temporary in nature (for the duration of the construction phase) and will include the establishment of the construction site camp (including site offices and other temporary facility for the appointed contractors). The laydown area is expected to cover a maximum area of 1 ha, the area will thereafter be rehabilitated (i.e. returned to its pre-construction condition) at the end of the construction phase.

During the construction phase, dust will be generated from the earthworks and excavation required for the construction of the proposed infrastructure and building foundations, the removal of vegetation, the movement of vehicles and equipment accessing the site, and the infilling of excavations and levelling. Appropriate mitigation measures will be implemented during the construction phase to reduce the dust levels if required. Approved soil stabilizing agents may need to be used to minimise dust (for the substation areas). Dust generation during the construction phase will be of a short-term duration and is predicted to be of low significance with the implementation of mitigation measures. Appropriate mitigation and management measures are included in the EMPr (Appendix G of the BA Report). The construction vehicles and equipment will also generate exhaust emissions. However, these emissions are also expected to be short-term in duration and of low significance with the implementation of mitigation measures. Appropriate mitigation and management measures are included in the EMPr (Appendix G of the BA Report) with regard to traffic control.

In terms of noise generation, as part of the construction phase, noise will be generated by the construction activities, earthworks, personnel, equipment and vehicles on the site. The levels of noise are not expected to be excessive and will be in line with standard industry levels associated with the proposed activity. In addition, noise generation during the construction phase is considered to be localised and short-term, with a very low significance (before and with the

implementation of mitigation measures). During the construction phase, the ambient noise is not expected to exceed 45 dB(A) during the day and 35 dB(A) at night for rural districts (as required by South African National Standard (SANS) 10103:2008). However, construction during night-time hours will as far as possible be avoided. In addition, the proposed project will generate a very limited noise (a slight buzzing sound that can only be heard when standing in close proximity to the lines) during the operational phase.

All efforts will be made to ensure that all construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the EMPr, which is included in Appendix G of this BA Report. During the construction phase, it is estimated that between 10 and 40 employment opportunities will be created. The employment creation is also dependent on the procurement requirements and the final engineering design.

The main activities that will form part of the construction phase are:

- Removal of vegetation for the proposed infrastructure;
- Excavations for infrastructure and associated infrastructure;
- Stockpiling of topsoil and cleared vegetation;
- Transportation of material and equipment to site, and personnel to and from site; and
- Construction of the 132 kV transmission line and additional infrastructure.

A.4.4.2 Operational Phase

The following activities will occur during the operational phase:

- The transmission of electricity generated from the proposed Kap Vley WEF to the Eskom Gromis Substation or the new proposed Eskom Substation; and
- Maintenance of the transmission line servitude including the gravel service road.

During the life span of the power line, on-going maintenance will be required on a scheduled basis. This maintenance work will be undertaken by contractors and in compliance with the EMPr.

A.4.4.3 Decommissioning Phase

The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise (i.e. if the actual Kap Vley WEF becomes redundant or the land needs to be used for other purposes), the decommissioning procedures will be undertaken in line with the EMPr and any legislation or guidelines relevant at the time and the site will be rehabilitated and returned to its pre-construction state.

A.5 Description of the listed activities associated with the proposed project

Section 24(1) of the NEMA states: "In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the competent authority charged by this Act with granting the relevant environmental authorization." The reference to "listed activities" in Section 24 of the NEMA relates to the regulations promulgated in GN R326, R327, R325 and R324, dated 7 April 2017. The relevant GN published in terms of the NEMA collectively comprise the NEMA EIA Regulations listed activities that require either a BA, or Scoping and EIA be conducted. As noted above, the proposed project requires a BA process.

As previously noted, the Application for EA for this BA process is being submitted concurrently to the DEA together with this Draft BA Report, which makes reference to all relevant listed activities forming part of the proposed development.

Table A5.1 below provides a list of the applicable listed activities associated for the proposed project in terms of Listing Notice 1 (GN R 327) and Listing Notice 3 (GN R324) in terms of the 2014 NEMA EIA Regulations (as amended).

Table A5.1. Applicable Listed Activities for the proposed construction of electrical grid infrastructure to support the juwi Kap Vley WEF.

Listed Activity (GN R327 and R324)	Description of Project Activity that triggers Listed Activity
GN R327	
<u>GN R327: Activity 11 (i)</u> The development of facilities or infrastructure for the transmission and distribution of electricity: (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	The proposed project will entail the construction and installation of an overhead 132 kV transmission line, as well as an on-site substation. The proposed project will take place outside of an urban area.
<u>GN R327: Activity 12 (ii)</u> The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	The proposed project will entail the construction and installation of an overhead 132 kV transmission line, as well as an on-site substation. Based on the Dry and Ephemeral Watercourses Impact Assessment undertaken as part of the BA process (Appendix E4), drainage features occur on site. The buildings and infrastructure are expected to exceed a footprint of 100 m² with some infrastructure or structures occurring within a watercourse (drainage line) or 32 m of watercourses. In addition, all three proposed alternative routings for the 132 kV powerline must cross the Buffels River to reach the Eskom Gromis substation. The proposed project will take place outside of an urban area. The activity would therefore be triggered. <i>Additional information regarding the presence of watercourses on site is provided in the Impact Assessment, which is attached to this report as Appendix E4.</i>
<u>GN R327: Activity 19 (i)</u> The infilling or depositing of any material of more than 5 cubic metres	The proposed project will entail the excavation, removal and moving of more than 5 m³ of soil, sand, pebbles or rock from the nearby watercourses. The proposed project will also entail the infilling or

Listed Activity (GN R327 and R324)	Description of Project Activity that triggers Listed Activity
into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse;	depositing of more than 10 m ³ of material into the nearby watercourses. Based on the Dry and Ephemeral Watercourses Impact Assessment that was undertaken, draining lines (watercourses) occur on the project site. All three powerline routings alternatives will also cross the Buffels River. This infilling and excavation of the material will occur as a result of the proposed construction of the transmission line and on-site substation. This activity would therefore be triggered. <i>Additional information regarding the presence of watercourses on site is provided in the Dry and Ephemeral Watercourses Impact Assessment Report, which is attached to this report as Appendix E4.</i>
<u>GN R327: Activity 27</u> The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	The proposed project will entail the construction of an on-site substation, which will cover an approximate area of 2.3 ha. As a result, more than 1 ha of indigenous vegetation will be removed for the construction of this structure. This activity would therefore be triggered.
<u>GN R327: Activity 28 (ii)</u> 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: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	As noted above, the proposed project will take place outside of an urban area, on several farm portions. The land is currently used for agricultural purposes. The proposed project, which is a commercial/industrial development, will entail the construction of an on-site substation, and transmission line (including towers and pylons). This will constitute infrastructure with a physical footprint of more than 1 ha. This activity would therefore be triggered.
<u>GN R324</u>	
<u>GN R324: Activity 12</u> The clearance of an area of 300 square metres or more of indigenous vegetation (g) In the Northern Cape (ii) Within critical biodiversity area identified in bioregional plans.	The proposed facility's development footprint will result in the clearance of more than 300 square meters of indigenous vegetation. The proposed project area falls within a CBA 1 and 2. This activity would therefore be triggered <i>Additional information regarding the location of the project site within a CBA 1 and 2 is provided in the Terrestrial Ecological Impact Assessment Report, which is attached as Appendix G.</i>
<u>GN R324: Activity 14</u> The development of -	The proposed project will entail the construction and installation of an overhead 132 kV transmission line, as well as an on-site substation. Based on the Dry and Ephemeral Watercourses Impact

Listed Activity (GN R327 and R324)	Description of Project Activity that triggers Listed Activity
(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs – - within a watercourse; - if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; (g) Northern Cape: ii. Outside urban areas, in: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	Assessment undertaken as part of the BA process, drainage features occur on site and the infrastructure will exceed a footprint of 10 m² and some will occur within 32 m of the watercourses. The powerline routing alternatives will also cross the Buffels River. The proposed project will take place outside of an urban area. Based on the Ecological Impact Assessment undertaken as part of the BA process, the proposed site falls within a CBA 1 and 2 and within a National Protected Area Expansion Strategy (NPAES) Focus Area. This activity would therefore be triggered. <i>Additional information regarding the CBA status and NPAES is provided in the Ecological Impact Assessment, which is attached to this report as Appendix E1.</i> <i>Additional information regarding the presence of watercourses on site is provided in the Dry and Ephemeral Watercourses Impact Assessment, which is attached to this report as Appendix E4.</i>

It must be noted that the above listed activities have been identified in line with the following:

It is proposed that less than 30 m³ of dangerous goods (such as petrol and diesel) will be temporarily stored on site during the construction phase. Furthermore, no infrastructure or structures are planned to be specifically constructed for the aforementioned temporary storage. Recommendations for the temporary storage of petrol and diesel on site during the construction phase have been provided in the EMPr (Appendix G of this BA Report).

A.6 Description of alternatives

This section discusses the alternatives that have been considered as part of the BA process. Sections 24(4) (b) (i) and 24(4A) of the NEMA require an Environmental Assessment to include investigation and assessment of impacts associated with alternatives to the proposed project. In addition, Section 24O (1)(b)(iv) also requires that the CA, when considering an application for EA, takes into account “where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”.

Therefore, the assessment of alternatives should, as a minimum, include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and

- Providing a methodology for the elimination of an alternative.

Compliance with Regulation 3 (1) (h) (i) of Appendix 1 of the 2014 NEMA EIA Regulations (as amended) is discussed below. Regulation 2 (e) of Appendix 1 of the 2014 NEMA EIA Regulations (as amended) states:

- *The objective of the basic assessment process is to, through a consultative process, and through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.*

The main factors that determined the location of the proposed transmission line are indicated below and discussed within this section:

- Location of the proposed Kap Vley WEF that will be connected to the National Grid via the proposed supporting electrical infrastructure;
- Location of the Gromis Substation (the location of the closer proposed Eskom Substation is unknown at this stage);
- Environmental sensitivities identified by the specialists along the three powerline routing alternatives;
- Landowner willingness; and
- The most cost-effective route and technically feasible routing for the Project Applicant.

A.6.1 Property or Location Alternatives (i.e. Site Alternatives)

It is important to note that the location of the proposed transmission line and service road, as well as the other associated infrastructure, is motivated by the location of the proposed Kap Vley WEF and its proximity to the Gromis or new proposed Eskom Substation (which will be closer). The determination of the development footprint was determined through a desktop screening assessment of the site and consultation with the relevant landowners identifying possible areas that should not be proposed for the development. The proposed connectivity options were assessed by the specialist studies (Appendices E1 to E10) and the line routings were adjusted to avoid sensitive features identified in these studies.

As discussed previously, the overall aim of this proposed project is to provide the necessary electrical infrastructure to ensure that the proposed Kap Vley WEF is equipped and enabled to transmit the generated electricity (from the WEF) to the Gromis or new proposed Eskom Substation. In turn, the best routing of the proposed transmission line from the proposed WEF site to the substation was based on economic feasibility, alignment with property boundaries and existing powerline corridors, environmental sensitivities identified by specialists, and the willingness of landowners to provide consent for the construction of the proposed electrical grid infrastructure on their land. Therefore, alternative routing options for the proposed Transmission Line were considered to determine the most acceptable and preferred routing. In addition, where applicable, an estimated 200 m powerline corridor has been assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed Transmission Line and service road. The sensitive areas identified by the specialists have been largely taken into consideration in determining the routing of the proposed Transmission Line and service road, which is indicated in Appendix B of this BA Report.

Based on the above, site alternatives for this proposed BA project are not applicable, however routing options of the proposed transmission line are applicable as described above. These routing options, in relation to linear activities, are described below. The co-ordinates of the powerline routing are included in Appendix B of this report. The co-ordinates of the start, middle and end points of Alternatives 1, 2 and 3 of the proposed Transmission Line are indicated in Table A6.1 below.

Table A6.1. Start, Middle and End Point of Alternatives 1, 2 and 3 of the Proposed Transmission Line and Connection to the proposed Gromis Substation

	Latitude (S)	Longitude (E)
Alternative 1:		
Start Point	29°51'25.20"S	17°22'37.12"E
Middle Point	29° 48' 6.85"S	17°15' 9.04"E
End Point	29° 35 '55.08"S	17°10' 46.90"E
Alternative 2:		
Start Point	29°51'25.20"S	17°22'37.12"E
Middle Point	29° 4'4 53.28"S	17°17' 58.31"E
End Point	29° 36' 5.84"S	17°10' 44.29"E
Alternative 3:		
Start Point	29°51'25.20"S	17°22'37.12"E
Middle Point	29° 40' 34.02"S	17°21' 30.12"E
End Point	29° 36' 4.70"S	17°10' 58.45"E
	Latitude (S)	Longitude (E)

Note: The end points above refer to the end of the transmission line itself. The starting points of the three transmission lines are the approximate centre-point locations of the proposed on-site substation.

For the proposed Transmission Line BA Project, three options have been assessed, however, one option is being put forward and considered as the preferred option for the Transmission Line routing to the proposed collector hub. **This preferred routing option is referred to as Alternative 1.** Please refer to Figure A1.1 for the locality map of the three routing options that were assessed.

The section below provides a summary and comparison of the alternative powerline routings assessed by the specialists and indicates their preferred alternative (if any).

Terrestrial Ecology:

Along the route between Gromis and Kap Vley, all three routes traverse an extensive area of Strandveld which is generally considered to be of relatively low sensitivity with low abundance of species or features of conservation concern. There are however some areas of heuweltjieveld towards the Buffels River as well as some more widespread areas of dunes and deflation hollows that are considered moderately sensitive. This is especially so along Alternative 3 which traverses the largest extent of moderately sensitive habitat, much of which has also been identified as a Critical Biodiversity Area (CBA) and an Ecological Support Area (ESA). Towards Kap Vley, Alternative 3 also passes through the area containing large numbers of *Acacia erioloba* and impact on this area is considered undesirable. Alternative 2 passes through a small extent of habitat within the Kap Vley powerline routing corridor that is considered to be a No-Go area. Impact to this area is undesirable, but the line could be deviated slightly to avoid this feature. Alternatively, the line could be spanned over this section as it is only about 350m long and it is likely that the pylons could be located outside of the no-go area on either side. Alternative 1 takes a westerly route out from Kap Vley and has the least extent of sensitive habitat along the route. Although it traverses the area which has been mapped as Namaqualand Salt Pans, this area is not a hydrological

feature and is not considered highly sensitive. The ecological sensitivity map for the study area is illustrated below in Figure A6.1.

The total extent of the different sensitivity categories within each power line route corridor are provided below in (Table A.6.2) and this supports Alternative 1 containing the lowest extent of sensitive habitat followed by Alternative 2 and then Alternative 3.

Table A6.2. Extent of the different sensitivity classes that occur within the different power line corridor alternatives. This is not the extent of habitat that would be impacted, but rather the extent of habitat overall within the 200m wide corridor and is used to provide an objective way of comparing the sensitivity of each corridor.

Alternative	Sensitivity					
	Low	Medium-Low	Medium	Medium-High	High	No-Go Area
Alt 1	19.15	599.24	112.37	0.00	1.96	2.89
Alt 2	19.34	419.75	183.19	0.40	9.21	8.87
Alt 3	18.84	395.96	327.20	6.79	9.75	3.71

The ecological sensitivity map for the study area is illustrated below in Figure A6.1.

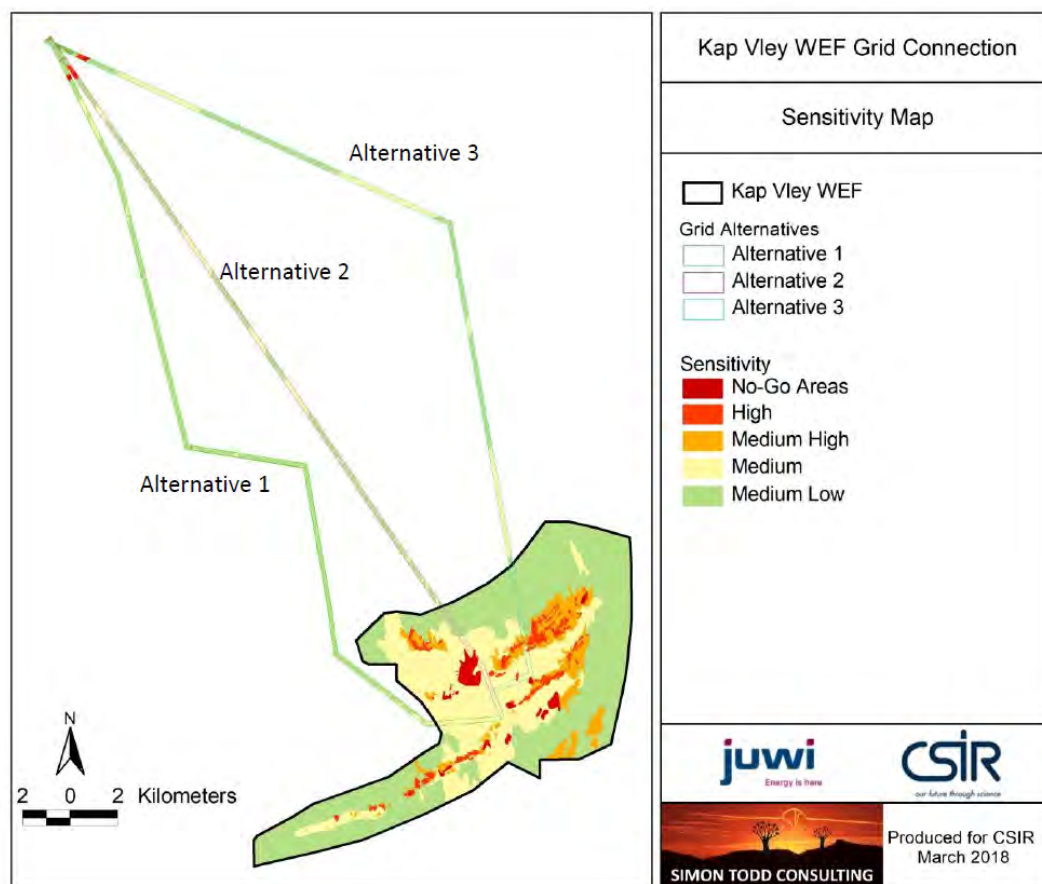


Figure A6.1. Ecological sensitivity map for the study area, showing the three grid alternatives as well as the sensitivity of the Kap Vley WEF study area as a whole

A summary of the assessment of the three alternative powerline routings in terms of Ecology is provided in Table A6.3.

Table A6.3. Summary of the Ecological Assessment of the three powerline routing alternatives

Alternative	Preference	Reasons (incl. potential issues)
Power Line ALTERNATIVES		
Alternative 1	Preferred	This power line alternative traverses the least extent of sensitive habitat. This is the preferred alternative and would generate less impact than the other alternatives.
Alternative 2	Acceptable	This alternative is not the preferred option because it traverses a short extent of No-Go area and the ridge that it crosses within Kap Vley is somewhat more sensitive than the low-lying areas that Alternative 1 use out of Kap Vley. As such this alternative is considered an acceptable but not preferred option.
Alternative 3	Not Preferred	This alternative is not preferred because it traverses several areas of sensitive habitat and has a higher risk compared to the other two alternatives. It is also longer and would generate significantly higher impact than the other alternatives and is not considered to be a viable or preferred alternative.

The Ecological Impact Assessment (Appendix E1) concludes that given the distribution and nature of sensitive features along the power line routes Alternative 1 is considered the preferred alternative from an ecological perspective. Alternative 2 is also considered acceptable, while Alternative 3 is considered least desirable and is not considered to be a viable alternative.

Birds

This arid area is home to several large terrestrial bird and raptor species, the most important of which are Ludwig's Bustard *Neotis ludwigii*, Kori Bustard *Ardeotis kori*, Secretarybird *Sagittarius serpentarius*, Karoo Korhaan *Eupodotis vigorsii*, Verreaux's Eagle *Aquila verreauxii* and Martial Eagle *Polemaetus bellicosus*. In addition to being classified as threatened regionally and in some cases globally, most of these species are facing significant threats to their survival from existing impacts in the arid parts of South Africa. In addition, this area is home to an assemblage of arid zone adapted smaller bird species including larks, sparrow-larks, chats and others. Most important of these from a conservation perspective are Red Lark *Calendulauda burra* and Sclater's Lark *Spizocorys sclateri*, both of which are listed as regionally threatened species (Vulnerable and Near-Threatened respectively), have very restricted ranges and have been recorded in the broader area within which the study area is situated.

The Bird Impact Assessment (Appendix E2) concludes that all proposed grid connection alternatives are acceptable. Although Alternative 2 (the central route) could be considered a more preferred route from an avifaunal perspective as it is the shortest route, the specialist confirmed that any of three alternative powerline routings are acceptable.

Bats

The project falls within the actual or predicted distribution range of approximately eleven species of bat (African Chiroptera Report 2013; Monadjem *et al.* 2010). However, the distributions of some bat species in South Africa, particularly rarer species, are poorly known so it is possible that more or less species may be present. Analysis of the acoustic monitoring data suggests that at least five species of bat are present. The bat species recorded at the project site include Egyptian free-tailed bat (*Tadarida aegyptiaca*), Roberts's flat-headed bat (*Sauromys petrophilus*), Natal long-fingered bat (*Miniopterus natalensis*), Cape serotine (*Neoromicia capensis*) and Long-tailed serotine (*Eptesicus hottentotus*). All these bat species have a National Conservation Status of Least Threatened.

The Bat Impact Assessment (Appendix E3) concludes that the powerline Alternative 1 is the preferred route as the other two routes could require the removal of more important bat habitat features.

Dry and Ephemeral Watercourses

The Kommagas River is situated approximately 2 km east of the proposed juwi WEF infrastructure (wind turbines and roads). A section of the 132 kV powerline (Alternative 3) is proposed within 500 m of the Kommagas River, but does not cross it. All three proposed alternative routings for the 132 kV powerline must cross the Buffels River near to the Eskom Gromis substation and the river itself is considered to be sensitive environment that should be avoided (Figure A.6.2). The banks on either side of the river are however steep and it is likely that the river can be spanned without impact.

The proposed 132 kV powerline routing Alternative 1 follows the routing of the 400 kV Eskom Juno-Gromis transmission line (DEA ref: 12/12/20/720) (Nsovo Environmental Consulting, 2016b), as well as smaller dirt roads along a farm boundary. As Alternative 1 follows existing linear disturbance corridors, it is likely to have the least impact through land and vegetation clearance and is thus the preferred alternative (Table A.6.4).

Table A6.4 Comparative summary of the three alternative powerline routings

	Alternative		
	1 (Preferred)	2	3
Buffels River crossing (at the connection with Eskom Gromis substation) <i>Powerline span 150 m, able to avoid Buffels River</i>	Yes	Yes	Yes
Namaqualand Salt Pan <i>Verified to not be a hydrological feature</i>	Verified to not be a hydrological feature		
Possibility for pylon placement in identified drainage lines (at connection with the WEF) <i>Powerline span 150 m,</i>	No	Yes	Yes

	Alternative		
	1 (Preferred)	2	3
able to avoid placing pylons ($< 1 \text{ m}^2$) in drainage lines.			
Comments	Follows existing linear disturbance corridors, it is likely to have the least impact through land and vegetation clearance.	Most direct route, assume fewer pylons, however, does not follow existing linear infrastructure or disturbance corridors. As such, undisturbed land will be cleared.	Longer route than Alternative 1 and 2, follows farm boundaries.

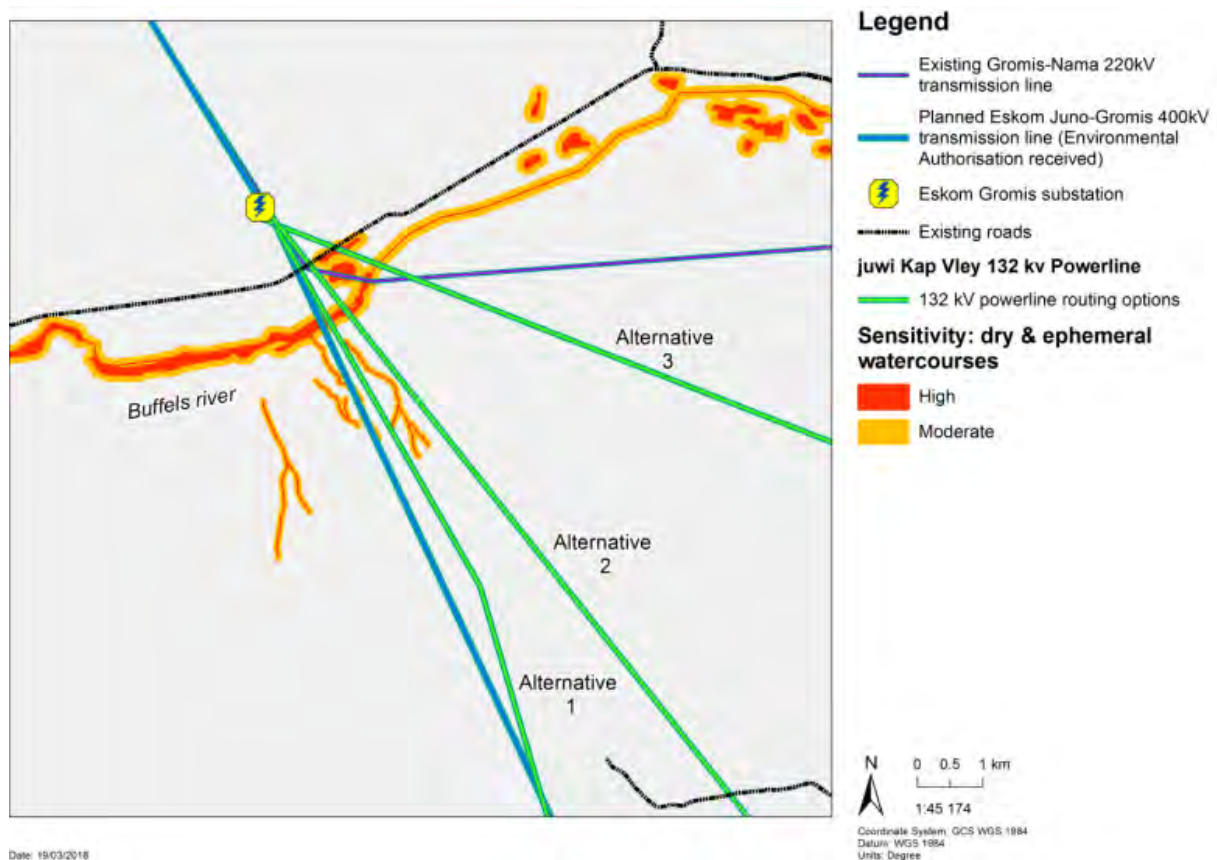


Figure A6.2. All three 132 kV powerline routings will need to cross the Buffels River to connect to the Eskom Gromis Substation.

The Dry and ephemeral watercourses (incl. drainage lines) sensitivity for the 132 kV powerline routings connecting the juwi Kap Vley WEF to the Eskom Gromis substation are indicated in Figure A6.3 below.

The Dry and Ephemeral Watercourses Impact Assessment (Appendix E4) concludes that Alternative 1 follows existing linear infrastructure and disturbance corridors, and is preferred from a dry and ephemeral watercourses perspective.

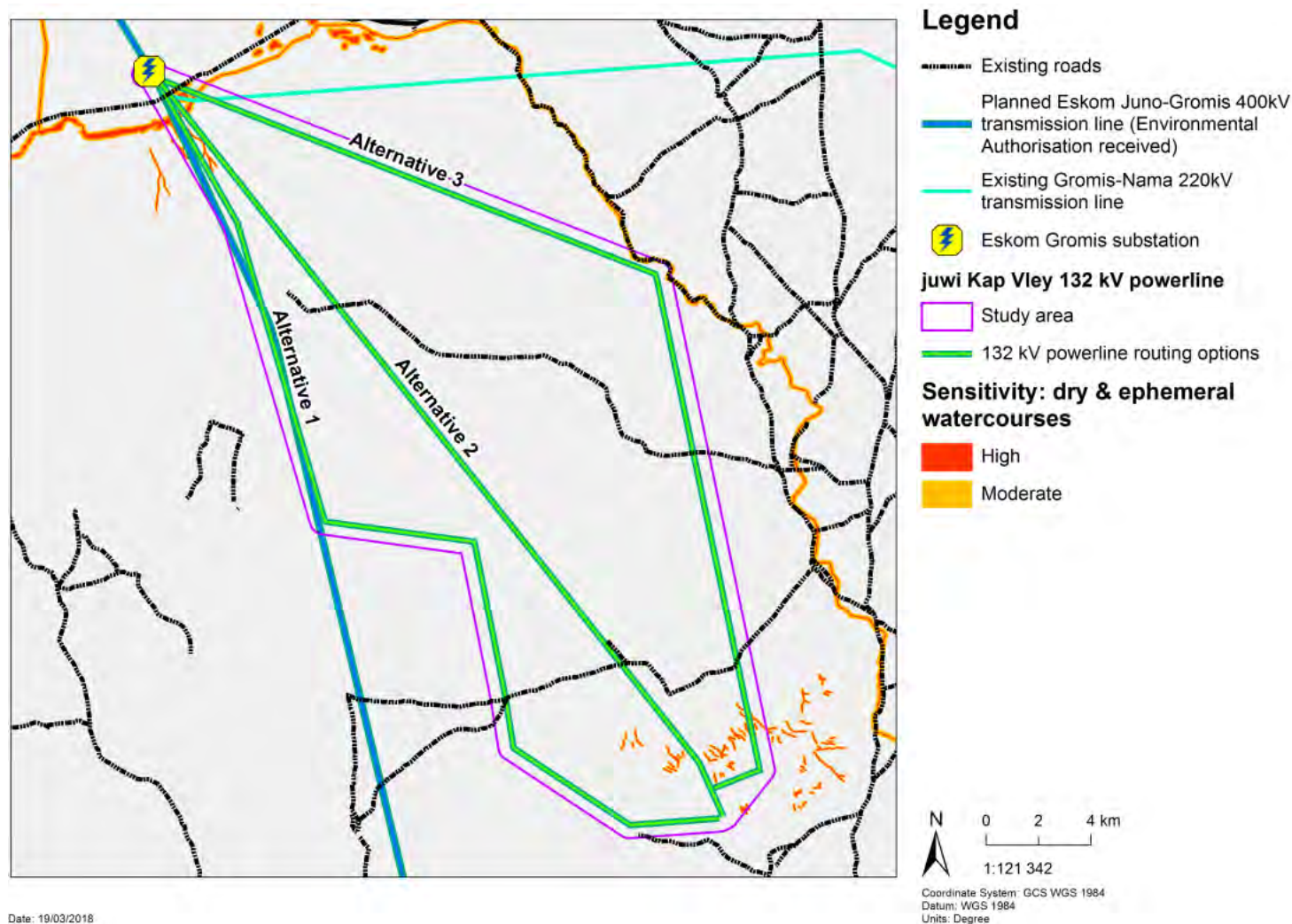


Figure A6.3. Dry and ephemeral watercourses (incl. drainage lines) sensitivity for the proposed 132 kV powerline routings connecting the juwi Kap Vley WEF to the Eskom Gromis substation.

Visual

The Visual Impact Assessment (Appendix E5) proposes that the powerline alignments should ideally follow farm boundaries and existing or approved powerline routes, as well as avoid the 'Toringkop'.

The study concludes that the potential visual impact of the transmission line would be similar for the three alternatives proposed and that any of the proposed three routings are therefore acceptable from a visual perspective.

Heritage

The Heritage Impact Assessment (Appendix E6) concludes that overall, the potential impacts are considered to be generally manageable and, from a heritage point of view, the development may proceed with any of the three proposed alternatives. In general, however, the shortest alternative – Alternative 2 in this case – would be favoured simply because of the slightly reduced chances sustaining archaeological impacts. However, **Alternative 1 runs alongside an existing approved electrical servitude for part of its length and would therefore be better from a visual point of view due to the grouping of power lines. Alternative 1 is also favoured by the proponent from a technical point of view.**

Agriculture

The Soils and Agricultural Impact Assessment (Appendix E7) concludes that there are no meaningful differences in terms of agricultural impact between any of these proposed alternatives. This is due to the very low agricultural impacts associated with the development, and the fact that agricultural conditions are largely uniform across the area. **There is therefore no preference between any of the proposed alternatives, in terms of agricultural impacts.**

Concluding statement on preferred powerline routing:

Based on the motivation and findings from the specialist studies above, Alternative 1 was selected as the preferred powerline routing alternative.

A.6.2 Type of Activity Alternatives

In terms of the alternatives considered for the type of activity to be undertaken, this is also entirely dependent on the activity associated with the proposed Kap Vley WEF (where the activity associated with the WEF is generation of electricity). Essentially, the Kap Vley WEF governs the type of activity associated with the proposed project. The activity to be undertaken is therefore the transmission of electricity that will be generated by the proposed Kap Vley WEF. Therefore, as a result, alternatives for the type of activity for this proposed BA project are not applicable. The only feasible method of transmitting the electricity that is generated by the proposed WEF to the Eskom Gromis or new proposed Eskom Substation is via an overhead Transmission Line. Underground cabling is not deemed economically feasible as it is prohibitively expensive and is very rarely used for rural transmission lines.

A.6.3 Design or Layout of the Activity Alternatives

As discussed above, as part of the BA, a 200 m corridor area was considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities can be avoided in the final siting and location of the proposed transmission line. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (and included in Appendix B of this Draft BA Report, as well as the EMP). This map shows the sensitivities on site

(terrestrial ecology, avifauna, aquatic, visual and heritage features) within the corridor that were assessed. Based on this map, the preferred location and routing for the Kap Vley transmission line (Alternative 1) avoids the sensitive features that were identified by the specialists within the corridor. Based on the boundaries of the corridor and the constraints of the environmental sensitivities, a routing has been preliminarily determined for this project, which is included in Appendices B of this Draft BA Report, as well as in the EMPr. It is important to note that should the routing change subsequent to the issuing of an EA (should such authorisation be granted), any alternative layout/routing or revisions to the layout/routing occurring within the boundaries of the corridor would not be regarded as a change to the scope of work or the findings of the impact assessments undertaken during the BA phase. This is based on the understanding that the specialists have assessed the larger area and have identified sensitivities, which have been avoided in the siting of the proposed infrastructure. The corridor is considered to be a “box” in which the project components can be constructed at whichever location (within its boundaries and within reason i.e. not within areas of mitigatable areas of concern such as the Buffels River) without requiring an additional assessment or change in impact significance. However, if any changes to the layout/routing occur outside of the boundaries of the corridor following the issuing of the EA (should it be granted), the authorisation will need to be amended accordingly.

A.6.4 Technology Alternatives

The technology that is proposed for the construction and operation of the proposed Transmission Line and electrical infrastructure will be guided by national standards and best practice. The technology options and operational aspects are governed by Eskom’s requirements and building specifications. This therefore limits the amount of variability in terms of the technology and operational processes. The type of technology used will relate to the infrastructure being installed and constructed, such as the type of conductors, pylon structures and design, use of Bird Flight Diverters, and building structures for the on-site substation. Other technology options for this project relate to the construction equipment and vehicles used during the construction phase, such as portable fire-fighting equipment (if necessary), stormwater management and spill contingency.

A.6.5 Alternatives: Operational Aspects of the Activity

It should be noted that no other alternatives for the operational aspects are being considered for the proposed project since there are no alternative ways in which the powerline can be operated by Eskom. Refer to the explanations provided above regarding the alternative process.

A.6.6 No-go Option

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed transmission line associated with the proposed Kap Vley WEF. This alternative would result in no environmental impacts on the site or surrounding local area (as identified in Section D of this BA Report). It provides the baseline against which other alternatives are compared and considered throughout the report.

The following implications will occur if the “no-go” alternative is implemented (i.e. if the proposed powerline is not constructed):

- There will be negative implications for the proposed Kap Vley WEF, as there will be no electrical infrastructure to allow the proposed WEF to connect to the Gromis or new proposed Eskom Substation and the national grid. This would result in non-realisation of the benefits, such as economic spin offs and electricity generation associated with the proposed Kap Vley

WEF. This would also result in additional costs and expenditure, as well as additional timeframes required, due to the re-design of the proposed Kap Vley WEF to align with an alternative substation within the region. Using an alternative substation within the region (dependent on capacity requirements) would likely result in longer power lines and associated service roads, which could, in turn, cause additional negative impacts to the surrounding environment. If re-design is not financially and technically feasible, then the proposed Kap Vley WEF will not be able to be constructed as it will not have fundamental infrastructure to link it to the national grid. If the proposed Kap Vley WEF cannot be constructed as a result of the powerline not being constructed, this could, in turn, result in the following implications:

- No expansion of formally protected areas will occur through the ecological offset proposed for the Kap Vley WEF;
- The landowners of the various farm portions on which the proposed infrastructure will be constructed will not be able to derive benefits from the implementation of an additional land-use;
- No additional power will be generated or supplied through means of renewable energy resources by this project at this location. The proposed 300 MW facility (maximum generation capacity) is predicted to generate sufficient clean power per year for approximately 40 000 households; the existing national Grid power consists of approximately 90% coal-based power generation with associated high levels of CO₂ emissions and water consumption
- Unless provided by other projects, no additional power will be provided via the Eskom grid,;
- Electricity generation will remain constant (i.e. no additional renewable energy generation will occur on the proposed site) and the local economy will not be diversified;
- Local communities will continue their dependence on agriculture production and government subsidies. The local municipality's vulnerability to economic downturns will increase because of limited access to capital and the downscaling of mining in the area;
- The positive socio-economic impacts likely to result from the project such as increased local spending, skills transfer and education/training of local communities, and the creation of local employment opportunities will not be realised; and
- The local economic benefits associated with the REIPPPP or alternative will not be realised, and socio-economic contribution payments into the local community trust will not be realised.

Converse to the above, the following benefits could occur if the "no-go" alternative is implemented:

- Agricultural land use will remain;
- No vegetation will be removed or disturbed during the development of the electrical infrastructure. No impact on the CBA 1 and 2 and NPAES;
- No impact on plant Species of Conservation Concern;
- No biodiversity (fauna and flora) will be removed or disturbed during the development of the electrical infrastructure;
- No potential impact to avifauna present in the area;
- No change to the current landscape will occur;
- No watercourses will be impacted upon; and
- No additional water use and waste generation during the construction phase.

It is important to take into account that the country is facing serious water shortages due to its heavy dependency on fossil fuels such as coal. There is therefore a need for alternative electricity generation options to be developed throughout the country. The purpose of the proposed Kap Vley – Transmission Line BA Project, is to transmit electricity generated by a renewable energy resource

into the national electricity grid. Many other socio-economic and environmental benefits will result from the development of this project such as development of renewable energy resources in the country and contribution to the increase of energy security, employment creation and local economic development (as noted above). The impact assessment undertaken and discussed within Section D of this BA Report, shows that no significant residual impacts or risks (high significant impacts), would occur following the implementation of the required mitigation measures.

Hence, the “no-go” alternative will result in both positive and negative implications, by not going ahead with the project. In addition, by not constructing the proposed electrical grid infrastructure, any positive community development or socio-economic benefits associated with the WEF would not be realised.

A.6.7 Concluding Statement for Alternatives

Appendix 1 of the 2014 NEMA EIA Regulations (as amended) has certain requirements in terms of alternatives. Table A6.5 below indicates these requirements and also includes a response from the EAP showing how the requirements of the 2014 NEMA EIA Regulations (as amended) have been addressed in this report.

Table A6.5. Requirements of Appendix 1 of the 2014 NEMA EIA Regulations (as amended) in terms of Alternatives

Requirements for a BA Report (in terms of alternatives) in terms of Appendix 1 of the 2014 NEMA EIA Regulations (as amended)	Response from EAP
Regulation 3 (1) (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;	Refer to Section A (6) i.e. this section of the BA Report for a description of the alternatives considered, and a justification for the preferred alternative. Three alternative connectivity options were considered and assessed by the specialist in order to ensure that any development constraints or environmental sensitivities will be avoided in the final siting and location of the proposed transmission line. The preferred routing option identified for this project is Alternative 1 based on the following: - Avoidance of environmental sensitivities identified by the specialists. This power line alternative traverses the least extent of sensitive habitat; - Technical and financial feasibility; and - Alignment with farm boundaries and existing servitudes.
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Refer to Section C of this BA Report for a description of the PPP undertaken.
(iii) a summary of the issues raised by interested and affected parties (I&APs), and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Refer to Appendix D of this BA Report for a description of the issues raised by I&APs during the PPP.

Requirements for a BA Report (in terms of alternatives) in terms of Appendix 1 of the 2014 NEMA EIA Regulations (as amended)	Response from EAP
▪ (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Refer to Section A (6) i.e. this section of the BA Report for a description of the alternatives considered and their corresponding environmental attributes.
▪ (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Refer to Section A (6) i.e. this section of the BA Report for a description of the alternatives and routing options considered, and a justification for the preferred alternative. Note that a complete impact assessment is included in Section D of this BA Report for Alternatives 1, 2 and 3 of the considered transmission line connectivity options. Section D of this BA Report details the impacts and risks identified. These are also included in the respective specialist studies in Appendix E of this BA Report (which includes the nature, significance, consequence, extent, duration, probability, reversibility, and irreplaceability of the impacts, as well as the suggested mitigation measures). The methodology used in the impact assessment is also noted in Section D of this report. All three connectivity options have been assessed as part of this BA process, based on the precautionary principle to allow for the proposed WEF to connect to either Alternative 1, 2 or 3 of the transmission lines.
▪ (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	
▪ (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	
▪ (viii) the possible mitigation measures that could be applied and level of residual risk;	
▪ (ix) the outcome of the site selection matrix;	
▪ (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	
▪ (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	Based on the aspects considered in this section, the following concluding statement has been provided in terms of the preferred alternative that has been considered in the BA Phase: Development of Powerline Routing Alternative 1 for the proposed Kap Vley WEF is the preferred alternative. This is mainly as it traverses the least extent of sensitive habitat, and follows property boundaries and an existing Eskom servitude. It is therefore also the most technical and feasible alternative. The layout of the transmission line and electrical infrastructure has also been informed by specialist studies during the BA phase to avoid environmental sensitivities as far as possible, as well as feasibility and landowner willingness. A sensitivity map was compiled and is included in Appendix B and in the EMPr. Thus, considering various technological alternatives relating to the design and construction of the pylon

Requirements for a BA Report (in terms of alternatives) in terms of Appendix 1 of the 2014 NEMA EIA Regulations (as amended)	Response from EAP
	structures on the preferred routing, as well as layout options to avoid sensitivities, Alternative 1 is preferred.

A.7 Needs and desirability

It is an important requirement in the BA process to review the need and desirability of the proposed project. Guidelines on Need and Desirability were published in the Government Gazette 38108 of 20 October 2014. These guidelines list specific questions to determine need and desirability of proposed developments. This checklist is a useful tool in addressing specific questions relating to the need and desirability of a project and assists in explaining that need and desirability at the provincial and local context. Need and desirability answer the question of whether the activity is being proposed at the right time and in the right place. Table A7.1 below includes a list of questions based on the DEA's Guideline to determine the need and desirability of the proposed project. It should be noted this table was informed by the outcomes of the Scoping and EIA process, as well as the BA process.

Table A7.1. The Guideline on the Need and Desirability's list of 14 questions to determine the "Need and Desirability" of a proposed project

NEED	
Question	Response
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area)?	
1.1. How were the following ecological integrity considerations taken into account?: 1.1.1. Threatened Ecosystems, 1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4. Conservation targets, 1.1.5. Ecological drivers of the ecosystem, 1.1.6. Environmental Management Framework, 1.1.7. Spatial Development Framework, and 1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	The environmental sensitivities present on site were determined and assessed within the ecological impact assessment undertaken for this project. The specialist identified all ecological sensitive areas on site that have to be avoided by the proposed development as well as how to suitably develop within these areas so that the ecological integrity of the areas is maintained. The sensitivity map is included in Appendix B of this Report.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy	The environmental sensitivities present on site were determined and assessed within the ecological impact assessment undertaken for this project. The specialist identified all ecological sensitive areas on site that have to be avoided by the proposed

NEED	
Question	Response
(including offsetting) the impacts? What measures were explored to enhance positive impacts?	development as well as how to suitably develop within these areas so that the ecological integrity of the areas is maintained. The sensitivity map is included in Appendix B of this Report. Measures to avoid, remedy, mitigate and manage impacts are included within the compiled Environmental Management Programme (EMPr), included as Appendix G of the Report, which forms part of this BA Report.
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Measures to avoid, remedy, mitigate and manage impacts are included within the compiled EMPr, which forms part of this Report.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether; what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Potential impacts associated with the proposed project, including waste generation are included in Section D of this Report, as well as in the EMPr included as Appendix G of this Report. Waste generated on site will be disposed of at a licenced landfill site. Measures to avoid, remedy, mitigate and manage impacts are included within the compiled EMPr, which forms part of this Report.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A Heritage Impact Assessment was undertaken as part of the assessment for this project. A Heritage profile is included in Section B of this Report, as well as in Appendix E6. The applicable measures to avoid, remedy, mitigate and manage impacts are included in Appendix E6, as well as in the EMPr included as Appendix G of this Report.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	An Ecological Assessment has been undertaken with regards to the proposed project; the assessment includes a detailed profile of the natural environment and anticipated impacts. Measures to avoid, remedy, mitigate and manage impacts are included in the EMPr (Appendix G of this Report).
1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	The proposed project aims to construct electrical infrastructure to connect the proposed Kap Vley WEF to the Eskom Gromis or new proposed Eskom Substation, and to ensure that the electricity generated by the proposed WEF feeds into the national grid. The overall wind energy project is seen as a source of 'clean energy' and reduces the dependence on non-renewable sources, such as coal fired power plants. The overall proposed project is a sustainable option for the area and the proposed footprint will be

NEED	
Question	Response
1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life) 1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources of the proposed development alternative?) 1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?	placed to ensure avoidance and/or mitigation of any potential impacts to the receiving environment.
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts?: 1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2. What is the level of risk associated with the limits of current knowledge? 1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The precautionary approach has been adopted for this assessment, i.e. assuming the worst-case scenario will occur and then identifying ways to mitigate or manage these impacts. Current gaps in knowledge include the location of the new proposed Eskom Substation. This substation was however considered in the planning of the proposed project. It is also not certain whether other transmission lines will be constructed in the area. Ways in which this gap is addressed is to consider the cumulative impact of all solar facilities and associated electrical infrastructure being developed within the area.
1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following: 1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	A detailed Socio-Economic Impact Assessment was undertaken and is included as Appendix E8 in the EIA Report. A socio-economic profile is included in Section B. An EMPr (Part B) has been compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced. The impact on the sense of place is difficult to predict and would potentially be ambiguous. This is due to the subjective nature of perceptions regarding the relative attraction or disturbance of transmission lines in a rural landscape. The visual impact has been assessed as part of the Visual Impact Assessment (Appendix E5 of this EIA Report).

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Question	Response
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area were considered in the Socio-Economic Impact Assessment undertaken (Appendix E8 of this EIA Report).
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?	The impacts on ecological integrity objectives of the area were considered as part of the Terrestrial Ecology Impact Assessment (Appendices E1). The proposed activity does not compromise any of the objectives set within the Nama Khoi Local Municipality's Integrated Development Plan (IDP) (2012/2017) and the Namakwa District Municipality's IDP (2017 - 2022). The proposed overall project will also be supportive of the IDP's objective of creating more job opportunities. The proposed Kap Vley WEF and associated electrical infrastructure will assist in local job creation during the construction and operation phases of the project (if an EA is granted by the DEA). However, it should be noted that although employment will be temporary during the construction phase of the transmission line and WEF, these opportunities are long-term during the operational phase of the overall project as the plant is expected to be operational for 20 years.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Please refer to Section A 6 of this Report.
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Please refer to Section D of this Report.
2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:	
2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,	The Nama Khoi Municipality's IDP (2017-2022) states that an opportunity exists to utilise wind energy more widely and lessen the dependence on wood and gas as energy sources for cooking in households. This opportunity has been identified because of the increasing backlog in electricity provisioning in the municipal area. Even though this WEF will not supply electricity directly to the municipality, the energy produced by the facility will feed into the national grid. The IDP has also identified embarking on renewable energy and upgrading electricity supply to water pump stations and incorporation of Eskom electricity network to address the electricity needs in the Komaggas area; this depicts a need for an alternative source of energy.

NEED	
Question	Response
	Furthermore, the DEA commissioned a SEA to identify the areas in South Africa that are of strategic importance for Wind and Solar PV development. The SEA aims to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy projects, referred to as REDZs. The proposed Kap Vley WEF and associated transmission infrastructure fall within REDZ 8 and is therefore aligned with national priority areas for the development of renewable energy projects. The REDZs were recently gazetted and renewable projects will operate within these areas. Eskom may therefore be able to unlock funding to proactively construct grid infrastructure to facilitate generation capacity from these areas. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area. One of the economic priority issues identified within the Nama Khoi Local Municipality IDP (2017- 2022) is the high levels of unemployment. The IDP further states that the majority of the adult population within the Nama Khoi Local Municipality have low skills levels and need employment. The proposed project will create job opportunities and economic spin offs during the construction and operational phases (if an EA is granted by the DEA). It should however be noted that although employment will be temporary during the construction phase of the transmission line and WEF, these opportunities are long-term during the operational phase of the overall project as the plant is expected to be operational for 20 years. Therefore, the proposed WEF would help to address the need for increased electricity supply while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area. The proposed activity does not compromise any of the objectives set within the Nama Khoi Local Municipality IDP (2017 - 2022). The proposed Kap Vley WEF and associated transmission line will also be supportive of the IDP's objective of facilitating job creation to address the high unemployment rate.
2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integration of segregated communities, need to upgrade informal settlements, need for densification, etc.),	N/A the proposed project is located within a rural area and the site is zoned for agricultural use.
2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.)	The impact on sensitive natural areas would be limited. Each of the three alternative transmission line connectivity options are proposed within a 200 m wide electrical infrastructure corridor. These corridors were considered and assessed by the specialists in order to ensure that any development constraints or environmental sensitivities will be avoided in the final siting and location of the proposed transmission line. The impact of the proposed project on cultural/heritage areas

NEED	
Question	Response
	(archaeology and palaeontology) have been assessed in the form of a Heritage Impact Assessment attached as Appendix E6. Due to sensitive heritage features present on site, the site layout has been amended to avoid these features. Please see Appendix B for an amended site layout map including the avoided sensitive features. The project site is currently being used for agricultural purposes, predominantly grazing. The site is deemed to be of low agricultural potential and no agricultural sensitive areas occur within the wider project area. A Soils and Agricultural Potential Impact Statement (Appendix E7) was compiled. As noted, an EMPr was compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced. The visual impact and considerations have been assessed in the Visual Impact Assessment which is attached as Appendix E5. An environmental sensitivity map is included in Appendix B, based on the input obtained from the various specialist studies. Where possible sensitive features have been avoided by layout revisions.
2.1.4. Municipal Economic Development Strategy ("LED Strategy").	The Nama Khoi Local Municipality's Integrated Development Plan (IDP) (2012/2017) LED Strategy (2016) lists renewable energy as an opportunity for the municipality. It states that "Renewable energy has become a global priority and there is potential for both wind and solar power within the Nama Khoi Local Municipality." The proposed Kap Vley WEF is therefore aligned with the LED Strategy of the Nama Khoi Local Municipality.
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long term? Will the impact be socially and economically sustainable in the short- and long-term?	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.5. In terms of location, describe how the placement of the proposed development will:	

NEED	
Question	Response
2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	N/A the proposed project is located within a rural area and the site is zoned for agricultural use.
2.5.2. reduce the need for transport of people and goods,	N/A the proposed project is located within a rural area and the site is zoned for agricultural use.
2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	N/A the proposed project is located within a rural area and the site is zoned for agricultural use. This project is a renewable energy project and not a transportation project.
2.5.4. compliment other uses in the area, 2.5.5. be in line with the planning for the area,	The preferred project site is currently being used for agricultural purposes, predominantly grazing. The site is deemed to be of low agricultural potential and no agricultural sensitive areas occur within the wider project area. A Soils and Agricultural Potential Impact Statement was undertaken (Appendix E7) to reflect the impact of the proposed project in terms of the land use and agricultural potential.
2.5.6. for urban related development, make use of underutilised land available with the urban edge,	N/A the proposed project is located within a rural area and the site is zoned for agricultural use.
2.5.7. optimise the use of existing resources and infrastructure,	The proposed Kap Vley WEF will connect to the Gromis Substation located on the remainder of Farm Dikgat 195, or closer to the new Eskom substation for which the location still needs to be determined via a 132 kV overhead transmission line.
2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	This project is in a REDZs and therefore in a priority renewable energy development area.
2.5.9. discourage "urban sprawl" and contribute to compaction/densification,	Not applicable as the project is not proposed in an urban area where social impacts are expected to manifest.
2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	N/A the proposed project is located within a rural area and the site is zoned for agricultural use.
2.5.11. encourage environmentally sustainable land development practices and processes,	Based on the findings of this BA, the proposed project would not have a significant ("high") negative impact on the receiving environment, with the implementation of suitable mitigation measures. No impacts of high significance (with the implementation of mitigation measures) were identified in the BA. As noted in Appendix E7 of this Report (Soils and Agricultural Potential Impact Assessment), due to the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing. Currently, the site is used for grazing, which could continue in the surrounding regions, together with the generation of additional income via the leasing of the land to the Applicant. It is also important to point out that the proposed Kap Vley WEF (including associated transmission infrastructure) will be designed according to

NEED	
Question	Response
	relevant national specifications and standards which are regarded as best practice in the renewable energy sector.
2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	Please refer to Section A6 for a description of the process undertaken to identify the preferred transmission line routing (Alternative 1).
2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	The impact of the proposed project on cultural/heritage areas (archaeology and palaeontology) was assessed in the Heritage Impact Assessment (Appendix E6) of this Report.
2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	Several Renewable Energy projects are proposed and environmentally approved in the area, which lends itself potentially to a renewable energy development area. The proposed WEF and associated transmission line fall within the gazetted REDZ 8. The REDZs were recently gazetted. Therefore, should the renewable energy projects operate within these areas, Eskom may be able to unlock funding to proactively construct grid infrastructure to facilitate generation capacity from these areas. This will mean that the municipality will also benefit from these upgrades and potentially alleviate the electrification backlogs present in the area.
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	
2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	
2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the	

NEED	
Question	Response
development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	
2.13. What measures were taken to:	
2.13.1. ensure the participation of all interested and affected parties,	The PPP undertaken to date as part of the BA process is included in Section C and Appendix D of this Report. Various methods were employed to notify potential I&APs of the proposed project, namely, through notices in the local newspaper, notices on site and in Komaggas & Kleinzee, emails as well as notification letters.
2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	
2.13.3. ensure participation by vulnerable and disadvantaged persons,	
2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	The BA process has taken cognisance of all interests, needs and values espoused by all interested and affected parties. Opportunity for public participation will be provided to all I&APs throughout the BA process in terms of the 2014 EIA Regulations, as amended.
2.13.5. ensure openness and transparency, and access to information in terms of the process,	The PPP undertaken to date as part of the BA process is included in Section C and Appendix D of this Report. This will be updated with the PPP undertaken during the distribution of the Draft BA Report. Various methods have been employed to notify potential (I&APs) of the proposed project, namely, through notices in the local newspaper, notices on site and in Komaggas & Kleinzee, emails as well as notification letters.
2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,	The BA process has taken cognisance of all interests, needs and values adopted by all interested and affected parties.

NEED	
Question	Response
2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein was promoted.	Public participation of all I&APs has been promoted and opportunities for engagement will be provided throughout the BA process.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	The proposed project presents viable long term benefits for the community and society in the Kleinsee/Komaggas area. Recommendations made within the Socio-Economic Impact Assessment (included in Appendix E8 of this EIA Report) and those included in the EMPr section of this Report (Part B) have the potential to facilitate more options to local community members in terms of socio-economic benefits.
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	An EMPr has been developed to address health and safety concerns. An Environmental Control Officer will be appointed to monitor compliance.
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1. the number of temporary versus permanent jobs that will be created,	This is addressed and included in the Socio-Economic Impact Assessment (Appendix E8).
2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	
2.16.3. the distance from where labourers will have to travel,	
2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits),	
2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	
2.17. What measures were taken to ensure:	
2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment,	Legislation, policies and guidelines, which could apply to impacts of the proposed project on the environment, have been considered. The scope and content of this BA Report has been informed by applicable integrated environmental management legislation and policies. Section A8 of this Report and the specialist studies included in this Report also provide a description of the relevant applicable legislation that the proposed development complies with.
2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	Public Participation has been undertaken as part of the BA process, and to this date the CSIR has not received information on potential conflicts of interest.
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Public participation forms an integral part of the Environmental Assessment Process and assists in identifying issues and possible alternatives to be considered during the BA process.
2.19. Are the mitigation measures proposed realistic	The proposed mitigation measures included in the

NEED	
Question	Response
and what long-term environmental legacy and managed burden will be left?	EMPr (Appendix G) of this Report have been informed by the Specialist studies undertaken and this includes a detailed assessment of the environment as well as the impacts associated with the proposed development. Wind energy facilities and associated electrical infrastructure can be dismantled and completely removed from the site utilised for the development and do not permanently prevent alternative land-uses on the same land parcel. Based on material and socio-economic terms, and measured to the value of the best alternative that is not chosen, the proposed project will result in positive opportunity costs.
2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The EMPr (Appendix G) of this proposed project must form part of the contractual agreement and be adhered to by both the contractors/workers and the applicant.
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Due to both the climate and soil limitations, the site is not suitable for any agricultural land use other than low intensity grazing. The site is within one of South Africa's eight proposed REDZs, and has therefore been identified as one of the most suitable areas in the country for renewable energy development, in terms of a number of environmental impact, economic and infrastructural factors. These factors include an assessment of the significance of the loss of agricultural land. Renewable energy development is therefore a suitable land use option for the site. The proposed overall project would however be more robust in terms of economic viability and profitability while also being largely uninfluenced by climate change variables. The proposed project contributes to local socio-economic upliftment through job creation.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	In assessing the cumulative impacts of the proposed development, all the projects that fall within a 50 km radius of the proposed Kap Vley WEF were considered. The incidence and severity of the immigration of job seekers and increases in social deviance are likely to increase with the development of more renewable energy projects in the area. The cumulative socio-economic benefit offered by industrial scale development in the area outweighs the negative impacts associated with economic growth. The cumulative impact of the proposed development is therefore considered to be of moderate significance (after mitigation) for the influx of people. The cumulative impact regarding project expenditure and long-term diversification of the economy is considered to be of high significance (positive impact) after mitigation.

A.8 Applicable legislation

The scope and content of this BA Report has been informed by the following legislation, guidelines and information series documents (Table A8.1). It is important to note that the specialist studies included in Appendix E of this BA Report also include a description of the relevant applicable legislation.

Table A8.1. Legislation Applicable to the Proposed Project

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
NEMA (Act 107 of 1998, as amended)	The proposed project will require the implementation of appropriate environmental management practices.	National DEA	19 November 1998
NEMA EIA Regulations published in GN R982, R983, R984 and R985, and as amended on 7 April 2017 in GN R326, R327, R325 and R324	These Regulations provide the procedures that need to be followed for the BA process.	National DEA	8 December 2014
NEMA EIA Regulations published in Government Notice R983 and R985, and as amended on 7 April 2017 in GN R327 and R324	These Regulations contain the relevant listed activities that are triggered, thus requiring a BA. Please refer to Section A (4) of this BA Report for the complete list of listed activities.	National DEA	8 December 2014 and amended on 7 April 2017
National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA)	General and hazardous waste will be generated during the construction phase, which will require proper management.	National DEA	6 March 2009
National Environmental Management: Waste Amendment Act (Act 26 of 2014)	General and hazardous waste will be generated during the construction phase, which will require proper management.	National DEA	2 June 2014
National Environmental Management: Air Quality Act (Act 39 of 2004)	The proposed stockpiling activities, including earthworks, may result in the unsettling of, and temporary exposure to, dust. Appropriate dust control methods will need to be applied.	National DEA	19 February 2005
Water Services Act (Act 108 of 1997)	Water will be required during the construction and decommissioning phases of the proposed project, for consumption purposes, earthworks and grassing etc.	National Department of Water Affairs	1997
Hazardous Substances Act (Act 15 of 1973)	During the proposed project, fuel and diesel will be utilised to power vehicles and equipment. In addition, potential spills of hazardous materials could occur during the construction and decommissioning phases.	Department of Health	1973
Environmental Conservation Act (ECA) (Act 73 of 1989 Amendment Notice No.1183 of 1997)	ECA was promulgated prior to the NEMA, and was the main piece of legislation in dealing with environmental issues in South Africa. The ECA has largely been repealed and replaced with NEMA.	National DEA	1997
National Forests Act (Act 84 of 1998)	As noted in Appendix E1 of this BA Report (Ecology Impact Assessment), the National Forest Act (Act 84 of 1998) governs the removal, disturbance, cutting or damage and destruction of identified "protected trees". If any protected species are found on site during the search and rescue or construction	DAFF	1998

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	phase, the Provincial Department of Agriculture, Forestry and Fisheries (DAFF) will be contacted to discuss the permitting requirements. Two protected tree species have been observed at the site, <i>Aloe dichotoma</i> and <i>Acacia erioloba</i>. Although the numbers of affected individuals is low, a permit from DAFF would be required for any impacts to these species. Under the assessed layout, there are some individuals of <i>Acacia erioloba</i> present along the power line routes, but no individuals of <i>Aloe dichotoma</i> were observed within the footprint. The exact number of affected individuals would need to be applied for would be clarified at the preconstruction phase following a preconstruction walk-through of the final approved development footprint.		
National Water Act (NWA) (Act 36 of 1998)	The need for a WUL will be confirmed with the Department of Water and Sanitation (DWS) during the 30 day review of the BA Report. Consultation with the DWS will also ensure that the relevant legislative requirements are complied with. Should any infrastructure need to be placed directly within an active channel of any freshwater resource, a WUL will be required and must be applied for by the proponent. In terms of Section 21 (c) and (i) of the NWA the relevant authorisation must be obtained from the DWS for any and all any activities that take place within the watercourses.	Department of Water Affairs	1998
Integrated Environmental Management (IEM) guideline series published by the DEA (various documents dated from 2002 to present)	The IEM Guideline series provides guidance on conducting and managing all phases and components of the required BA and PPP, such that all associated tasks are performed in the most suitable manner.	National DEA	2002 - present
National Heritage Resources Act (Act 25 of 1999)	The proposed project may require a permit in terms of the National Heritage Resources Act (Act 25 of 1999) prior to any fossils or artefacts being removed by professional palaeontologists and archaeologists. Additional information regarding this is provided in the Heritage Impact Assessment (Appendix E6).	National Department of Arts and Culture	1999
Conservation of Agricultural Resources Act (Act 43 of 1983)	The Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983) has categorised a large number of invasive plants together with associated obligations of the land owner. Invasive plant species that should be removed or maintained only under certain commercial situations are identified in terms of the CARA. CARA defines different categories of alien plants and those listed	National Department of Agriculture	1983

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	under Category 1 are prohibited and must be controlled while those listed under Category 2 must be grown within a demarcated area under permit. Category 3 plants includes ornamental plants that may no longer be planted but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the floodline of water courses and wetlands. The predominant alien of concern at the site is <i>Acacia cyclops</i>, which is listed as Category 1b.		
Northern Cape Nature Conservation Act (Act 9 of 2009)	All species listed by the Northern Cape Nature Conservation Act (Act 9 of 2009) will require removal permits should they be impacted upon by the construction activities. The Northern Cape Conservation Act under its pertinent regulation, governs the disturbance of species listed in the Ecology Impact Assessment (included in Appendix E1 of this BA Report), or possibly other species not yet identified on the site. As noted above, a permit from the Provincial Department of Environment and Nature Conservation will be required in order to disturb or translocate such species. The absence or presence of these species will be confirmed as part of the plant rescue and protection plan and should any species be present and determined that they will be impacted on, permits will be obtained from Department of Environment and Nature Conservation in this regard.	Northern Cape Department of Environment and Nature Conservation	2009
National Environmental Management: Biodiversity Act (Act 10 of 2004)	This Act serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. The majority of the power line alternatives are located within the Namaqualand Strandveld vegetation type with small amounts of Namaqualand Klipkoppe Shrubland within Kap Vley and a short area of Namaqualand Salt Pans along Alternative 1 and a very short area of Namaqualand Riviere along the Buffels River towards the Gromis Substation. The proposed transmission line development may not necessitate any particular application for a change in land use from an ecological perspective, however the effective disturbance and removal of species identified	National DEA	September 2004

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	the Ecological Impact Assessment Report (Appendix E1), as well as possible other species, will require specific permission from the applicable authorities. In addition, the planting and management of exotic plant species on route, if and where required, will be governed by the Alien and Invasive Species (AIS) regulations, which were gazetted in 2014. These regulations compel landowners to manage exotic weeds on land under their jurisdiction and control.		

SECTION B: DESCRIPTION OF THE AFFECTED ENVIRONMENT

This Section of the BA Report provides an overview of the affected environment and surrounding region of the proposed development of electrical infrastructure to support the Kap Vley WEF. The receiving environment is understood to include biophysical, socio-economic and heritage aspects which could be affected by the proposed development or which in turn might impact on the proposed development. The information presented in this section has also been derived from the specialist studies that are included in Appendix E of this BA Report.

It is important to note that this chapter intends to provide an overview of the receiving environment based on the specialist studies. Detailed descriptions of the proposed project site focused on specific environmental aspects are provided in the relevant specialist studies (which are included in Appendix E of this BA Report).

B.1 Property details

Table B1.1 below provides the details of the affected properties for the Kap Vley Alternative 1, 2 and 3 transmission lines.

Table B1.1. Details of the Affected Properties

	Kap Vley Alternative 1	Kap Vley Alternative 2	Kap Vley Alternative 3
Farm name and number	Kapvlei 315/1	Kapvlei 315/1	Kapvlei 315/1
	Kapvlei 315/2	Kourootjie 316/rem.	Kourootjie 316/rem.
	Kapvlei 315/3	Pienaars Bult 317/1	Komaggas 200/rem. of portion 5
	Kourootjie 316/rem.	Pienaars Bult 317/2	Pienaars Bult 317/2
	Pienaars Bult 317/1	Klein Schaap Kop 320/rem.	Pienaars Bult 317/rem
	Pienaars Bult 317/2	Mannels Vley 321/rem.	Doornfontein 319/rem
	Kannebieduin 324/rem.	Dikgat 195/rem.	Doornfontein Wes 196/rem.
	Sand Kop 322/rem.		Mannels Vley 321/rem.
	Mannels Vley 321/rem.		Dikgat 195/rem
	Dikgat 195/rem.		
SG code	C0530000000031500001	C0530000000031500001	C0530000000031500001
	C0530000000031500002	C0530000000031600000	C0530000000031600000
	C0530000000031500003	C0530000000031700001	C0530000000020000000
	C0530000000031600000	C0530000000031700002	C0530000000020000005
	C0530000000031700001	C0530000000032000000	C0530000000031700002
	C0530000000031700002	C0530000000032100000	C0530000000031700000
	C0530000000031700000	C0530000000019500000	C0530000000031900000
	C0530000000032400000		C0530000000019600000
	C0530000000032200000		C0530000000032100000
	C0530000000032100000		C0530000000019500000
	C0530000000019500000		
Current land-use zoning	Agricultural land-use - mainly livestock grazing. A servitude for the proposed transmission line will need to be registered on the affected farm portions. Servitude requirements also need to be discussed between the Applicant and Eskom.		

B.2 Site context

The south-eastern end of the study area is located in a relatively remote area to the west of the village of Komaggas and to the southeast of Kleinsee. The powerline would run towards the north-west and cross the Buffels River to the existing Eskom Gromis Substation or the new proposed Eskom Substation for which a location still needs to be determined. Limited diamond mining has occurred in this part of the study area in the past, specifically on Mannels Vley and Dikgat. The study area and surrounds are largely used for small stock grazing and the only infrastructure present consists of sparsely distributed farm houses, farm tracks and fences and a number of stock posts within the Komaggas Reserve. Roads in the immediate area are all gravelled.

B.3 Topography and landscape of the site

Based on the elevation profiles derived from Google Earth, as well as the findings of the specialists during site work and the topographical profiles included in the Visual Impact Assessment (Appendix E5 of this BA Report), the elevation characteristics of the project area are very slight (ranging from ~ 900 m – 1050 m) with an average of slope of 0.5 %. The broader landscape of the study area is generally flat, with a few rocky hills occurring sporadically. The Terrestrial Ecology Impact Assessment (Appendix E1 of this BA Report) notes that few elevated features are evident across the corridors.

B.4 Geology, land use and soil

The geology of the coastal plains is aeolian material overlying Tertiary and Quaternary marine sediments. The underlying geology of the ridges is migmatite and gneiss of the Namaqualand Metamorphic Complex.

The predominant land use associated with the study area is agriculture, mainly extensive grazing, including dorper sheep, and subsistence farming where irrigation is available, particularly in the Komaggas settlement. Grazing farms tend to be large and farmsteads far apart in the semi-arid landscape. Diamond mining took place in the past and many excavated trenches still remain. The land-based mining in the immediate area appears to have largely ceased.

The land type classification is a nationwide survey that groups areas of similar soil, terrain and climatic conditions into different land types. There are five land types across the site. The coastal plains comprise four similar land types. Soils of these land type are predominantly deep to moderately deep very sandy soils on underlying hardpan carbonate. Predominant soil forms are Hutton, Clovelly, Fernwood, Vilafontes and Pinedene. These soils would fall predominantly into the Oxidic and Calcic (underlying hardpan carbonate) soil groups according to the classification of Fey (2010). The higher lying ridges comprise a different land type, Ib123, that is dominated by rock outcrop and shallow, sandy soils on underlying rock of the Hutton and Mispah soil forms. These soils would fall into the Oxidic and Lithic soil groups according to the classification of Fey (2010). The field investigation confirmed that the dominant soil types are as described in the land type data.

The sandy soils are susceptible to wind erosion. Although the soils are not classified as highly susceptible to water erosion, the aridity of the environment with consequent low plant cover means that erosion risk is nevertheless high.

Figures B4.1 and B4.2 show typical veld and landscape soil conditions along the powerline routing.



Figure B4.1. Photograph of typical veld and landscape conditions across the site along the powerline routing.



Figure B4.2. Photograph of typical veld and landscape conditions across the site along the powerline routing.

B.5 Terrestrial Environment

B.5.1 Groundcover

The three power line alternatives are located within an environment that is largely similar, with few significant differences between the routes. The majority of the affected area consists of Namaqualand Strandveld with relatively little extent of other vegetation types present. In general, there are two main sensitive areas that are of concern. The Kap Vley site itself has a variety of sensitive habitats and species present and in this area, and Alternative 1 would thus generate the lowest impact. Towards Gromis Substation, all three alternatives traverse the Buffels River and there are no significant differences between the route alternatives in this area. Although the Buffels River is considered sensitive, the power line can be spanned across the river valley and direct impact on the riparian areas and groundwater can be avoided.

B.5.2 Vegetation Types

According to the national vegetation map (Mucina & Rutherford 2006/2012), there is a variety of vegetation types in the broader area of the power line routes (Figure B5.1), but only four along the power line route alternatives. The majority of the power line alternatives are located within the Namaqualand Strandveld vegetation type with small amounts of Namaqualand Klipkoppe Shrubland within Kap Vley and a short area of Namaqualand Salt Pans along Alternative 1 and a very short area of Namaqualand Riviere along the Buffels River towards the Gromis Substation. Each of these units is described in more detail below.

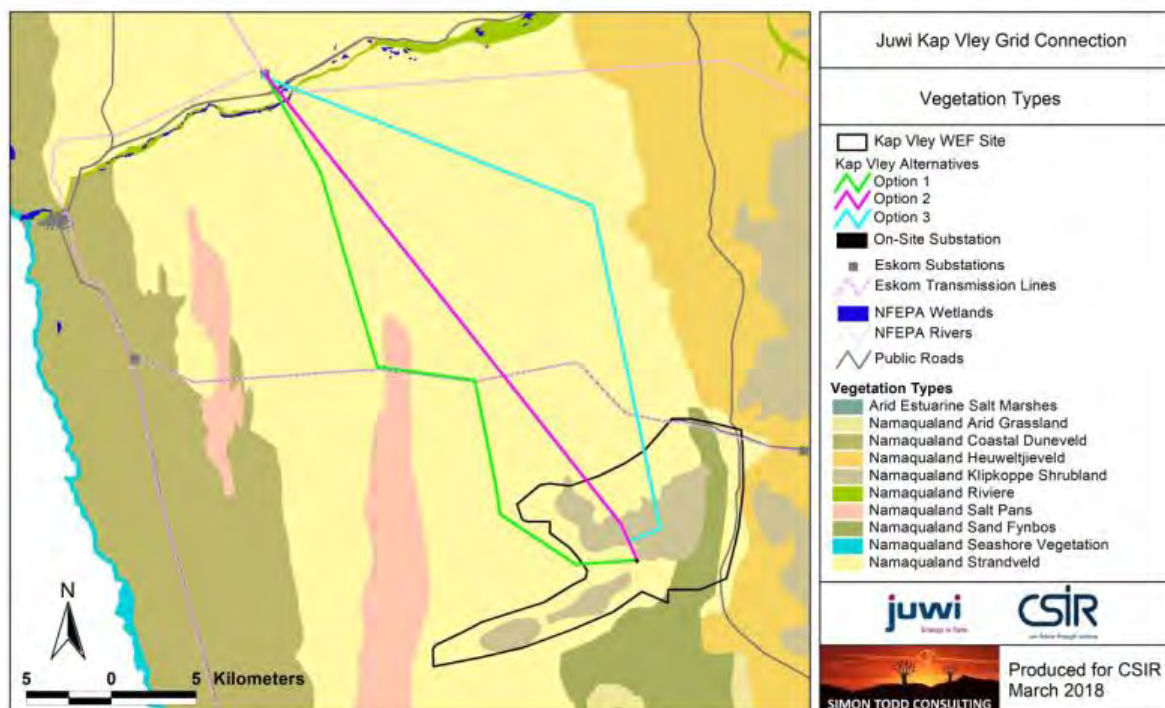


Figure B5.1. Vegetation map (Mucina and Rutherford 2006 and 2012 Powrie Update) of the Kap Vley Grid Connection route alternatives and surrounding area.

1. Namaqualand Strandveld

The majority of the length of all three route alternatives falls within the Namaqualand Strandveld vegetation type. About 10% of this vegetation type has been lost mainly to coastal mining for heavy metals and it is not currently listed. In general, this is not considered to be a highly sensitive vegetation type as it is fairly extensive and generally has a low abundance of species of conservation concern. There may however be specific habitats present that are of limited extent and contain specialised associated species.

2. Namaqualand Klipkoppe Shrubland

Within Kap Vley farm, there are several large ridges present which have been classified as Namaqualand Klipkoppe Shrubland. This vegetation unit occupies 10 936 km² of central Namaqualand from Steinkopf to Nuwerus in the south. As Namaqualand Klipkoppe Shrubland is still largely intact, it has been classified as Least Threatened. Mucina & Rutherford list 15 endemic species for this vegetation type. At a coarse level, it is sensitive largely in terms of offering a diverse habitat for fauna such as reptiles but relatively speaking does not have a high abundance of listed plant species. The extent of this vegetation unit within the Kap Vley study area is considerably over-mapped and only the actual rocky outcrops and not the surrounding areas within the site should be mapped as falling within this unit.

3. Namaqualand Sand Fynbos

Although there is no Sand Fynbos mapped within the corridors and based on the Vegmap, it only occurs to the east of the study area, the field assessment reveals that there are extensive areas of Sand Fynbos within Kap Vley. This is considered to be a sensitive habitat because the majority of plant species of conservation concern (SCC) that have been observed at Kap Vley are found within the areas of Sand Fynbos.

4. Namaqualand Salt Pans

The Namaqualand Salt Pans vegetation type occurs in the Northern and Western Cape on the coastal plain including the Sonnekwa, Hindevlei, Bloupan, Dryerspan, and Soutpan as well as parts of the Olifants River mouth. This unit occupies the flat surfaces of depressions, mostly without vegetation and only occasionally covered with sparse salt-tolerant succulent shrubs. Namaqualand Salt Pans are nearly permanently dry and especially in the Kleinsee area they disappear and are buried under layers of wind-borne sand. This vegetation type is considered to be Least Threatened and has been little impacted by transformation to date.

Within the study area, the classification of these areas as this vegetation type is debateable as these areas do not appear to be salt pans in their origin and do not correspond with the general description of these areas as provided. Furthermore, their description as a pan is a misnomer as these areas are dry and do not fill with water even in exceptional circumstances. These appear to rather be areas where the wind has removed the sand overburden exposing the older underlying calcrete basement, leading to their 'white' appearance and assumption that these are salt pans. As this is not a common vegetation unit in the area and offers different habitat to the surrounding sandy areas, it is considered more sensitive than the surrounding areas, but is not considered to be a no-go area.

The national vegetation map does not provide a very satisfactory reflection of the vegetation of the site. This relates largely to the extensive tracts of Namaqualand Klipkoppe Shrubland which has been mapped at the site compared to the limited extent of this unit actually present. Of relevance to the current study, is that the site occurs at the northern extreme distribution point of Namaqualand Sand Fynbos and there do not appear to be any areas of this unit to the north of the current site. In addition, this unit has not been well investigated in the past and there are at least 30 endemic or red-listed species of conservation concern known from this vegetation unit. The vegetation of the site as affected by the development is detailed below.

B.5.2.1 Fine-Scale Vegetation Description

The different habitats present along the power line corridors are described below, including the distribution and extent of each habitat within each corridor and the characteristic species present within each habitat. In general, the description of units is organised starting from the on-site substation and moving towards the Gromis Substation.

Sand Fynbos



Figure B5.2. The broad valley within Kap Vley where the on-site substation is located and from where the grid connection would start. The vegetation is largely sand fynbos dominated by *Willdenowia incurvata* and *Thamnochortus bachmannii*.

The low-lying areas within Kap Vley where the substation would be located consist of restio-dominated sand fynbos (Figure B5.2). Species present include *Thamnochortus bachmannii*, *Searsia longispina*, *Leucospermum praemorsum* (VU), *Leucadendron brunioides*, *Watsonia meriana*, *Argyrobolium velutinum* (EN), *Aspalathus albens*, *Aspalathus spinescens*, *Harveya squamosa*, *Lampranthus procumbens* (VU) and *Wiborgia obcordata*. There are also occasional *Acacia erioloba* trees present in this habitat. Although there are some listed species present in this habitat is considered moderately sensitive based on the relatively low abundance of listed species, the relatively large extent of this habitat and the relative tolerance to disturbance. All three route options traverse this habitat but there is least of this habitat within Alternative 1 which runs west from the substation into an area dominated by Strandveld.

Rocky Hills

Alternative 3 traverses the major rocky ridge within the Kap Vley site (Figure B5.3). This is considered to be a generally sensitive habitat due to high diversity of this habitat and the high value of these areas for fauna. Common and characteristic species found in the rocky hills include *Ficus ilicina*, *Crassosiphonia sedifolia*, *Euryops dregeanus*, *Eriocephalus microphyllus*, *Hirpicium alienatum*, *Tetragonia fruticosa*, *Ehrharta barbinodis*, *Searsia longispina*, *Stoeberia utilis*, *Pteronia undulata*, *Antimima watermeyerii*, *Amphiglossa tomentosa*, *Lycium cinereum*, *Conophytum bilobum*, *Antimima* sp., *Cassula hirtipes*, *Crassula deceptor*, *Crassula hirsuta*, *Adromischus marianiae*, *Teedia lucida*, *Berkheya fruticosa*, *Exomis microphylla*, *Tylecodon paniculatus*,

Athanasia flexuosa, *Euphorbia hamata*, *Asparagus capensis*, *Hermannia cuneifolia*, *Euphorbia rhombifolia*, *Nenax cf microphylla*, *Monsonia ciliata*, *Ruschia goodiae*. This habitat is restricted to Alternative 3 and while Alternative 2 also traverses the main ridge at Kap Vley the area where it crosses the ridge is sandy and it does not cross and significant rocky areas.



Figure B5.3. Looking along the major rocky ridge of the Kap Vley site, showing the area where Alternative 3 crosses the ridge.

***Cladoraphis - Acacia erioloba* Plains**

A unique feature present along Alternative 3 only is the Camelthorn “forest” that occurs at the foot of Sandberg to the east and north of the Kap Vley site and which extends as far north as the Buffels River (Figure B5.4). This community is associated with red sands and is characterised by the presence of numerous *Acacia erioloba* trees with an understorey dominated by the spiny grass *Cladoraphis spinescens*. Other species present in this area include *Stipagrostis ciliata*, *Zygophyllum morskana*, *Lebeckia spinescens*, *Asparagus capensis*, *Euphorbia burmannii*, *Sarcocaulon ciliata*, *Othonna sedifolia* and *Lycium cinereum*. This is a unique habitat that is not found elsewhere in Namaqualand and as such impact to this ecosystem is considered undesirable.



Figure B5.4. Looking south along Alternative 3 towards the northern ridge of the Kap Vley site, showing the *Acacia erioloba* population that would be affected by this Alternative.

Plains Strandveld

The ridge areas affected by the development generally consist of low Strandveld (Figures B5.5 and B5.6). It is dominated by species such as *Ruschia goodiae*, *Monsonia ciliata*, *Amphiglossa tomentosa*, *Crassothonna sedifolia*, *Anthospermum spathulatum*, *Euphorbia rhombifolia*, *Diospyros ramulosa*, *Roepera morganiana*, *Lycium cinereum*, *Willdenowia incurvata*, *Pelargonium praemorsum*, *Cephalophyllum pillansii*, *Jordaaniella spongiosa*, *Ehrharta barbinodis*, *Tetragonia fruticosa*, *Wiborgia monoptera*, *Asparagus capensis*, *Hermannia trifurca*, *Osteospermum oppositifolium*, *Hirpicium alienatum*, *Aspalathus pulicifolia*, *Chrysocoma longifolia* and *Searsia longispina*. The abundance of species of conservation concern in this habitat is low and it is not considered to be highly sensitive. There are also no faunal habitats of high significance in this habitat. This is the most common habitat within the power line routes and is widely distributed within all three alternatives.



Figure B5.5. Low Strandveld vegetation on relatively flat plains along the alignment of Alternative 2, which runs to the left of the farmhouse visible in the distance.



Figure B5.6. Looking south across the Buffels River from near the Gromis Substation, showing the homogenous Strandveld plains south of the Buffels River.

Namaqualand Dune Strandveld

There is a distinct plant community associated with the larger, more mobile dune fields of the area, i.e. the Namaqualand Dune Strandveld (Figure B5.7). These areas are more dynamic than the areas of flatter strandveld and have areas of alternating low cover associated with areas of greater sand movement and areas of taller vegetation occurring in the dune slacks and other more stable

situations. Typical and dominant species include *Zygophyllum morganiana*, *Searsia longispina*, *Tripteris oppositifolia*, *Cladoraphis cyperoides*, *Othonna sedifolia*, *Conicosia pugioniformis*, *Asparagus lignosus*, *Hermannia* sp., *Erioccephalus racemosus*, *Asparagus capensis*, *Lycium cinereum*, *Lebeckia spinescens*, *Tetragonia spicata* and *Diospyros ramulosa*. These areas are considered somewhat more sensitive than the typical surrounding Strandveld due to the loose soils and slopes of the dunes which are vulnerable to disturbance. This habitat is present along all three alternatives, but is most prevalent along Alternative 3.



Figure B5.7. Looking back towards Kap Vley along Alternative 1, with Namaqualand Dune Strandveld in the foreground and more typical Plains Strandveld in the distance.

Strandveld on Namaqualand Salt Pans

The vegetation of the areas classified as Namaqualand Salt Pans is distinct from the adjacent Strandveld (Figure B5.8). However, the naming of these areas in the Vegmap is not appropriate as these are not salt pans. These areas occur on shallow white sands overlaying calcrete. Water does not collect in these areas and they are freely drained. Typical and dominant species include *Amphibolia rupis-arcuatae*, *Euphorbia brachiata*, *Othonna sedifolia*, *Asparagus capensis*, *Zygophyllum morganiana*, *Ruschia goodiae*, *Cheirodopsis denticulata*, *Aridaria nociflora*, *Othonna cylindrica* and *Ruschia* sp. As this is a habitat of limited extent and offers features that are not found elsewhere in the area, it is considered more sensitive than the surrounding Strandveld. This habitat is restricted to a relatively short section of corridor Alternative 1.



Figure B5.8. The areas mapped as Namaqualand Salt Pans are areas where the sandy overburden has been removed by the wind and are generally fairly well vegetated with shorter succulent and woody shrubs. These are not hydrological features and occur on marine sediments.

Buffels River

All three alternatives traverse the Buffels River just before the approach to the Gromis Substation (Figure B5.9). This is considered a sensitive habitat and disturbance to the riparian environment should be minimised. The river valley is however steep and it is highly likely that the river can be easily spanned by the power line. Species present within the river include *Acacia karoo*, *Suaeda fruticosa*, *Salsola aphylla*, *Tamarix useneoides*, *Hermannia trifurca*, *Stipagrostis namaquensis*, *Galenia africana*, *Codon royenii*, *Argemone ochroleuca*, *Scirpoides dioecus* and *Forsskaolea candida*. There are no significant differences between the different alternatives in terms of their potential impact on the Buffels River and as such, there is no specific preference for an alternative in this regard.



Figure B5.9. Looking north over the Buffels River, just south of the power line crossing point.

B.5.2.2 Listed and Protected Plant Species

There are a number of local endemics and SCC present in the study area which could be affected by the development. These are largely concentrated within the Sand Fynbos areas of Kap Vley with the abundance of such species outside of the site being relatively low. Notable species observed include *Metalasia adunca* (NT), *Muraltia obovata* (VU), *Agathosma elata* (EN), *Argyrobium velutinum* (EN), *Lampranthus procumbens* (VU) and *Leucospermum praemorsum* (VU). Impact on these species can be minimised through the detailed mapping that has been conducted within Kap Vley. Outside of Kap Vley there are also some SCC present. Along Alternative 3, there is the large population of *Acacia erioloba* on the plains north of Kap Vley. While *Acacia erioloba* is not threatened, it is a protected tree and any impact on this species requires a permit from DAFF. Impact on any SCC along the final power line route can be reduced through a preconstruction walk-through of the power line footprint which can be used to inform the final pylon placement and routing.

B.5.3 Fauna

B.5.3.1 Faunal Communities

1. Mammals

A list of Mammals known from the broad area around the Kap Vley site, based on the MammalMap Database (<http://vmus.adu.org.za>) is provided in Appendix 1 of Terrestrial Ecology Impact Assessment (Appendix E1).

The area has a modestly rich mammalian community. The majority of the area is however still natural and used as extensive rangeland with the result that smaller mammals are relatively common and widespread across the study area. Species that have been observed directly or through camera trapping include African Wildcat, Bat-eared Fox, Cape Fox, Cape Grey Mongoose, Caracal, Common Duiker, Cape Hare, Honey Badger, Steenbok, Striped Polecat, Yellow Mongoose, Porcupine and Smith's Red Rock Rabbit. The most common species encountered are Steenbok and

Cape Hare, with Duiker, Porcupine, Striped Polecat and Caracal being moderately abundant. Small mammals present include Hairy-footed Gerbil, Western Rock Elephant Shrew, Namaqua Rock Mouse and Four-striped Mouse. The Namaqua Rock Mouse and Western Rock Elephant Shrew are confined to rocky areas while the sandy substrates are dominated by Hairy-footed Gerbil, the Four-striped Mouse, Karoo Bush Rats and Brants's Whistling Rat.

Apart from the species which were observed and can be confirmed present in the area, four red-listed SCC are known to occur in the broad area. This includes the Leopard *Panthera pardus* (Vulnerable), Littledale's Whistling Rat *Parotomys littledalei* (Near Threatened), African Clawless Otter *Aonyx capensis* (Near Threatened) and Grants' Golden Mole *Eremitalpa granti granti* (Vulnerable). It is not likely that either the Leopard or Otter are present at the site on account of human disturbance or lack of suitable habitat. Golden Moles are confirmed present, but it is not clear if these are the more common Cape Golden Mole or Grants' Golden Mole. However, the power line would not generate significant levels of habitat loss for any of the mammals present.

2. Reptiles

A list of Reptiles known from the vicinity of the Kap Vley site, based on records from the ReptileMap database is provided in Appendix 2 of Terrestrial Ecology Impact Assessment (Appendix E1). (Conservation status is from Bates et al. 2013).

The area has a relatively diverse reptile assemblage with few species of conservation concern observed, but several local endemics confirmed present. The rocky hills have the highest diversity of reptiles present due to the greater habitat diversity and refuge availability in this habitat compared to the plains. Species observed include Armadillo Girdled Lizard, Karoo Girdled Lizard, Giant Desert Lizard, Southern Rock Agama, Common Giant Ground Gecko, Namaqua Day Gecko, Knox's Desert Lizard, Common Sand Lizard, Pink Blind Legless Skink and Many-horned Adder. This is likely to represent only a proportion of the reptile fauna of the site and as many as 40 species are known to occur in the wider area. No SCC have however been recorded from the area, although it is possible that the Speckled Padloper *Chersobius signatus* (Vulnerable) is present. The most important habitat for reptiles is the rocky outcrops, which provide an array of microsites and suitable refuges for a variety of reptiles. Direct impact to this habitat would be relatively low as the footprint in these areas would be minimal. The sandy substrates are home to local endemics such as the Pink Blind Legless Skink and Coastal Dwarf Legless Skink, which may be vulnerable to habitat disruption due to the construction of roads which may fragment the continuity of the preferred sandy substrate. Overall, impacts of the development on reptiles are likely to be low and there are no species with a very narrow distribution ranges or of high conservation concern which may be compromised by the development.

3. Amphibians

A list of Amphibians known from the vicinity of the Kap Vley site, based on records from the FrogMap database is provided in Appendix 3 of Terrestrial Ecology Impact Assessment (Appendix E1). (Conservation status is from Minter et al. 2004).

There is very little natural permanent or even seasonal standing water in the study area and the only area which has water on a semi-regular basis is the Buffels River which flows from time to time. As a result, the amphibian community of the area is restricted to species which are relatively independent of water. The only species confirmed present is the Namaqua Rain Frog (Figure B5.10) which appears to be relatively widespread in the area and likely occurs in most areas of Namaqualand Strandveld. Other species which are possibly present include the Cape Sand Frog *Tomopterna delalandii* and the Desert Rain Frog *Breviceps macrops* which is classified as Vulnerable. The Desert Rain Frog is however restricted to the coastline and is not known to occur

more than 10 km inland and as a result is unlikely to occur within the power line corridors, although this cannot be discounted as the area has not been well investigated.

Given the paucity of important amphibian habitats at the site and the low diversity of amphibians, a significant impact on frogs is very unlikely.



Figure B5.10. The only frog observed in the area is the Namaqua Sand Frog, which is independent of water and a West-Coast endemic.

B.5.4 Critical Biodiversity Areas

The CBA map for the study area is indicated below in Figure B5.11. The areas within Kap Vley are largely classified as CBA1, while the majority of the rest of the routes fall within other natural areas that are not CBAs or Ecological Support Areas (ESAs). There are however several other sections of CBA along Alternative 3 and it is clear that this is the least desirable route with regard to potential impacts on CBAs. Along Alternative 1 and Alternative 2 it is clear that impact on the CBA within and near to Kap Vley is the major area of concern for these two route alternatives. However, the footprint in these areas would be relatively small and due to the detailed sensitivity mapping that has been done within Kap Vley for the proposed Kap Vley WEF EIA, the important biodiversity features present in this area can be avoided. Overall, the power line would not be likely to generate significant impact on the CBAs with the implementation of suitable avoidance and the impact would be of low significance and of a local nature only.

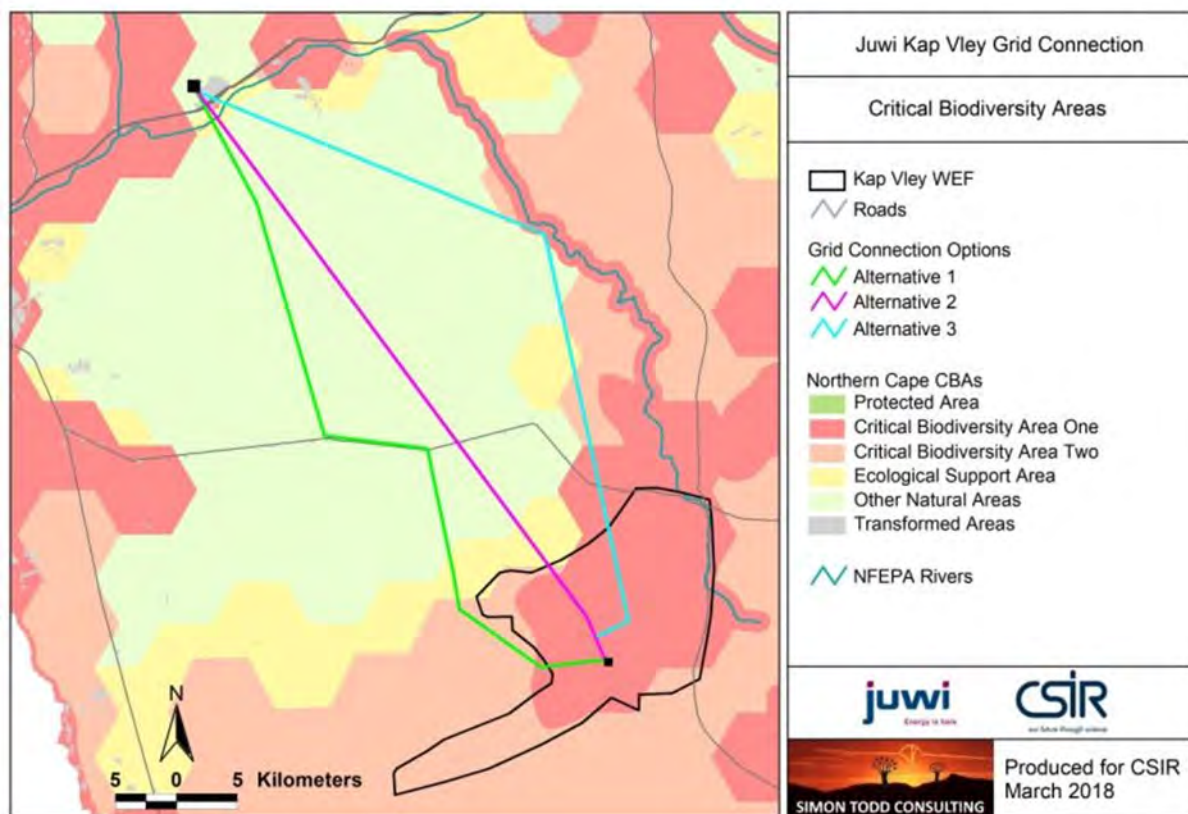


Figure B5.11. Critical Biodiversity Areas map for the study area, showing that once the route options leave Kap Vley, the majority of the route is within areas that have not been identified as CBAs or ESAs.

Those parts of the study area around Kap Vley which are classified as CBA 1 and CBA 2 have also been identified as a Northern Cape Protected Area Expansion Strategy (NCPAES) Focus Area (2017).

While the development of the wind farm would certainly place some limitations on the future expansion of traditional formalised conservation into the affected areas, the power line itself would generate minimal long-term impact on the value of these areas for future conservation expansion as the footprint is small and would certainly not threaten biodiversity pattern or process to a significant degree.

B.6 Avifauna

B.6.1 Birds

This arid area is home to several large terrestrial bird and raptor species, the most important of which are Ludwig's Bustard *Neotis ludwigii*, Kori Bustard *Ardeotis kori*, Secretarybird *Sagittarius serpentarius*, Karoo Korhaan *Eupodotis vigorsii*, Verreaux's Eagle *Aquila verreauxii* and Martial Eagle *Polemaetus bellicosus*. In addition to being classified as threatened regionally and in some cases globally, most of these species are facing significant threats to their survival from existing impacts in the arid parts of South Africa. In addition, this area is home to an assemblage of arid zone adapted smaller bird species including larks, sparrow-larks, chats and others. Most important of these from a conservation perspective are Red Lark *Calendulauda burra* and Sclater's Lark *Spizocorys sclateri*, both of which are listed as regionally threatened species (Vulnerable and Near-Threatened respectively), have very restricted ranges and have been recorded in the broader area within which the study area is situated. Stark's Lark *Spizocorys starki* is also an important endemic

present in the area, and Burchell's Courser *Cursorius rufus* (Vulnerable) is a nomadic species which occurs in the broader area.

B.6.2 Bats

The project falls within the actual or predicted distribution range of approximately eleven species of bat (African Chiroptera Report 2013; Monadjem *et al.* 2010). However, the distributions of some bat species in South Africa, particularly rarer species, are poorly known so it is possible that more (or fewer) species may be present. Analysis of the acoustic monitoring data suggests that at least five species of bat are present at the Kap Vley site (Table B6.1) (ARCUS, 2018).

Bats were most often recorded in the lower lying areas of the site and were recorded less on ridges, where all turbines are proposed. A total of 17,912 bat passes were recorded from 356 sample nights across the five species and across all bat detectors. Overall, the levels of bat activity were low to moderate compared to other sites within a similar biome.

The bat monitoring data presented suggest that the development of the proposed Kap Vley WEF and associated powerline can be achieved without unacceptable risks to bats. The majority of the proposed turbines are situated in areas where low levels of bat activity were recorded, on the ridges, and as such they are less sensitive to development with regards to impacts to bats. A confirmed roost was located at a farmstead approximately 1,600 m to the nearest turbine. This roost has been buffered with a no-go buffer of 1 km in which no turbines, or parts of a turbine, should enter. Other infrastructure, such as roads and powerlines, is permitted in this buffer.

Table B6.1: Bat Species recorded at the proposed Kap Vley WEF site

Species	Species Code	# of Bat Passes	Conservation Status ¹	
			National	International
Egyptian free-tailed bat <i>Tadarida aegyptiaca</i>	EFB	7,290	Least Concern	Least Concern
Roberts's flat-headed bat <i>Sauromys petrophilus</i>	RFB	235	Least Concern	Least Concern
Natal long-fingered bat <i>Miniopterus natalensis</i>	NLB	3,737	Least Concern	Least Concern
Cape serotine <i>Neoromicia capensis</i>	CS	6,009	Least Concern	Least Concern
Long-tailed serotine <i>Eptesicus hottentotus</i>	LTS	641	Least Concern	Least Concern

B.7 Dry and ephemeral watercourse

Due to the arid climate and very limited rainfall, not many permanent watercourses exist within the landscape. Dry and ephemeral rivers, salt pans (depressions) and drainage lines were identified. The proposed WEF layout and 132 kV powerline avoid these as far as possible in its initial design, or follows existing linear and disturbance corridors (preferred Alternative 1). The mapped Namaqualand Salt Pan crossed by the powerlines was confirmed by the terrestrial ecology specialist (Todd, 2018a & b), through ground-truthing, to not exist as a hydrological feature.

¹ Child, M.F., Roxburgh, L., Do Linh San, E., Raimondo, D., Davies-Mostert, H.T. eds., 2016. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

B.7.1 Regional Vegetation

The project area is situated in vegetation types of the Succulent Karoo and Fynbos biomes. However, some azonal inland vegetation (Mucina *et al.*, 2006) associated with salt pans and riparian vegetation exists and is of specific concern to this study as they are indicative of ephemeral waterbodies.

B.7.1.1 Namaqualand Salt Pans

Namaqualand Salt Pans are bare depressions, sometimes sparsely covered with salt-tolerant succulent shrubs. The pans are almost permanently dry, but can become intermittently moist or pools. In the Kleinsee area the depressions are often covered by a layer of sand transferred by the wind (Mucina *et al.*, 2006).

The Namaqualand Salt Pans are Least Threatened from a conservation perspective and have undergone minimal transformation (Mucina *et al.*, 2006), but are unique features of the landscape. These salt pans are also potentially of importance in terms of aquatic invertebrates, that rely on the pans for some or all of their life cycles. A high level of endemism may be associated with these taxa, which are poorly studied in this area.

B.7.1.2 Namaqualand Riviere

The Namaqualand Riviere vegetation type is associated with dry riverbeds throughout Namaqualand, especially the Buffels River. The riverbed may sometimes carry torrential flood water, and is characterised by alluvial shrubland, patches of grass, and low woody thickets (Mucina *et al.*, 2006).

The Namaqualand Riviere are Least Threatened from a conservation perspective, but are under pressure exotic invasive shrubs (Mucina *et al.*, 2006), but are unique features of the landscape.

B.7.2 Quaternary catchments

The water resources of South Africa have been divided into quaternary catchments, which serve as water management units for the country (DWA, 2015). A Quaternary Catchment is a fourth order catchment in a hierarchical classification system in which the primary catchment is the major unit. The project area spans several quaternary catchments: F30D, F30F, F30G, F40A, F40B, F40D. The proposed layout entails that physical infrastructure would only be constructed in quaternary catchments F30G, F40A, F40B, F40D (Figure B7.1).

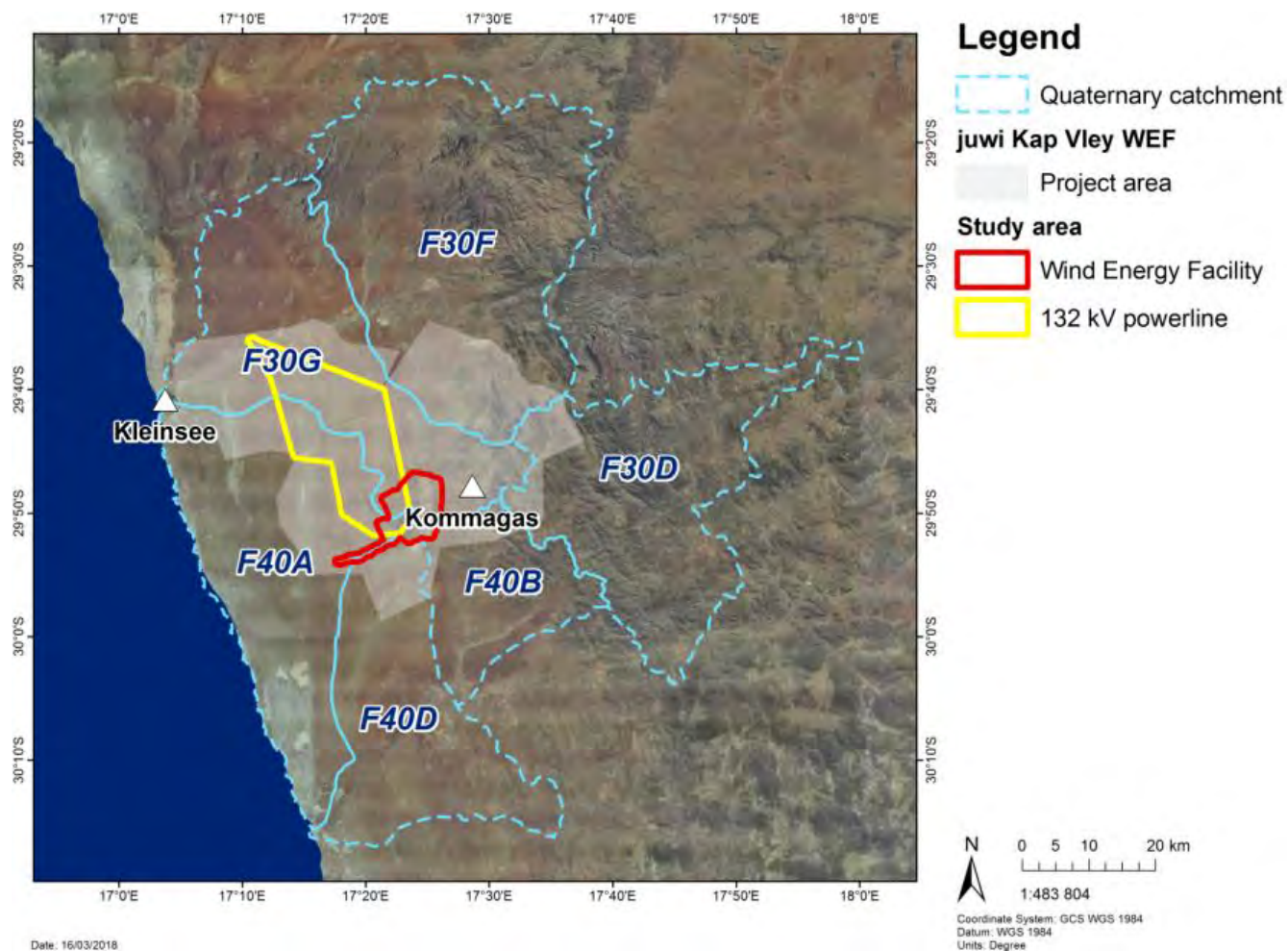


Figure B7.1. Quaternary catchments in the juwi Kap Vley WEF and associated powerline project area.

B.7.3 Dry and ephemeral watercourses

Based on existing spatial data, watercourses in the project area consist of ephemeral rivers, wetlands and salt pans (Figure B7.2).

During the site visit, carried out in August 2017, no pans, drainage lines or other watercourses were observed to be wet or inundated.

B.7.3.1 Non-perennial rivers

Two ephemeral rivers are within the project area, namely the Buffels River (non-perennial, primary river) and the Kommagas River (non-perennial, secondary river) (Table B7.1, Figure B7.2). Both these rivers were modelled by Kleynhans (2000) as being in a Category C, or Moderately Modified, Present Ecological State (PES).

Table B7.1. Present Ecological State, Ecological Importance & Ecological Sensitivity of the Buffels and Kommagas Rivers.

	Buffels	Kommagas
Present Ecological State (Kleynhans, 2000)	C Moderately Modified	C Moderately Modified
Ecological Importance (DWS, 2014)	Moderate	Moderate
Ecological Sensitivity (DWS, 2014)	Low	Low

Rivers in semi-arid to arid regions generally show decreased volume downstream mainly due to evaporation and infiltration into the alluvium and channel boundaries (Tooth, 2000). In the Buffels River most of the water flows along the base of the alluvial aquifer and is stored in the channel banks during drier months (Adams *et al.*, 2004).

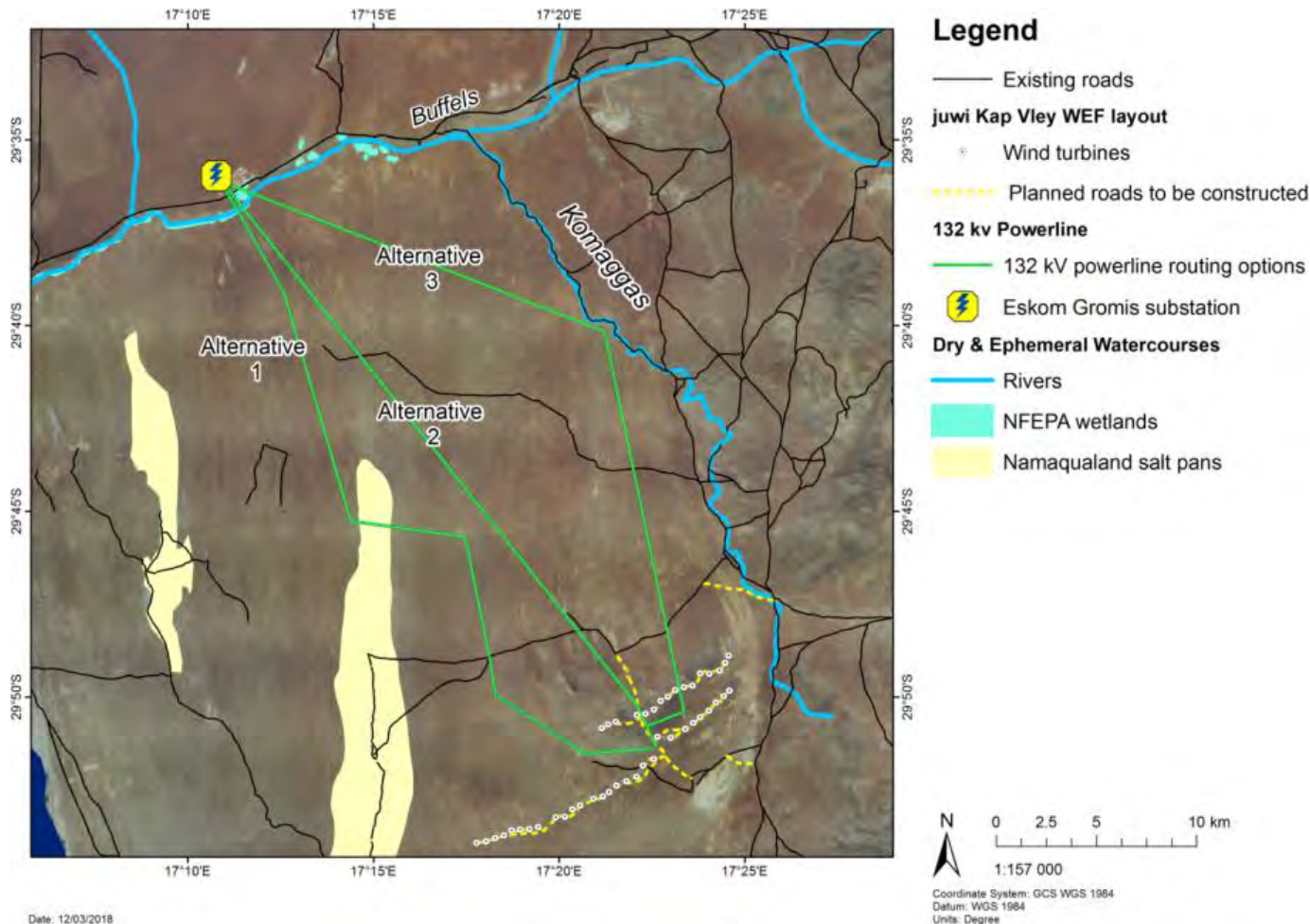


Figure B7.2 Dry and ephemeral watercourses in the project area consist of ephemeral rivers and wetlands (incl. Namaqualand Salt Pans) (based on existing spatial data). Importantly, the Namaqualand Salt Pans were verified in-field to not be hydrological features.

The Buffels River is likely to be sensitive to physical disturbance of its bed and banks, with long disturbance recovery times being required, as a result of the low frequency of river “re-setting” flows. Species present within the river include *Acacia karoo*, *Suaeda fruticosa*, *Salsola aphylla*, *Tamarix useneoides*, *Hermannia trifurca*, *Stipagrostis namaquensis*, *Galenia africana*, *Codon royenii*, *Argemone ochroleuca*, *Scirpoides dioecus* and *Forsskaolea candida* (Todd, 2018b).

The Kommagass River is situated approximately 2 km east of the proposed juwi WEF infrastructure (wind turbines and roads). A section of the 132 kV powerline (Alternative 3) is proposed within 500 m of the Kommagass River, but does not cross it (Figure B7.3). As such, the Kommagass River will not be impacted and was not described and assessed in this report.

All three proposed alternative routings for the 132 kV powerline must cross the Buffels River to reach the Eskom Gromis Substation. However, the river would be easily spanned by the proposed powerline (Figure B7.3).

B.7.3.2 Wetlands

Natural wetlands associated with the Buffels River as delineated by the National Freshwater Ecosystem Priority Area (NFEPA) project (Nel *et al.*, 2011) are presented in Figure B7.3.

All three proposed alternative routings for the 132 kV powerline must cross the Buffels River to reach the Eskom Gromis Substation. Based on the NFEPA database, the wetlands at the proposed Buffels River crossing are channelled valley-bottom and flat wetlands. Most of the wetlands here have been assessed as in a Natural or Good condition (equivalent to PES A), whilst the wetland closest to the existing road is Moderately Modified (equivalent to PES C) (Nel *et al.*, 2011). However, from the satellite imagery (Figure B7.3) it is clear that the wetlands recorded in the NFEPA database are mainly associated with the riverbed of the Buffels River and may have been incorrectly derived for the NFEPA database. The entire Buffels River can be regarded as a wetland and the extent is greater than the extent indicated on the NFEPA spatial data. The river does not currently hold water and may go for several years without water, but in wet years it may flow for several months at a time. The Buffels River is not classified as NFEPA Priority River as it is ephemeral and does not have any priority species. However, the associated wetlands are classified as priority wetlands, indicating that they are in a largely natural state and considered to be good examples of the valley bottom wetlands within the Namaqualand Sandveld region. The Buffels River may be considered to be in a reasonable condition in most parts and the NFEPA classification is considered a reasonable reflection of the situation on the ground. (S. Todd, Pers. Comm, 19 Mar. 2018).

B.7.3.3 Salt pans

According to the South African Vegetation map Namaqualand salt pans are present in the project area (Mucina *et al.*, 2006; SANBI, 2012). Namaqualand salt pans are nearly permanently dry. Occasionally the lowest depressions of these pans may contain pools of standing water. In the Kleinsee area these pans are often covered under wind-borne sand (Mucina *et al.*, 2006).

However, within the study area, the classification of these areas as this vegetation type as a salt pan is debatable as these areas do not appear to be salt pans in their origin and do not correspond with the general description of these areas as provided. Furthermore, their description as a pan is considered a misnomer as these areas are dry and do not fill with water even in exceptional circumstances. These appear to rather be areas where the wind has removed the sand overburden exposing the older underlying calcrete basement, leading to their 'white' appearance and assumption that these are salt pans (Figure B7.4).

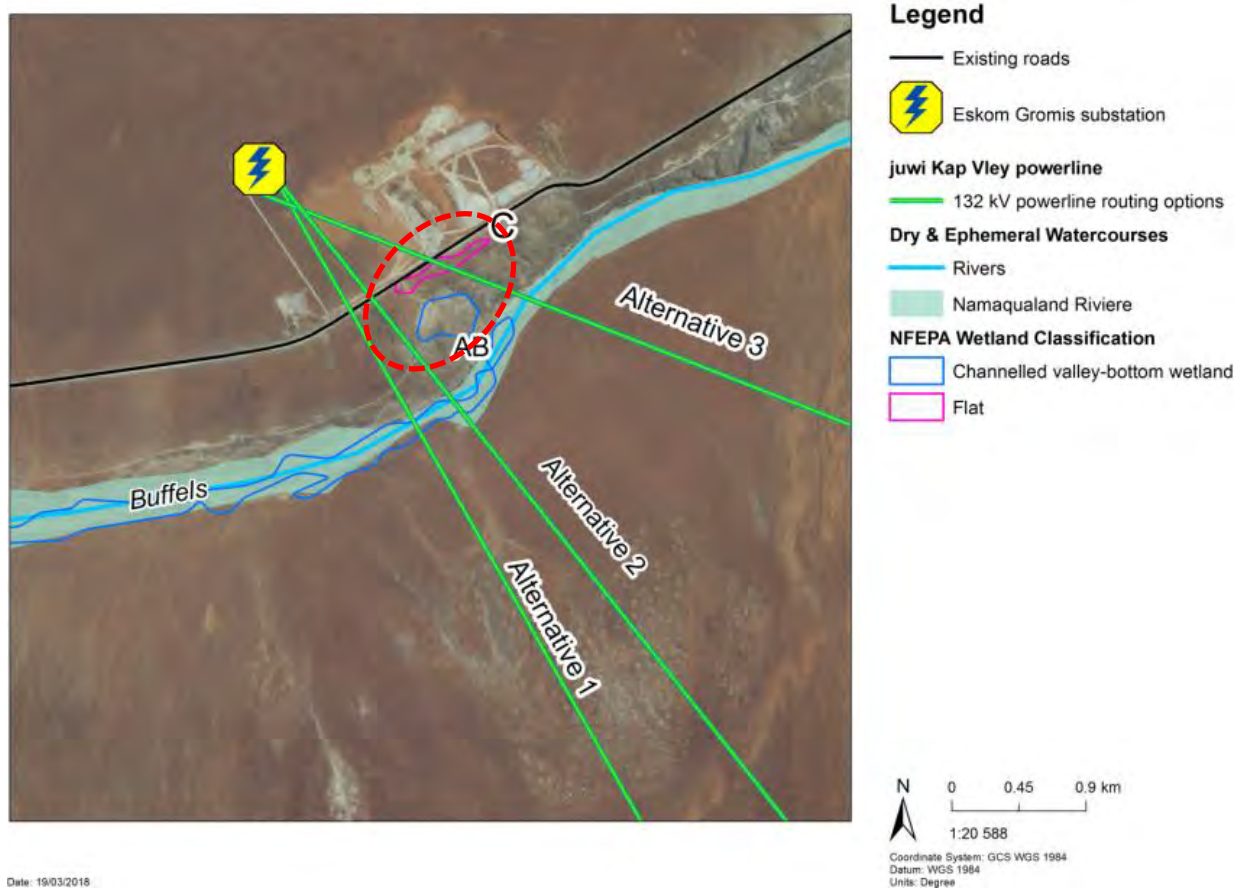


Figure B7.3. Classification and Present Ecological State of wetlands associated with the non-perennial Buffels River (Nel *et al.*, 2011). The two wetlands indicated by the red dashed line do not exist and are related to the mining operation that can be seen adjacently.



Figure B7.4. Photo of the area indicated by the Vegetation Map of South Africa (Mucina & Rutherford 2006; SANBI, 2012). The sandy overburden has been removed by the wind. The area is generally fairly well vegetated with shorter succulent and woody shrubs. These are not hydrological features and occur on marine sediments (Photo credit: Simon Todd).

B.7.4 Drainage line delineation

Drainage lines were delineated using existing spatial data, namely imagery on Google Earth Pro (Google Inc. 2014), the South African 50 cm imagery (CD:NGI, 2012), and 20 m contours (CS:SM, 2006). Drainage lines were digitised using ArcMap 10.4 software (ESRI Inc., 2014).

Slope was derived from the 20 m Digital Terrain Model of South Africa (ComputaMaps, 2002). The slope of the 132 kV powerline study area is exceeding 20 degrees at the connection point with the WEF, but very slight (0 – 2.5 degrees) towards to Eskom Gromis Substation (Figure B7.5).

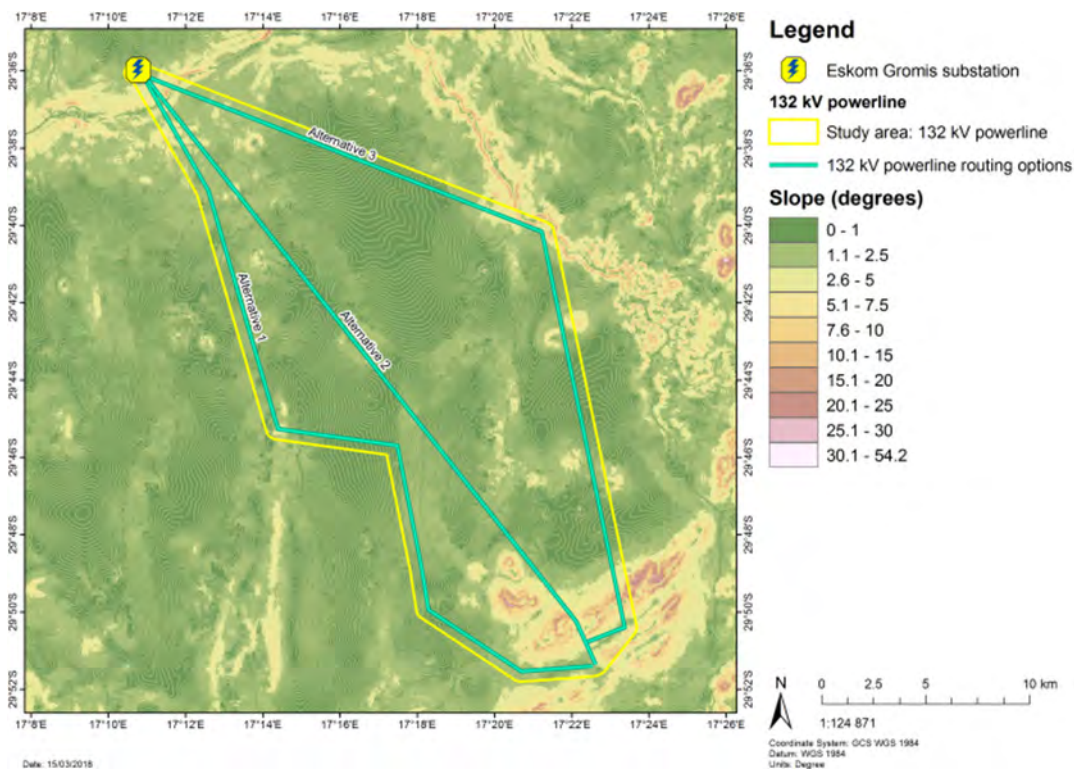


Figure B7.5. Slope of the 132 kV powerline study area, exceeding 20 degrees at the connection point with the WEF, but very slight (0 – 2.5 degrees) towards to Eskom Gromis Substation.

B.8 Heritage profile

B.8.1 Site context

The south-eastern end of the study area is located in a relatively remote area to the west of the village of Komaggas and to the south-east of Kleinzee. The powerline would run towards the north-west and cross the Buffels River to the existing Eskom Gromis Substation. The study area and surrounds are largely used for small stock grazing and the only infrastructure present consists of sparsely distributed farm houses, farm tracks and fences and a number of stock posts within the Komaggas Reserve. Roads in the immediate area are all gravelled.

The south-eastern end of the study area is located on a small highland underlain by quartzite. The hill is shrouded in climbing and falling sand dunes and is generally quite well vegetated because the high ground attracts more moisture (Figure B8.1). Although a large cluster of thorn trees lies just to the north of the high ground (Figure B8.2), the remainder of the alignments run over relatively flat terrain with low scrubby vegetation (Figures B8.3-6). There are many deflation hollows in the central and northern part of the study area (Figure B8.4).



Figure B8.1. View towards the southeast across the high ground. The power line would start along the track visible in the distance.



Figure B8.2. View towards the south along part of Alternative 3 with the high ground visible in the distance.



Figure B8.3. View towards the north from the high ground over the plains that would host Alternative 2 running towards the north.



Figure B8.4. View northwards over one of the deflation hollows visited along Alternative 3.



Figure B8.5. View towards the north in the middle of Alternative 1.



Figure B8.6. View towards the south from the vicinity of the Gromis Substation. The mining on Mannels Vley is visible at the far left.

B.8.2 Findings of the Heritage study

This section describes the heritage resources recorded in the study area during the course of the project. Table B8.1 lists the sites recorded as well as others recorded in the past and that are relevant to the present study. They are all archaeological.

B.8.2.1 Palaeontology

Although the SAHRIS Palaeosensitivity map indicates low sensitivity throughout the study area (Figure B8.7), a brief desktop review of the palaeontological potential for the project was requested by the client and is included as Appendix 4 of the Heritage Impact Assessment (Appendix E6). Pether (2017) notes that the hills are of quartzites and schists of the Springbok Formation and are entirely unfossiliferous. The slopes around the hills are mantled by aeolian sand, talus, colluvium and ephemeral stream deposits, all of which are considered to have low fossil bone potential. The surface sands around the hills are similarly considered to have low sensitivity because of the likely sparseness of fossils. Bones would most likely occur on the surface of the buried dorbank layer and might be associated with archaeological material (in which case they would be protected as archaeology). Such material is virtually impossible to find unless the surficial sands have been removed. Nevertheless, if any fossils were found they would likely be of scientific significance because of their rarity and the generally limited palaeontological knowledge of this area.

Table B8.1. List of archaeological heritage finds from the survey and from previous records.

Waypoint	Site name	GPS co-ordinate	Description	Significance (grade)
1420	KOM2017/001	S29 49 46.1 E17 23 10.2	A stone farm boundary beacon that may be historic. It is located some 110 m west of Alternative 3.	Low (GPB)
Waypoints 1446 to 1451 represent a set of deflation hollows visited along the original Alternative 3 alignment in order to gauge the types of materials present in the hollows. All are located between 160 m and 600 m from Alternative 3.				
1446	KOM2017/003	S29 46 38.7 E17 22 44.4	A light quartz artefact scatter in a deflation hollow.	Low (GPC)
1447	KOM2017/004	S29 46 23.2 E17 22 42.3	A light quartz artefact scatter in a deflation hollow.	Low (GPC)
1448	KOM2017/005	S29 46 21.2 E17 22 37.4	A light quartz artefact scatter in a deflation hollow.	Low (GPC)
1449	KOM2017/006	S29 46 22.0 E17 22 48.2	A light quartz artefact scatter in a deflation hollow.	Low (GPC)
1450	KOM2017/007	S29 46 31.4 E17 22 51.9	A light quartz artefact scatter in a deflation hollow. Also a CCS artefact seen.	Low (GPC)
1451	KOM2017/008	S29 46 33.5 E17 22 55.4	A moderate density quartz artefact scatter in a deflation hollow. Also a CCS artefact seen.	Low-medium (GPA)
---	MV2007/015	S29 40 37.7 E17 13 46.6	A very dense deflation hollow with many thousands of stone artefacts and also some evidence of historical use. Recorded by Orton (2007). Located between Alternatives 1 and 2, 0.9 km and 1.1 km away from them respectively.	High (IIIB)
---	MV2004/001	S29 36 57.0 E17 12 42.0	Dispersed surface scatter of Pleistocene-aged stone artefacts including two handaxes. Recorded by Morris (2004). Located about 200 m from Alternative 3.	Low (GPB)
---	DKG2004/001	S29 36 26.0 E17 10 51.2	Ephemeral scatter of quartz flakes of indeterminate age. Recorded by Morris (2004). Located south of Gromis Substation about 200 m from where the power line would enter the substation yard.	Low (GPC)



Figure B8.7. Extract from the SAHRIS Palaeomap showing the entire study area to be of low palaeontological sensitivity (blue shading).

B.8.3 Archaeology

Although very little of the three alternative alignments was examined, there is enough data on record to provide an overview of the expected archaeological heritage and the impacts thereto. On the high ground in the southern part of the study area the archaeological sites tend to be focused around the rocky outcrops as revealed by the survey carried out for the wind farm (Orton, in preparation). The only site recorded close to one of the power line routes is a historic stone boundary cairn (Figure B8.8). Because the power line options all run between the rocky ridges no other significant sites are expected to occur within any of the alignments on the high ground. To the west of the hill Alternative 1 passes some 360 m north of the farm complex but this distance is well far enough for no related features to be present.

The main concern over the remainder of the study area is Stone Age archaeological sites, especially located within deflation hollows. A series of hollows alongside Alternative 3 were examined in order to obtain a sample of the deflation hollows in the area to go with existing data. Examples of the deflations are shown in Figures B8.4 and B8.9. None of them was found to contain dense artefact assemblages. To the north, close to the Buffels River, Morris (2004) reported a broad, ephemeral scatter of Pleistocene-aged artefacts that included some handaxes.

One very impressive deflation hollow site is on record from this area. It is located 8.2 km south of the Buffels River between the Alternative 1 and 2 alignments (c. 1.1 km and 0.9 km from each respectively). Although this is the only such site on record here it should be remembered that,

aside from the small mining-related surveys close to the Buffels River, no systematic survey has ever been carried out in this area. This site was located in a very large deflation hollow with a floor of at least 50 m by 60 m and the majority of this area was coated in a dense accumulation of stone artefacts. Although not yet studied, experience from elsewhere in Namaqualand suggests that this site is likely to be mid-Holocene in age.



Figure B8.8. The stone boundary cairn at waypoint 1420.



Figure B8.9. View of the deflation at waypoint 1448.



Figure B8.10. View of the massive deflation at MV2007/015. Note the person standing in the centre.

Nearly 2 km to the northeast of Alternative 3 and close to the Buffels River Orton (2007) documented a series of light stone artefact and pottery scatters that he later ascribed to herders based on the presence of pottery and the informality of the assemblages (Orton 2012). Although this cluster of sites is away from the proposed alignment it is suggestive of what might be found in some of the deflation hollows in the area.

B.8.4 Graves

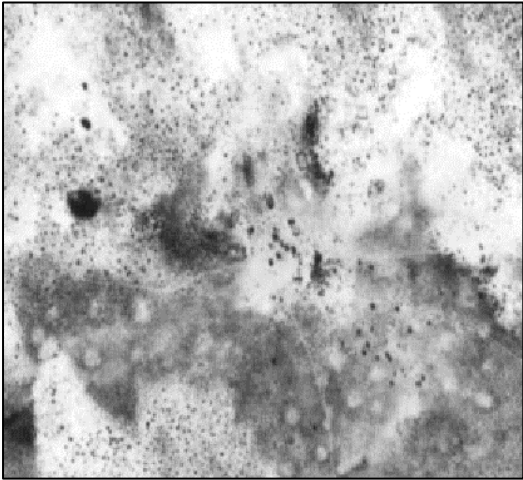
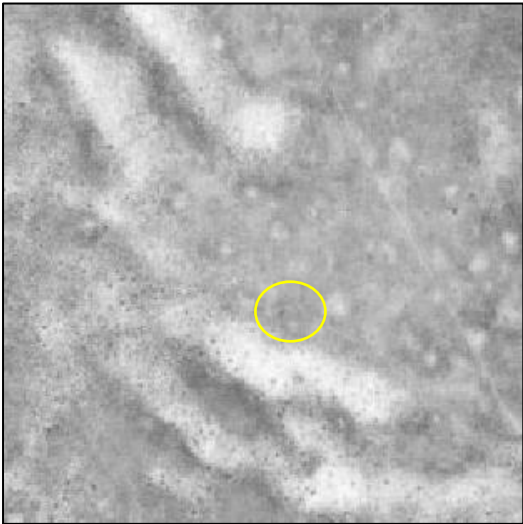
A number of unmarked LSA graves have been reported from the coastal dunes of Namaqualand but none are known from the inland coastal plain. Nevertheless, the possibility exists that such burials could be intersected during foundation excavations anywhere within the study area. The chances, however, are extremely small.

B.8.5 Built environment

No structures were seen during the survey. An examination of aerial photography and topographic maps showed that only four structures occurred within about 500 m of any of the alignments. Three of these were along Alternative 1 and one along Alternative 2 (Table B8.2). Although none of these

was visited, another consultant provided a photograph of the Kap Vley farm house (Figure B8.11). It shows that it is a simple, probably early-mid-20th century structure. Historical aerial photography shows that an established complex was present there in 1964. The earliest topographic map (1:250 000) dates to 1961 and does not show farm complexes. The second edition from 1972 labels this complex as Kap Vley. Nevertheless, based on the 1964 historical aerial photograph (Table 3), the complex is likely to contain structures greater than 60 years of age. The house on Kourootje was also present in 1964, but the other two structures appear to be more recent in age.

Table B8.2. Structures within approximately 500 m of the three power line alternatives.

Alternative 1:	
Kap Vley farm house: 380 m away (located in centre of 1964 image)  1964 (Job 525, strip 33, photograph 2546)	
Small structure on Kap Vley: 320 m away  1964 (Job 525, strip 32, photograph 4186)	

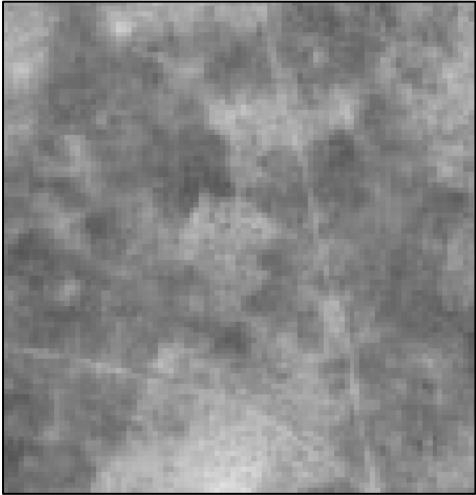
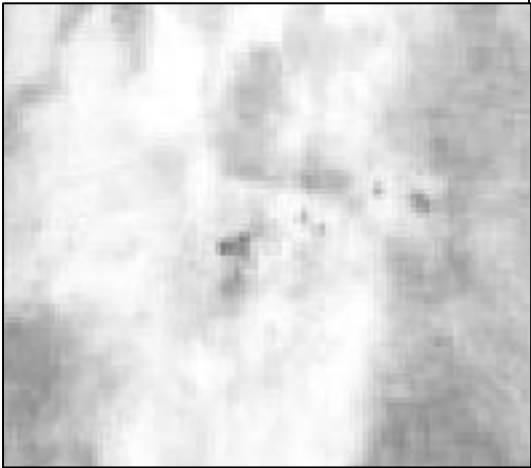
Small structure on Mannels Vley: 170 m away	
 1964 (Job 525, strip 29, photograph 3100)	
Alternative 2:	
Structure on Kourootje: 100 m away	
 1964 (Job 525S, strip 32, photo 4185)	
Alternative 3	
None	



Figure B8.11. View of the front of the Kapvlei farmhouse. The overall form and the presence of steel-framed windows are typical of early-mid-20th century structures in the region.
Photo provided by Morné de Jager.

B.8.6 Cultural landscape and its relationship to intangible heritage

The NHRA does not protect intangible heritage itself, but places associated with intangible heritage are protected. The Komaggas area contains many small stock posts which are actively used on a seasonal basis by members of the community who practice herding. Because this way of life has been ongoing for so long it is regarded as intangible heritage and the stock posts, although recent, are the physical manifestations of that heritage. They are also one of the primary components of the local cultural landscape, especially on the farm Kamaggas, and hence these two aspects are considered together in this section of the HIA.

The cultural landscape over the broader area is generally very weakly developed since humans have had only a very light ‘footprint’ on the landscape. The landscape relates to small stock farming and the main anthropogenic features one finds are fences and vehicle tracks, neither of which have any particular cultural significance.

B.9 SOCIO-ECONOMIC CHARACTER

It must be noted that documented data on the study area (i.e. Kleinsee and surrounds), particularly in terms of area specific socio-economic data, is very limited. Accordingly, the available data is interpreted in terms of professional opinion and generally accepted trends within the study area and South Africa.

B.9.1 Demographic and Economic Profile

The Nama Khoi Local Municipality (LM) is part of the six local municipalities within the Namakwa District Municipality within the Northern Cape Province. This municipality is the least populated within the Province according to the Namakwa District Municipality’s (DM’s) IDP (2017-2022). Figure B9.1 shows the age group distribution of the population present within the Namakwa DM, shown via the representative of each Local Municipality. In addition, The Nama Khoi LM has the highest population group within the 15-54 and 54-64 age groups. The overall dominant age group within the DM is the 15-54 age groups, which, according to the Namakwa DM IDP, shows that within the DM there is need for job creation and new employment opportunities.

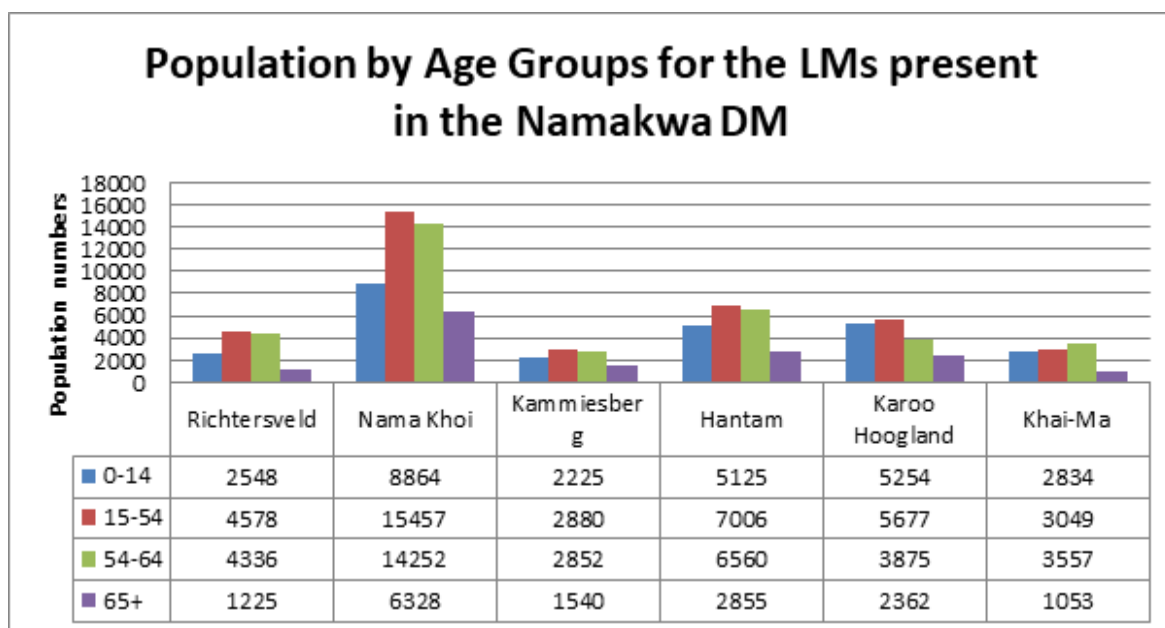


Figure B9.1. Population age by age groups for the LMs present within the Namakwa DM (Nama Khoi DM IDP, 2017)

Within the Namakwa District Municipality, several sectors contribute to the municipality's economy and the Gross Domestic Product (GDP). These sectors include agriculture, mining, electricity, construction and trade. From 2004 to 2014, most of these sectors have seen growth and the Nama Khoi LM remains the largest contributor to the economy in the District (Figure B9.2).

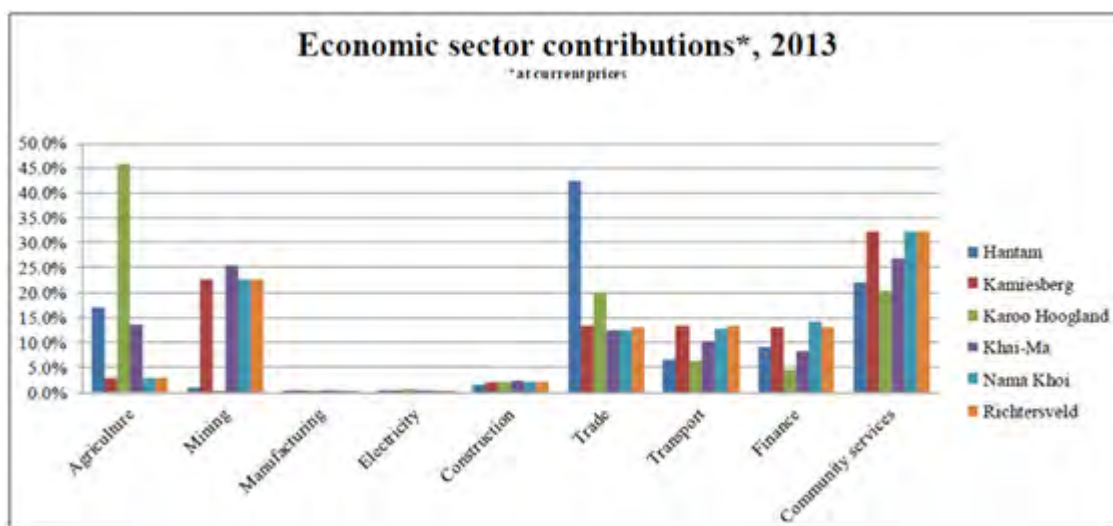


Figure B9.2. Sectors contributing to the LM's local economies in 2013

Kleinzee

According to a Mail and Guardian article in 2011, Kleinzee was established as a mining town in 1926. The town was supported by the mining company, De Beers, through the supply of free services such as water and electricity as well as 25 recreational clubs including a golf course, tennis courts and a swimming pool. At the peak of the mine, it was estimated that a million carats of diamonds were mined in the area per year. In the 1980's it was estimated that 3 000 people were

employed in Kleinsee and the population was close to 6 000 people. In 2007, De Beers significantly scaled down their operations in the town and linked to this, residents lost their jobs and moved away. De Beers has subsequently sold their Namaqualand Mines to Transhex in 2011 and only a small amount of mining is still occurring in the area, approximately 100 000 carats a year. Rehabilitation efforts by Transhex are however still providing jobs to a limited number of residents. Within the town, most of the houses are empty and limited services are still available (Stilwell, 2011). During the site visit in August 2017, a resident indicated that recently the pharmacy and the butchery closed down. The Cape Times noted in 2013 that only 10 children were enrolled at the town's preprimary school and 50 children in the primary school. Kleinsee does not have a high school or hospital (Dolley, 2012). According to the census data of 2011, Kleinsee had a total population of 728, with an average household size of 1,9 (StatsSA, 2013).

Komaggas

Komaggas is named after a tributary of the Buffelsrivier. Historically the area was established as a station of the London Missionary Society in 1829. According to the census data of 2011, Komaggas has a population size of 3116 with an average household size of 3,7 (StatsSA, 2013). According to the Nama Khoi SDF, because of the low population threshold and isolation of Komaggas, development strategies should be focused on developing human capital. For instance, it would not be feasible to develop schools and hospitals in Komaggas and as such mobile services such as clinics and libraries should be the main focus for investment. Learners should be transported to Springbok's schools.

Based on the demographic profiles of Kleinsee and Komaggas, the following comparisons can be made (as shown in the figures below). The majority of the residents in both towns are coloured (Figure B9.3). As shown in Figure B9.4 below, the majority of the people living in Kleinsee are in the age group between 45 - 49, with the second largest group of age 20 - 24. Compared to Kleinsee, the majority of the Komaggas population is aged between 0 - 29 years which shows a much younger population group. The lowest percentage of people in Komaggas is in the 35 - 39 age group (Figure B9.4). In terms of the highest education level reached by individuals within Kleinsee and Komaggas; the majority of the population in Kleinsee has completed secondary school, while the majority of residents in Komaggas has some secondary school grades completed (Figure B9.5) (Laurie, 2018).

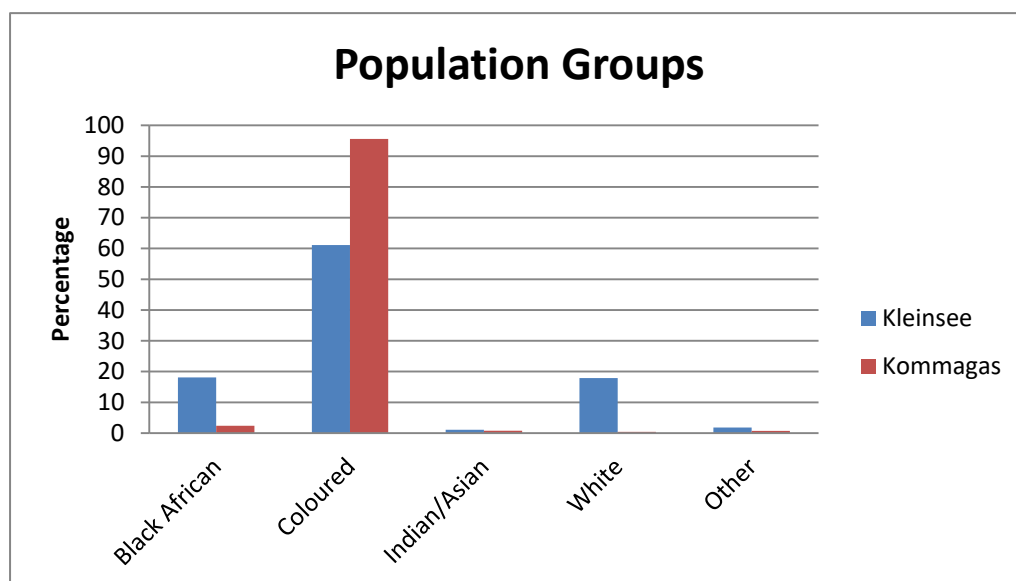


Figure B9.3. Population groups residing within Kleinsee and Komaggas (2011)) (StatsSA, 2013).

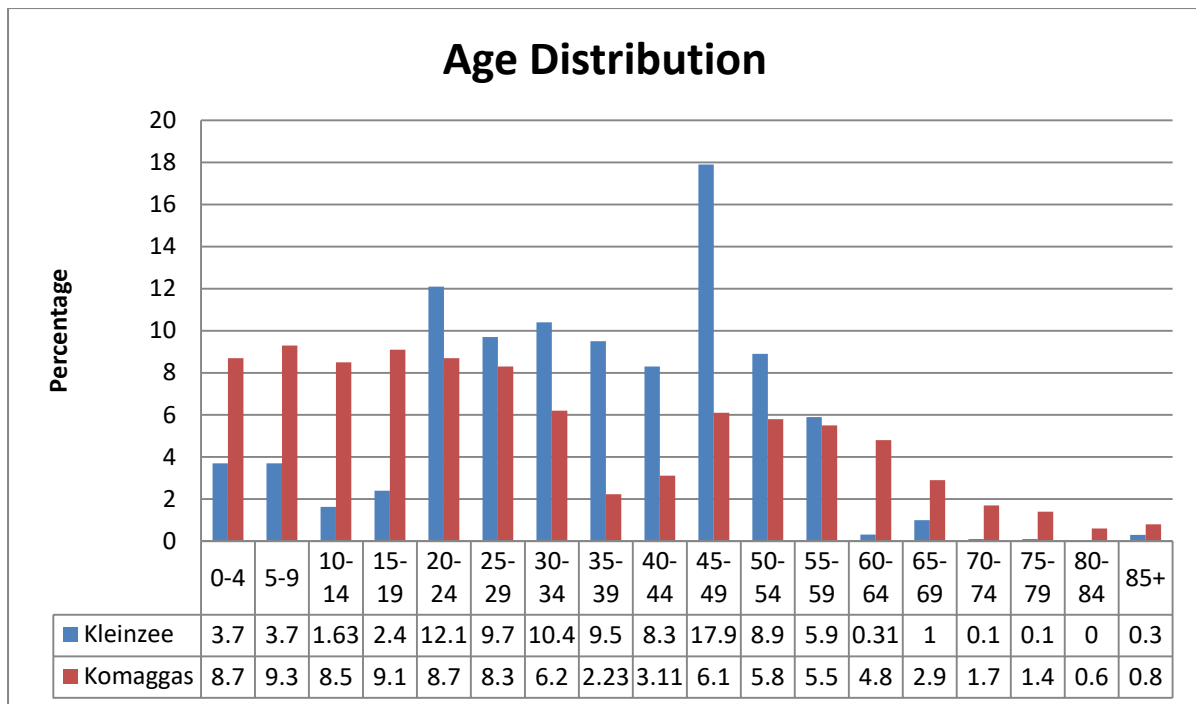


Figure B9.4. Age distribution within Kleinzee and Komaggas (2011) (StatsSA, 2013).

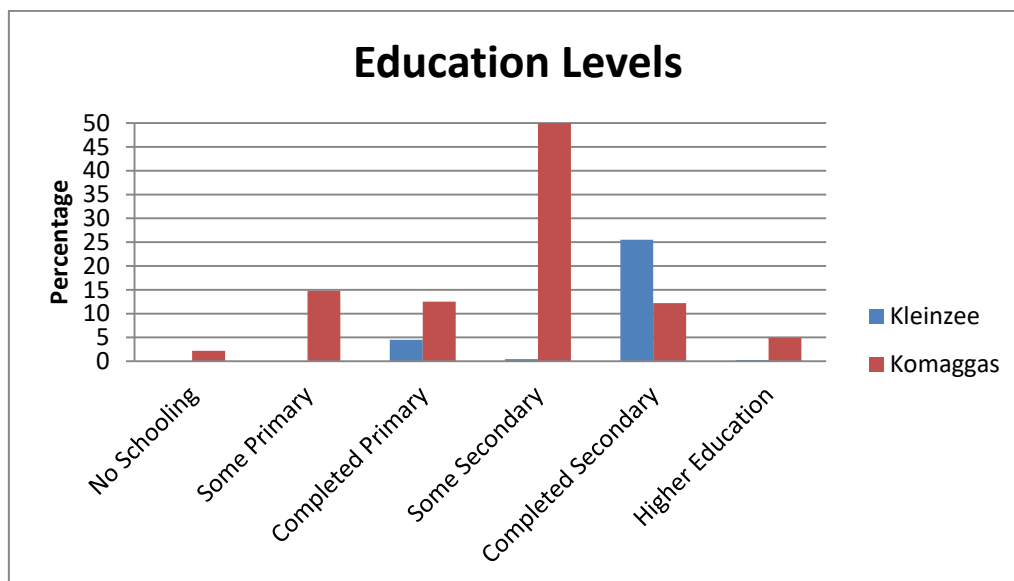


Figure B9.5. Highest education levels achieved by population in Kleinzee and Komaggas (2011) (StatsSA, 2013).

According to the Community Survey (2007) included in the Nama Khoi IDP in 2001, the unemployment rate in Kleinzee was 5% and 41% for Komaggas. The Labour Participation Rate, which refers to the measure of the economy's labour force who is either employed or actively looking for work, was 89% and 68% for Kleinzee and Komaggas, respectively (StatsSA, 2008).

SECTION C: PUBLIC PARTICIPATION

This section provides an overview of the tasks undertaken during the BA phase, with a particular emphasis on providing a clear record of the PPP followed. The BA process commenced in September 2017, during which the proposed project was announced in the public domain via an integrated notification process. The integrated PPP included notifying the public of the BA process [Transmission Line (i.e. this project)] and the Kap Vley WEF (Draft EIA Report concurrently released for comment with this Draft BA Report).

The BA Report is currently being released to I&APs, Stakeholders and Organs of State (including the National DEA) for a 30-day comment period. The Application for EA has been submitted to the National DEA at the same time as the BA Report.

All comments submitted during the 30-day review of the Draft BA Report (which is being circulated during the consultation process) will be incorporated into the finalised BA Report, as applicable and where necessary. The finalised BA Report will be submitted to the DEA, in accordance with Regulation 19 (1) of the 2014 NEMA EIA Regulations (as amended), for decision-making in terms of Regulation 20 of the 2014 NEMA EIA Regulations (as amended).

C.1 Advertisement and Notice

Appendix D of this BA Report includes proof of the placement of the newspaper advertisement and site notice boards.

Newspaper Advertisement:

In order to notify and inform the public of the proposed project and invite I&APs to register on the project database, the BA process (combined with the EIA process) were advertised in a local newspaper. Specifically, the advertisement was placed in “Die Plattelander” newspaper on 27 October 2017 (Proof can be seen in **Appendix D** to this Draft BA Report). The newspaper advertisement also provided the details of the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>) where information available on the project could be downloaded from.

Site Notice Boards:

Regulation 41 (2) (a) of the 2014 NEMA EIA Regulations (as amended) requires that a notice board providing information on the project and BA process is fixed at a place that is conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the application will be undertaken or any alternative site. To this end, notice boards were placed at the locations shown in **Appendix D** at the start of the overall EIA and BA process.

C.2 Determination of appropriate measures

The section below which provides a detailed outline of the measures taken to include all potential I&APs during the BA process (as required by Regulation 41(2)(e), 41(6) and 41(2)(b) of GN R326, in terms of the 2014 NEMA EIA Regulations (as amended)).

Proof of emails sent during the Project Initiation Phase is included in Appendix D. In terms of Regulation 41(2)(e) of GN R326, at this stage of the assessment process no persons have been identified as desiring but unable to participate in the process. Therefore, no alternative methods have been agreed to by the competent authority.

In line with Regulation 41(2)(b) of GN R326 and prior to the commencement of the BA process (and advertising the EIA process in the local print media), an initial database of I&APs (including key stakeholders and Organs of State) was developed for the BA process. Appendix D of this BA Report contains a detailed copy of the I&AP database which indicates interaction with I&APs, key stakeholders and all I&APs registered on the project database during the BA process. The current I&AP database has been updated to include requests to register interest in the project, and comments received following the project announcement.

In terms of the electronic database, I&AP details are captured and automatically updated as and when information is distributed to or received from I&APs. This ongoing record of communication is an important component of the PPP. It must be noted that while not required by the Regulations, those I&APs proactively identified at the outset of the BA process will remain on the project database throughout the process and will be kept informed of all opportunities to comment and will only be removed from the database by request (it should be noted that to date, no requests to de-register were received by the EAP).

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs is ongoing for the duration of the study. Stakeholders from a variety of sectors, geographical locations and/or interest groups are expected to show an interest in the proposed project, for example:

- Provincial and Local Government Departments;
- Local interest groups, for example, Councillors and Rate Payers associations;
- Surrounding landowners;
- Farmer Organisations;
- Environmental Groups and NGOs; and
- Grassroots communities and structures.

As noted in the sections above, the Transmission Line Alternative 1 will traverse 9 farm portions in the Northern Cape and Alternative 2 and 3 will each traverse 6 and 8 farm portions respectively in the Northern Cape. The landowners of the affected farm properties and adjacent farm properties were identified during the Project Initiation Phase based on the proposed project layout at the time (i.e. September 2017), and they were informed of the proposed project and included on the database of I&APs (as included in Appendix D). Therefore, written notice has been provided to the occupiers of the site (in accordance with Regulation 41 (2) (b) (i) of the 2014 NEMA EIA Regulations (as amended)).

C.3 Approach to the PPP

In terms of Regulation 41(6) of GN R326 the section below outlines the PPP for this assessment in order to provide potential I&APs, Stakeholders and Organs of State access to information on the project and the opportunity to comment at the various stages of the assessment process. It should be noted that no deviations from the PPP have been requested or undertaken.

C.3.1 Project Initiation Phase - Identification and Notification to I&APs and Organs of State

The following summarises the PPP undertaken up to the release of the BA Report for I&AP Review:

- **Database Development and Maintenance:** In line with Regulation 41(2)(b) of GN R326, prior to the commencement of the BA process and placing the newspaper advertisement (during the Project Initiation Phase as noted in Section C (1) above), an initial database of potential I&APs was developed for the BA process. As noted above, while not required by the Regulations, all I&APs (and authorities and Organs of State) proactively identified prior to advertising the BA process will remain on the database for the duration of the assessment process. As comments are received or requests to register interest are received from I&APs during the project, the database is amended to include these I&APs as registered I&APs. A copy of the I&AP database is included in Appendix D of this BA Report.
- **Letter 1 to I&APs:** As noted above, I&APs were notified via a Letter (dated 30 October 2017) of the Project Initiation Phase. Letter 1 to I&APs was emailed to I&APs and organs of state on the database (where email addresses were available) on 31 October 2017.
- **Advertisement to Register Interest:** An advertisement was placed in “Die Plattelander” newspaper on 27 October 2017, advertising the BA (and EIA) commencement and opportunity to comment. A copy of this advertisement is included in Appendix D of this BA Report.
- **Site Notice Board:** As noted in Section C (1) above, notice boards were placed for the proposed projects. A copy of the notice boards and proof of placement thereof are included in Appendix D of this BA Report.
- **30 Day Comment Period:** As noted above, during the Project Initiation Phase, the potential I&APs, including authorities and Organs of State, were notified via Letter 1 of the 30 day comment and registration period within which to submit comments on the proposed project and/or to register on the I&AP database.
- **Comments Received:** To date no comments have been received pertaining to the BA process, however, following the 30 day public comment period, all comments received on this project will be captured in a comments and responses trail and included in the Final BA Report for submission to the Competent Authority.
- **Access to Information:** All project information has been made available on an easily accessible website: <https://www.csir.co.za/environmental-impact-assessment>.

C.3.2 BA Report Phase - Review of the BA Report (Current Stage)

As noted above, the BA Report (this report) is currently being released to I&APs for review. The section below summarises the PPP for the review of the BA Reports.

- **Database Maintenance:** The database will be updated throughout the BA process as required. The current database is included in Appendix D of this BA Report.

- **Letter 2 to I&APs:** Written notification of the availability of the Draft BA Report has been sent to all I&APs and Organs of State registered on the project database via Letter 2 via email (where email addresses are available) and post (where addresses available). The letter includes notification of the 30-day comment period for the BA Reports. Proof of delivery and a copy of the emails sent will be included in Appendix D of the finalised BA Report (which will be submitted to the DEA for decision-making).
- **30-day Comment Period:** As noted above, registered I&APs, including authorities and Organs of State, were notified via Letter 2, of the 30-day comment period for the BA Report.
- **Availability of Information:** The BA Report has been made available and distributed to ensure access to information on the project and to communicate the outcome of specialist studies. A copy of the report has been placed at the Kleinsee library and the Kleinsee Police Station for I&APs and Stakeholders to access for viewing. Key authorities have been provided with either a hard copy and/or CD of the BA Report via courier. The BA Report has been uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>) and telephonic consultations will take place, as necessary.
- **Comments Received:** A key component of the BA process is documenting and responding to the comments received from I&APs and the authorities. Copies of all comments received during the review of the BA Reports will be included in Appendix D of the finalised BA Report and in the Comments and Response Report (Appendix D of the finalised BA Report), which will be submitted to the DEA for decision-making. The Comments and Responses Report will indicate the nature of the comment, as well as when and who raised the comment. The comments received will be considered by the BA team and appropriate responses will be provided by the relevant member of the team, Applicant and/or specialist.

C.3.3 Compilation of finalised BA Report for Submission to the DEA

- Following the 30-day commenting period of the BA Report and incorporation of the comments received into the reports, the finalised BA Report (i.e. hard copies and electronic copies) will be submitted to the DEA in line with Regulation 19 (1) (a) of the 2014 NEMA EIA Regulations (as amended). In line with best practice, I&APs on the project database will be notified via email (where email addresses are available) of the submission of the finalised BA Report to the DEA for decision-making.
- The BA Report that is submitted for decision-making will include proof of the PPP that will be undertaken to inform Organs of State, Stakeholders and I&APs of the availability of the BA Report for the 30 day review (as explained above). To ensure ongoing access to information, copies of the finalised BA Report that will be submitted for decision-making and the Comments and Response Report (detailing comments received during the BA Phase and responses thereto) will be placed on the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>).
- The DEA will have 107 days (from receipt of the finalised BA Report) to either grant or refuse EA (in line with Regulation 20 (1) of the 2014 NEMA EIA Regulations, as amended on 7 April 2017).

C.3.4 Environmental Decision-Making

- **Environmental Decision-Making and Appeal Period** - Subsequent to the decision-making phase, if an EA is granted by the DEA for the proposed projects, all registered I&APs, Organs of State and stakeholders on the project database will receive notification of the issuing of the EA and the appeal period. The 2014 NEMA EIA Regulations (as amended) (i.e. Regulation 4 (1)) states that after the Competent Authority has reached a decision, it must inform the Applicant of the decision, in writing, within 5 days of such decision. Regulation 4 (2) of the

2014 NEMA EIA Regulations (as amended) stipulates that I&APs need to be informed of the EA and associated appeal period within 14 days of the date of the decision. All registered I&APs will be informed of the outcome of the EA and the appeal procedure and its respective timelines. A letter (i.e. Letter 3) will also be sent via registered mail and email to all registered I&APs, Stakeholders and Organs of State (where postal, physical and email addresses are available) on the database. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EA. A copy of the Environmental Decision will be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>). In addition, all I&APs on the project database will be notified of the outcome of the appeal period in writing.

C.4 Authority participation

Authorities and Organs of State received written notification of the proposed activities via email together with all potential I&APs identified for this assessment.

Below is a summary of the notification process undertaken as part of the PPP for Authorities:

- **Notification of the Project Initiation Phase:**

Authorities and Organs of State were notified via Letter 1 (dated 30 October 2017) of the 30 day period within which to submit comments on the proposed project.

- **Notification of the BA Report Release Phase:**

All Authorities and Organs of State on the project database have been notified of the 30-day comment period on the BA Report, via Letter 2. Key authorities have been provided with either a hard copy and/or CD of the BA Report via courier. Proof of courier waybills will be included in Appendix D of the finalised BA Report, which will be submitted to the DEA for decision-making.

Organs of State will also be notified via email (where email addresses are available) of the submission of the finalised BA Report to the DEA, as well as via post and email (where postal, physical and email addresses are available) of the outcome of the decision-making process.

SECTION D: IMPACT ASSESSMENT

D.1 POTENTIAL IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

This section includes a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning phase, in line with the requirements of the 2014 NEMA EIA Regulations (as amended).

In terms of Regulation 19(3) of GN R326, a complete Impact Assessment is included in Appendix F of this Draft BA Report. The following must be noted:

- In this section, the impact status (i.e. neutral, negative or positive) is provided in brackets adjacent to the significance ratings.
- Impacts have been assessed for Alternative 1, 2 and 3 below.

D.1.1 Approach to the BA: Methodology of the impact assessment

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the proposed development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed. The process of identification and assessment of impacts includes:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

The impact assessment methodology has been aligned with the requirements for BA Reports as stipulated in Appendix 1 (3) (1) (j) of the 2014 NEMA EIA Regulations (as amended), which states the following:

“A BA Report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include an assessment of each identified potentially significant impact and risk, including –

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be mitigated”.

As per the DEAT Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. This assessment will be based on the precautionary approach i.e. assume that all solar and wind energy facilities (requiring transmission lines) will be developed within the area and therefore assuming worst case scenario.

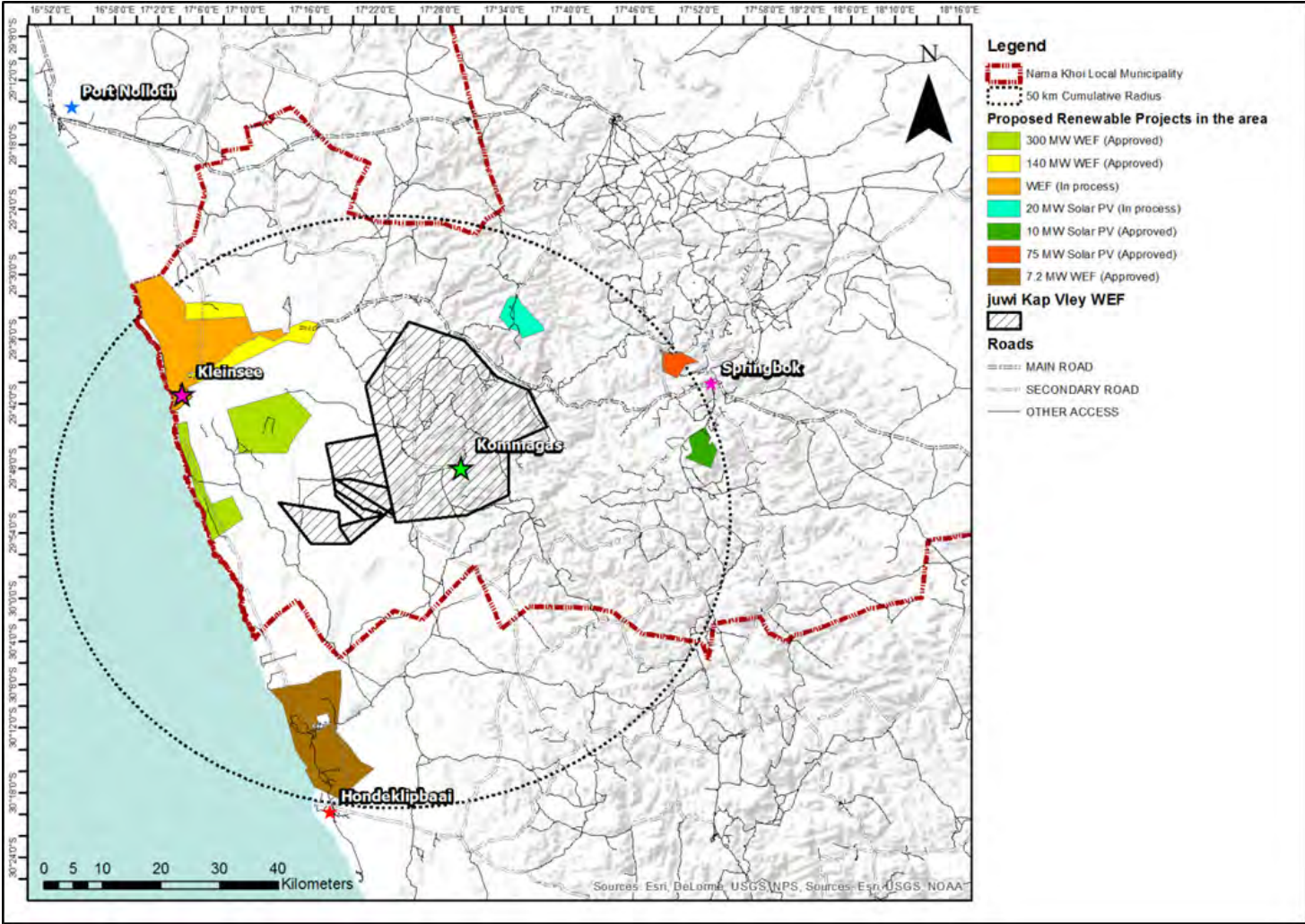


Figure D1.1: Map of proposed Renewable Energy and Electrical Infrastructure projects considered for the Cumulative Impact Assessment (50 km radius).

In addition to the above, the impact assessment methodology includes the following aspects:

Nature of impact/risk - The type of effect that a proposed activity will have on the environment.

Status - Whether the impact/risk on the overall environment will be:

- Positive - environment overall will benefit from the impact/risk;
- Negative - environment overall will be adversely affected by the impact/risk; or
- Neutral - environment overall not be affected.

Spatial extent - The size of the area that will be affected by the impact/risk:

- Site specific;
- Local (<10 km from site);
- Regional (<100 km of site);
- National; or
- International (e.g. Greenhouse Gas emissions or migrant birds).

Duration - The timeframe during which the impact/risk will be experienced:

- Very short term (instantaneous);
- Short term (less than 1 year);
- Medium term (1 to 10 years);
- Long term (the impact will cease after the operational life of the activity (i.e. the impact or risk will occur for the project duration)); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).

Consequence - The anticipated consequence of the risk/impact:

- Extreme (extreme alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they permanently cease);
- Severe (severe alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Substantial (substantial alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Moderate (notable alteration of natural systems, patterns or processes, i.e. where the environment continues to function but in a modified manner); or
- Slight (negligible alteration of natural systems, patterns or processes, i.e. where no natural systems/environmental functions, patterns, or processes are affected).

Reversibility of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):

- High reversibility of impacts (impact is highly reversible at end of project life i.e. this is the most favourable assessment for the environment);
- Moderate reversibility of impacts;
- Low reversibility of impacts; or
- Impacts are non-reversible (impact is permanent, i.e. this is the least favourable assessment for the environment).

Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks - the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):

- High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment);

- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment).

Using the criteria above, the impacts are further assessed in terms of the following:

Probability – The probability of the impact/risk occurring:

- Extremely unlikely (little to no chance of occurring);
- Very unlikely (<30% chance of occurring);
- Unlikely (30-50% chance of occurring)
- Likely (51 – 90% chance of occurring); or
- Very Likely (>90% chance of occurring regardless of prevention measures).

To determine the significance of the identified impact/risk, the consequence is multiplied by probability (qualitatively as shown in Figure D1.2). This approach incorporates internationally recognised methods from the Intergovernmental Panel on Climate Change (IPCC) (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity, to generate an integrated picture of the risks related to a specified activity in a given location, with and without mitigation. Risk is assessed for each significant stressor (e.g. physical disturbance), on each different type of receiving entity (e.g. the municipal capacity, a sensitive wetland), qualitatively (very low, low, moderate, high, and very high) against a predefined set of criteria (i.e. probability and consequence) as indicated in Figure D1.2:

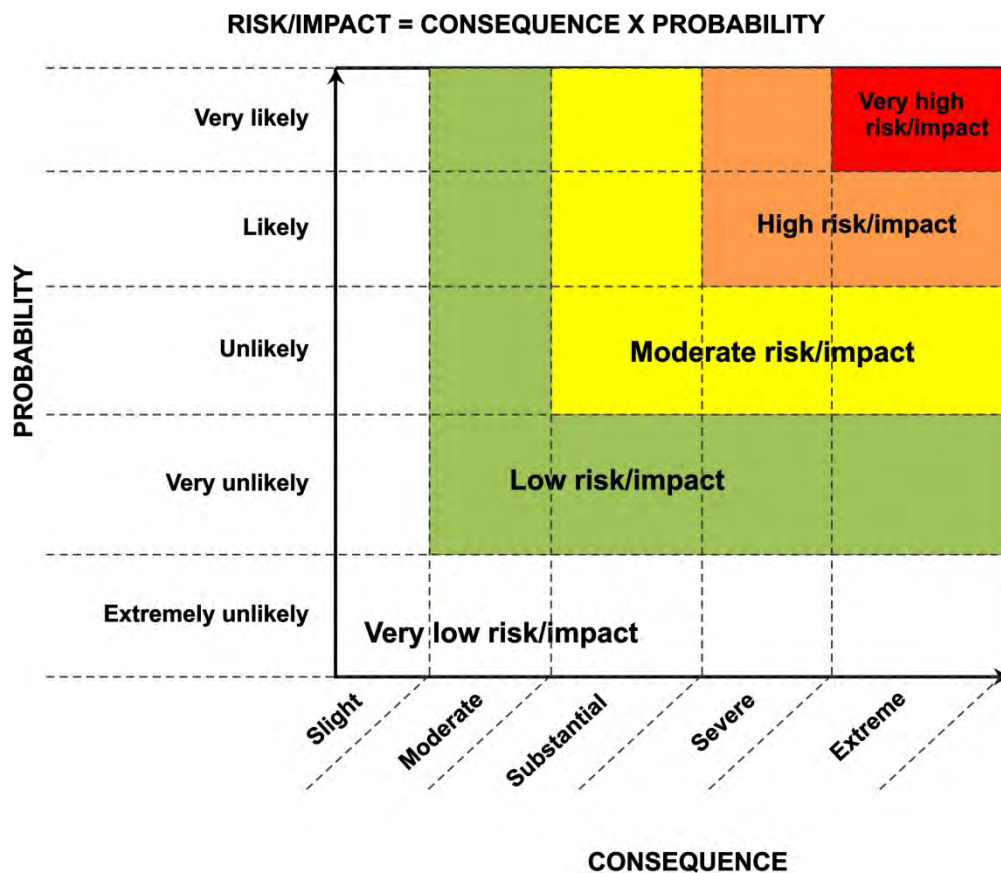


Figure D1.2. Guide to assessing risk/impact significance as a result of consequence and probability.

Significance – Will the impact cause a notable alteration of the environment?

- Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);
- High (the risk/impact will result in major alteration to the environment even with the implementation of the appropriate mitigation measures and will have an influence on decision-making); and
- Very high (the risk/impact will result in very major alteration to the environment even with the implementation of the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

With the implementation of mitigation measures, the residual impacts/risks will be ranked as follows in terms of significance (based on Figure D1.2):

- Very low = 5;
- Low = 4;
- Moderate = 3;
- High = 2; and
- Very high = 1.

Confidence – The degree of confidence in predictions based on available information and specialist knowledge:

- Low;
- Medium; or
- High.

Impacts have been collated into the EMPr (Appendix G of the BA Report) and these include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements (as applicable). This includes a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this is stated.
- Positive impacts and augmentation measures have been identified to potentially enhance positive impacts where possible.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts are evaluated for the construction and operational phases of the development. The assessment of impacts for the decommissioning phase is brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts have been evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact;

- The impact evaluation has, where possible, taken into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area (as described above and in Table 15); and
- The impact assessment attempts to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are used as a measure of the level of impact.

The specialist findings presented in this section represent a summary of the detailed and original specialist studies contained in the relevant appendices to this report (**Appendices E1 to E10**). The current summary of specialist findings is provided in the interest of brevity and with a view to facilitating public participation; as contemplated in the NEMA principles. The CA, with its mandate of substantive review of the BA report, is therefore urged to also read the original specialist studies in the relevant appendices to this report with the aim of discharging its decision-making function. Should any discrepancy occur between this summary, and the relevant detailed specialist study; the detailed specialist study will prevail.

Notes regarding the specialist studies:

- Each specialist study in Appendix E considered the impacts for all three alternatives as presented by this BA report.
- The Visual Impact Assessment considered the Kap Vley WEF and Transmission Line as a whole from a visual perspective, which is why the specialist study (E5) is a combined report for the WEF and Transmission Line. Only impacts pertinent to the Kap Vley Transmission Line are included in the impact assessment below.
- The Dry and Ephemeral Watercourse Impact Assessment (Appendix E4) was peer reviewed by an external qualified specialist and the details of this review can be seen in Appendix E4.
- The Socio-Economic Impact Assessment (Appendix E8) was peer reviewed by an external qualified specialist and the details of this review can be seen in Appendix E8.

The tables below for each field of study are impacts for **all three of the alternatives**. In some instances, where there is an impact specific to one of the alternatives, this will be stipulated in **red**.

Cumulative impacts have been discussed in each sub-section below for the respective field of study. Figure D1.1 above highlights the projects that were considered in the cumulative impact assessments conducted by the specialists (projects within a 50 km radius of the proposed Kap Vley Transmission Line Project).

D.2 IMPACT ASSESSMENTS FOR EACH STUDY

D.2.1 Terrestrial Ecology (including Fauna and Flora)

D.2.1.1 Findings of the Terrestrial Ecological Assessment

Vegetation

An assessment of the Terrestrial Ecology (fauna and flora) on the proposed site was conducted by Simon Todd (2018) and attached as **Appendix E1**.

Given the distribution and nature of sensitive features along the power line routes, Alternative 1 is considered the preferred alternative from an ecological perspective, while Alternative 2 is also

considered acceptable. Alternative 3 is considered least desirable and is not considered to be a viable alternative.

Fauna

The construction of the development will result in significant habitat loss, noise and disturbance on site. This will lead to direct and indirect disturbance of resident fauna. Some slow-moving or retiring species such as many reptiles would likely not be able to escape the construction machinery and would be killed. There are also several species present at the site which are vulnerable to poaching and there is a risk that these species may be targeted. This impact would be caused by the presence and operation of construction machinery and personnel on the site. This impact would however be transient and restricted to the construction phase, with significantly lower levels of disturbance during the operational phase.

Operational activities as well as the presence of the turbines and the noise they generate may deter some sensitive fauna from the area. In addition, the access roads may function to fragment the habitat for some fauna, which are either unable to or unwilling to traverse open areas. For some species this relates to predation risk as slow-moving species such as tortoises are vulnerable to predation by crows and other predators. In terms of habitat disruption, subterranean species such as Golden Moles and burrowing snakes and skinks are particularly vulnerable to this type of impact as they are unable to traverse the hardened roads or become very exposed to predation when doing so. This is a low-level continuous impact which could have significant cumulative impact on sensitive species.

The **overall conclusion** of the Terrestrial Ecological Impact Assessment is that the proposed Kap Vley WEF and the associated transmission infrastructure, is considered to have acceptable terrestrial ecological impacts (provided the proposed mitigation measures included in the study are implemented) and is therefore supported from a terrestrial ecological point of view.

Alternative 1 and Alternative 2 are considered acceptable routes for the Kap Vley Grid Connection and would generate low post-mitigation impacts on fauna and flora. Alternative 3 would generate significantly higher impacts than the other alternatives and is not considered a viable option. Alternative 1 is considered to be the preferred alternative from an ecological perspective and would generate the lowest overall impacts on fauna and flora. The development of the Kap Vley 132kV Grid Connection is therefore considered to have acceptable terrestrial ecological impacts and is therefore supported from a terrestrial ecological point of view.

D.2.1.2 Impact Assessment for Ecology (including fauna and flora)

Impacts on ecology have been described based on the construction, operation and decommissioning phases, as well as the cumulative impacts associated with the proposed project. A number of potential impacts have been identified and thoroughly described in **Section 1.6 of Appendix G**. The proposed development will result in the loss of approximately 128 ha of vegetation during site clearing in the construction phase. The proposed development site will also have an impact on plant SCC and fauna through habitat loss and mortality.

The main potential impacts are discussed below:

Construction Phase

- Impact on vegetation and plant SCC; and
- Direct and indirect impacts on fauna.

Operational Phase:

- Increased soil erosion; and
- Impacts on CBAs.

Decommissioning Phase

- Increased soil erosion; and
- Increased alien plant invasion.

Cumulative

- Cumulative habitat loss and impact on broad-scale ecological processes; and

The impact assessment for each phase can be seen in the tables below (Table D2.1):

Table D2.1. Impact Assessment: Terrestrial Ecology (Fauna and Flora)

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
TERRESTRIAL ECOLOGY: FAUNA AND FLORA															
CONSTRUCTION PHASE-DIRECT IMPACTS															
Habitat Loss	Impact on vegetation and plant SCC	Negative	Local	Long-term	Moderate	Likely	Low	Moderate	Moderate	Partly	Largely	Fine-scale habitat and SCC population mapping within Kap Vley section to inform the final routing and pylon placement to ensure that impact on these features can be minimised through avoidance at the design stage. No development roads or pylons within No-Go areas. Preconstruction walk-through of the development footprint to further refine the layout and reduce impacts on SCC	Low	4	High

² Status: Positive (+) ; Negative (-)

³ Site; Local (<10 km); Regional (<100); National; International

⁴ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												through micro-siting of the pylons and access roads. Demarcate all areas to be cleared with construction tape or other appropriate and effective means. However caution should be exercised to avoid using material that might entangle fauna.			
Habitat Loss	Faunal Impacts due to construction (direct and indirect impacts)	Negative	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate	Partly	Partly	Avoidance of identified areas of high fauna importance at the design stage. Ensure that lay-down and other temporary infrastructure is within medium- or low- sensitivity areas, preferably previously transformed areas if possible. Search and rescue for reptiles and other vulnerable species during construction, before areas are cleared.	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person. Limiting access to the site and ensuring that construction staff and machinery remain within the demarcated construction areas during the construction phase. Environmental induction for all staff and contractors on-site. All construction vehicles should adhere to a low speed limit (40km/h for cars and 30km/h for trucks) to avoid collisions with susceptible species such as snakes and tortoises and rabbits or hares. Speed limits should apply			

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												within the facility as well as on the public gravel access roads to the site. If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs) as far as practically possible, which do not attract insects and which should be directed downwards.			
OPERATIONAL PHASE-DIRECT IMPACTS															
Disturbance	Increased soil erosion	Negative	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate	Yes	Yes	Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan included in the EMPr. All hardened roads and other surfaces should have runoff control features which redirect water flow and	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												dissipate any energy in the water which may pose an erosion risk. Regular monitoring for erosion after construction to ensure that no erosion problems have developed as result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project. All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. All cleared areas should be revegetated with indigenous perennial species from the local area. Avoid areas of high wind			

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												erosion vulnerability as much as possible. Use net barriers, geotextiles, active rehabilitation and other measures during and after construction to minimise sand movement at the site.			
Habitat loss and disturbance	Impacts on Critical Biodiversity Areas	Negative	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate	Partly	Partly	Minimise the development footprint as far as possible, which includes locating temporary-use areas such as construction camps and lay-down areas in previously disturbed areas. Avoid impact to restricted and specialised habitats such as quartz patches or active dune fields.	Moderate	3	High
DECOMMISSIONING PHASE-DIRECT IMPACTS															
Habitat loss and disturbance	Increased soil erosion	Negative	Local	Long-term	Moderate	Likely	Low	Moderate	Moderate	Yes	Yes	All hard infrastructure should be removed and the footprint areas rehabilitated with locally-sourced perennial	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												species. The use of net barriers, geotextiles, active rehabilitation and other measures after decommissioning to minimise sand movement and enhance revegetation at the site. Monitoring of rehabilitation success at the site for at least 5 years after decommissioning. All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.			
Habitat loss and degradation	Increased alien plant invasion	Negative	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate	Yes	Yes	Alien management plan to be implemented during the decommissioning phase of the development, which makes provision for regular	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												alien clearing and monitoring for at least 5 years after decommissioning. Active rehabilitation and revegetation of previously disturbed areas with indigenous species selected from the local environment. Wherever excavation is necessary for decommissioning, topsoil should be set aside and replaced after decommissioning activities are complete to encourage natural regeneration of the local indigenous species. Due to the disturbance at the site alien plant species are likely to be a long-term problem at the site following decommissioning and regular control will need to be			

Impact pathway	Nature of potential impact/risk	Status ²	Extent ³	Duration ⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												implemented until a cover of indigenous species has returned. Regular monitoring for alien plants within the disturbed areas for at least two years after decommissioning or until alien invasives are no longer a problem. Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.			

Cumulative impacts

Impact pathway	Nature of potential impact/risk	Status ⁵	Extent ⁶	Duration ⁷	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
TERRESTRIAL ECOLOGY: FAUNA AND FLORA															
CUMULATIVE IMPACTS															
Habitat loss and disturbance.	Cumulative habitat loss and impact on broad scale ecological processes	Negative	Regional	Long-term	Substantial	Very Likely	Low	Moderate	Moderate Risk	Partly	Partly	Avoid impact to restricted and specialised habitats such as quartz patches or dune fields. Ensure that on-site impacts on plant SCC are maintained at acceptable levels through avoidance of significant populations of these species. Investigate the potential for an offset to mitigate the residual impacts of the development. An offset	Moderate	3	High

⁵ Status: Positive (+) ; Negative (-)

⁶ Site; Local (<10 km); Regional (<100); National; International

⁷ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ⁵	Extent ⁶	Duration ⁷	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												study has been commissioned as part of the EIA study for the windfarm and any residual impacts resulting from the wind farm development will be mitigated through a conservation offset.			

D.2.2 Birds

D.2.2.1 Findings of the Bird Impact Assessment

The bird assessment was conducted by ARCUS (2018) to evaluate the impact on birds from the proposed Kap Vley WEF and associated transmission infrastructure. This report is attached as Appendix E2.

Activity and abundance of priority species and red data species were generally found to be low on the Kap Vley WEF site after one year of pre-construction monitoring. Thorough fieldwork and monitoring did not reveal any key or important avifaunal landscape features or sensitivities (e.g. nest sites) on or within 5 km of the WEF site. Abundances of small passerines were also found to be low. While the drought conditions experienced during the first two surveys (summer and autumn 2017), may have influenced the results, the third and fourth surveys (winter and spring) were conducted after rainfall in the area. It is unlikely that inter-annual variation in bird occurrence would be so substantial so as to significantly alter the findings of this study. This can be said, as historical data sets from the area (as well as other studies done on surrounding proposed projects), did not reveal substantially different findings/conclusions. The Kap Vley WEF site has some of the lowest activity and occurrence of priority species experienced by the specialists, relative to other project sites worked on in South Africa. Passage rates were very low. The level of Verreaux's Eagle activity is regarded as low, and it is unlikely that the development would pose a highly significant risk to this or any other species.

The **overall conclusion** of the Bird Impact Assessment is that the potential impacts on birds are not viewed as being of a significance so as to preclude development and it is the specialists' opinion that the project may proceed, subject to the implementation of all recommendations and mitigations referred to in the Bird Impact Assessment (Appendix E2).

D.2.2.2 Impact assessment

It is important to assess the impacts of WEFs on birds, and to base this assessment on a thorough investigation of the local bird population prior to construction, which was done for the proposed development. A one year pre-construction bird monitoring programme was undertaken for the project in line with Best Practice Guidelines applicable at the time of the surveys (Jenkins *et al.* 2015).

The main impacts of WEFs and their associated infrastructure have been identified as displacement through disturbance and habitat destruction, mortality through collisions with turbines and/or powerlines and electrocution on live power infrastructure (Drewitt & Langston 2006; Percival 2005; van Rooyen 2000).

The following potential impacts of the associated powerlines on birds are listed below:

Construction Phase

- Habitat destruction;
- Habitat loss through perceived increased predation risk (displacement); and reduced breeding success.

Operational Phase

- Bird mortality due to collisions with overhead powerlines;
- Habitat loss through perceived increased predation risk (displacement) due to disturbance and noise from maintenance activities.

Decommissioning Phase

- Habitat loss through perceived increased predation risk (displacement).

Cumulative impacts:

Five wind energy-and eight solar PV energy developments are proposed or approved within a 50 km radius of the proposed site, which could lead to cumulative impacts on birds. All of the above mentioned impacts, and particularly those associated with the operational phase of the proposed project, could be intensified due to potential cumulative effects.

The Eskom Kleinsee WEF avifaunal specialist concludes in the Final EIA report (Savannah Environmental 2015) that the species to be most likely impacted on are flamingos, cormorants, pelicans, bustards, korhaans, eagles and ducks. Flamingos may occur along the Kap Vley Grid connection route alternatives, and are at risk of cumulative impacts of power line collisions.

Similarly, the Koingnaas WEF avifaunal specialist assessment identified flamingos, raptors, shelduck and Ludwig's Bustard as species likely to be impacted on, with particular emphasis on Ludwig's Bustard. Of these, flamingos may be impacted upon by the proposed Kap Vley grid connection.

At Springbok WEF Verreaux's' Eagle, which also occurs at Kap Vley WEF site, was identified as the species that will potentially be impacted on. However, Verreaux's' Eagle was only recorded sporadically at Kap Vley WEF site, and is not considered a species of high concern there. Therefore the cumulative impact of the proposed Kap Vley WEF on Verreaux's' Eagle is expected to be moderate.

The Project Blue Wind Energy Facility avifaunal specialist report mentions Black Harrier, Secretarybird, Jackal Buzzard and two kestrels (Greater and Rock Kestrel) as species of concern. Of these, Jackal Buzzard, Black Harrier and the kestrels were recorded at a low frequency at the Kap Vley WEF site with no record of Secretarybird.

Eight solar PV projects are planned within a 50 km radius. The main impact of solar PV facilities on birds is habitat destruction and collision impacts associated with the grid connection lines. Due to the relatively small footprint and resulting low significance of the habitat destruction impact at the Kap Vley WEF and Grid Connection, the cumulative habitat destruction impact for these developments is concluded to be of **low significance**. The potential cumulative impact of power line collisions (particularly involving Ludwig's Bustard) is rated as moderate-high.

In summary the cumulative effect of Kap Vley WEF and Grid Connection along with the impacts of the proposed five wind farms and eight solar PV facilities has the potential to affect various bird species at a higher significance than the impacts of the Kap Vley WEF and Grid Connection alone. Key species most likely to be impacted upon cumulatively include Ludwig's Bustard, Southern Black Korhaan, Jackal Buzzard, Verreaux's' Eagle, Cape Long-billed Lark and Black Harrier. Ludwig's Bustard and Southern Black Korhaan are most prone to impacts from collisions with power lines. There may be some moderate effects on other small raptors and passerines, but this is not considered to be of high concern.

The impact assessment for each phase can be seen in the tables below (Table D2.3):

Table D2.3. Impact Assessment: Birds

Impact pathway	Nature of potential impact/risk	Status ⁸	Extent ⁹	Duration ¹⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
BIRDS															
CONSTRUCTION PHASE-Direct impacts															
Clearing of vegetation	Habitat destruction	Negative	Site	Long-term	Moderate	Very Likely	Moderate	Moderate	Low	No	Yes	Implement CEMP	Low	4	Medium
Noise and disturbance from construction activities	Habitat loss through perceived increased predation risk (Displacement). Reduced breeding success.	Negative	Site	Medium-term	Moderate	Likely	High	Moderate	Low	No	Yes	Amend construction schedule. Implement CEMP	Low	4	Medium
OPERATIONAL PHASE-Direct impacts															
Collisions with overhead powerlines	Bird mortality	Negative	Local	Long-term	Severe	Very Likely	Non-reversible	High	High	No	Yes	Where possible route new line along existing roads and/or power line servitudes.	High	3	Medium

⁸ Status: Positive (+) ; Negative (-)

⁹ Site; Local (<10 km); Regional (<100); National; International

¹⁰ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ⁸	Extent ⁹	Duration ¹⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												Bird Flight Diverters (BFDs) must be installed on new overhead power line spans identified during a pre-construction walkthrough.			
Electrocution from overhead powerlines	Bird mortality	Negative	Regional	Long-term	Severe	Unlikely	Non-reversible	Moderate	Moderate	Yes	Yes	New powerline to be buried anywhere where possible. Use only a bird-friendly pylon structure. Ensure all clearance between live components are 1.8 m or greater.	Very Low	5	High
Disturbance and noise from maintenance activities	Habitat loss through perceived increased predation risk (Displacement)	Negative	Site	Long-term	Substantial	Likely	Moderate	Moderate	Moderate	No	Yes	Reduce disturbance by adhering to OEMP; on-site manager / ECO to be trained to ID priority species and signs of breeding; monitor raptor nest breeding success and conduct post-construction monitoring; No pylons in No-go areas.	Low	4	Medium

Impact pathway	Nature of potential impact/risk	Status ⁸	Extent ⁹	Duration ¹⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
DECOMMISSIONING PHASE-Direct impacts															
Noise and disturbance from decommissioning activities	Habitat loss through perceived increased predation risk (Displacement). Reduced breeding success.	Negative	Site	Medium-term	Substantial	Likely	High	Moderate	Moderate	No	Yes	Adhere to Decommissioning Phase EMP. Amendments to decommissioning schedule required if any of the Red Data species are confirmed to be breeding decommissioning activities within 500 m of the breeding site must cease, and an avifaunal specialist may advise changes to the schedule if required.	Low	4	Medium

Cumulative impacts: Birds

Impact pathway	Nature of potential impact/risk	Status ¹¹	Extent ¹²	Duration ¹³	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS: BIRDS															
CONSTRUCTION PHASE															
Clearing of vegetation	Habitat destruction	Negative	Site	Long-term	Substantial	Very Likely	Moderate	Moderate	Moderate	No	Yes	Implement CEMP	Low	4	Medium
OPERATIONAL PHASE															
Collisions with overhead powerlines	Bird mortality	Negative	Regional	Permanent	Extreme	Very Likely	Non-reversible	Moderate	Very High	No	Yes	Where possible route new lines along existing roads and/or power line servitudes. BFDs must be installed on new overhead power line spans identified during a pre-construction walkthrough.	High	2	Medium

¹¹ Status: Positive (+) ; Negative (-)

¹² Site; Local (<10 km); Regional (<100); National; International

¹³ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

D.2.3 Bats

D.2.3.1 Findings of the Bat Impact Assessment

The bat assessment was conducted by ARCUS (2018) to evaluate the impact on bats from the proposed Kap Vley WEF and associated transmission infrastructure. This report is attached as **Appendix E3**.

The bat monitoring data presented from one year pre-construction bat monitoring suggest that the development of the proposed Kap Vley WEF and associated transmission infrastructure can be achieved without unacceptable risks to bats. A confirmed roost was located at a farmstead approximately 1,600 m to the nearest turbine. This roost has been buffered with a no go buffer of 1 km in which no turbines, or parts of a turbine, should be constructed. Other infrastructure, such as roads and powerlines, is permitted in this buffer.

The significance ratings for the majority of the impacts to bats posed by the development are predicted to be of low significance before mitigation and very low after mitigation, including those for cumulative impacts. Impacts related to bat mortality are predicted to be of high significance before mitigation but low after mitigation. However, cumulative impacts are predicted to be of moderate significance after mitigation.

At this stage, the mitigation measures are related to the design of the proposed Kap Vley WEF and associated powerline to avoid placement of turbines or powerline structures along the identified sensitive areas. This has been adhered to in the proposed layout (see Figure 1 in the Bat Impact Assessment Report (Appendix E3).

The **overall conclusion** of the bat study is that the bat monitoring data presented suggest that the development of the proposed Kap Vley WEF and associated powerline can be achieved without unacceptable risks to bats.

D.2.3.2 Impact assessment

Direct impacts pose the greatest risk to bats and, in the context of the project, habitat loss and displacement should not pose a significant risk because the footprint of the powerline foundations is small.

The following potential impacts to birds have been identified for the proposed powerline associated with the Kap Vley WEF:

Construction Phase

- Roost disturbance;
- Roost destruction; and
- Habitat modification.

Operational Phase

- Habitat creation in high risk locations leading to bat mortality; and
- Displacement and reduced foraging opportunities for bats due to light pollution.

Decommissioning Phase

- Roost disturbance.

The impact assessment for each phase can be seen in the tables below (Table D2.4):

Table D2.4. Impact Assessment: Bats

Impact pathway	Nature of potential impact/risk	Status ¹⁴	Extent ¹⁵	Duration ¹⁶	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
BATS															
CONSTRUCTION PHASE-Direct impacts															
Excessive noise, dust and blasting	Roost Disturbance	Negative	Site	Medium	Moderate	Unlikely	Moderate	Low	Low	Yes	Yes	Avoid construction near roosts. Adhere to sensitivity map (Figure 1 of Bat Impact Assessment (Appendix E3). Survey infrastructure footprint locations for presence of roosts.	Very low	5	Medium
Removal of buildings, trees or rocky outcrops	Roost Destruction	Negative	Site	Permanent	Moderate	Likely	Moderate	Low	Low	Yes	Yes	Avoid destroying roosts. Survey infrastructure	Very low	5	Medium

¹⁴ Status: Positive (+) ; Negative (-)

¹⁵ Site; Local (<10 km); Regional (<100); National; International

¹⁶ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ¹⁴	Extent ¹⁵	Duration ¹⁶	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
(bat roosts)	Bat Mortality	Negative	Site	Permanent	Moderate	Likely	Non-reversible	Low	Low	Yes	Yes	footprint locations for presence of roosts. Construction Phase EMP.	Very low	5	Medium
Removal of foraging and commuting habitat	Habitat Modification	Negative	Site	Long Term	Moderate	Likely	High	Low	Low	No	Yes	Limiting the removal of vegetation. Construction Phase EMP. Rehabilitate disturbed areas.	Very low	5	Medium
OPERATIONAL PHASE-Direct impacts															
Light Pollution	Displacement and reduced foraging opportunities for bats	Negative	Local	Long term	Moderate	Likely	High	Low	Low	Yes	Yes	Using as little lighting as possible. Low pressure sodium and warm white LED lights are favourable.	Low	4	Medium
	Bat Mortality	Negative	Regional	Long term	Severe	Very Unlikely	Non-reversible	Low	Low	Yes	Yes	High pressure sodium and white mercury lighting to be avoided.	Very low	5	Medium

Impact pathway	Nature of potential impact/risk	Status ¹⁴	Extent ¹⁵	Duration ¹⁶	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
DECOMMISSIONING PHASE-Direct impacts															
Excessive noise and dust could result in bats abandoning their roosts	Roost Disturbance	Negative	Site	Medium	Moderate	Unlikely	Moderate	Low	Low	Yes	Yes	Avoid decommissioning activities near roosts. Limit decommissioning activities to daylight hours.	Very low	5	Medium

Cumulative impacts: Bats

Impact pathway	Nature of potential impact/risk	Status ¹⁷	Extent ¹⁸	Duration ¹⁹	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS: BATS															
CONSTRUCTION PHASE															
Excessive noise, dust and blasting could result in bats abandoning their roosts	Roost Disturbance	Negative	Regional	Medium	Moderate	Likely	Moderate	Low	Low	Yes	Yes	Avoid construction near roosts. Survey infrastructure footprint locations for presence of roosts.	Very low	5	Medium
Physically destroying or removing buildings, trees or rocky outcrops	Roost Destruction	Negative	Regional	Permanent	Moderate	Likely	Moderate	Low	Low	No	Yes	Avoid destroying roosts. Survey infrastructure footprint locations for presence of roosts.	Very low	5	Medium
	Bat Mortality	Negative	Site	Permanent	Moderate	Likely	Non-reversible	Low	Low	Yes	Yes	Construction Phase EMP.	Very low	5	Medium
Removal of foraging and commuting habitat	Habitat Modification	Negative	Regional	Long Term	Moderate	Likely	High	Low	Low	No	Yes	Limiting the removal of vegetation. Construction Phase EMP. Rehabilitate disturbed	Very low	5	Medium

¹⁷ Status: Positive (+) ; Negative (-)

¹⁸ Site; Local (<10 km); Regional (<100); National; International

¹⁹ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ¹⁷	Extent ¹⁸	Duration ¹⁹	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												areas.			
OPERATIONAL PHASE															
Light Pollution	Displacement and reduced foraging opportunities for bats	Negative	Regional	Long term	Moderate	Likely	High	Low	Low	Yes	Yes	Using as little lighting as possible. Low pressure sodium and warm white LED lights are favourable.	Low	4	Medium
	Bat Mortality	Negative	Regional	Long term	Severe	Very Unlikely	Non-reversible	Low	Low	Yes	Yes	High pressure sodium and white mercury lighting to be avoided.	Very low	5	Medium
DECOMMISSIONING PHASE															
Excessive noise and dust could result in bats abandoning their roosts	Roost Disturbance	Negative	Regional	Medium	Moderate	Unlikely	Moderate	Low	Low	Yes	Yes	Avoid decommissioning activities near roosts. Limit decommissioning activities to daylight hours.	Very low	5	Medium

D.2.4 Dry and Ephemeral Watercourses Impact Assessment

D.2.4.1 Findings of Dry and Ephemeral Watercourses assessment

The Dry and Ephemeral Watercourses Impact Assessment specialist study was conducted by Luanita Snyman-van der Walt from the CSIR (2018) to evaluate the impact on watercourses from the proposed Kap Vley WEF and associated electrical infrastructure. The study was subject to a peer review process by an external reviewer (Dr Liz Day, Freshwater Consulting). This external review report is included as an appendix to the study. Please see Appendix E4 for the review letter and CV of the specialist attached. It must be noted that the recommendations for edits to be made to the study have been made post external review. Appendix E4 contains a sign-off letter that was provided by Freshwater Consulting to confirm that they accept the changes to the report and approve of the study. The aspect associated with the juwi Kap Vley WEF and 132 kV powerline that is most likely to drive impacts on dry and ephemeral watercourses is the clearance of land (surface disturbance) and vegetation clearance for the establishment of physical footprints of infrastructure and roads. The clearance of land and vegetation could impact dry and ephemeral watercourses through increasing runoff and sedimentation in the surrounding ecosystems. However, this is not expected to be a significant concern given the limited rainfall of the arid region (< 100 mm Mean Annual Precipitation) to stimulate damaging overland flow.

Due to the arid climate and very limited rainfall, not many permanent watercourses exist within the landscape. Dry and ephemeral rivers, salt pans (depressions) and drainage lines were identified. The proposed WEF layout and 132 kV powerline avoid these as far as possible in its initial design, or follows existing linear and disturbance corridors. The mapped Namaqualand Salt Pan crossed by the powerlines was confirmed by the terrestrial ecology specialist (Todd, 2018a & b), through ground-truthing, to not exist as a hydrological feature.

The impacts of physical disturbance to dry and ephemeral watercourses, altered drainage patterns, increased runoff, erosion and sedimentation due to clearance of land and vegetation for the WEF and the 132 kV overhead powerline are expected to be **'Low' to 'Very Low'**, with the effective implementation of the mitigation and management actions outlined the specialist report (Appendix E4).

Table D2.5. Summary of sensitive dry and ephemeral watercourses in the study area that may be impacted, and recommended actions required.

Sensitive dry and ephemeral watercourses	132 kV overhead powerline
Drainage lines	Avoided ACTION: None required. Implement recommended mitigation measures
Drainage lines proposed buffer	Avoided ACTION: None required Implement recommended mitigation measures
Potential Namaqualand Salt Pan and proposed buffer (Verified to not be a hydrological feature)	Verified to not be a hydrological feature
Buffels River, associates NFEPA wetland and proposed buffers	Avoided ACTION: None required Implement recommended mitigation measures
Kommagas River	Not impacted

The overall conclusion of the Dry and Ephemeral Watercourses Assessment is that the Kap Vley WEF and 132 kV overhead powerline, from a dry and ephemeral watercourses perspective, may receive EA with adherence to the mitigation and management measures set out in specialist report (Appendix E4).

D.2.4.2 Impact assessment

The following potential impacts to water courses have been identified for the proposed powerline associated with the proposed Kap Vley WEF:

Construction Phase

- Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines); and
- Altered drainage patterns, increased runoff, erosion and sedimentation of surrounding ecosystems.

Operational Phase

- Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines); and
- Altered drainage patterns, increased runoff, erosion and sedimentation of surrounding ecosystems.

Decommissioning Phase

- Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines); and
- Altered drainage patterns, increased runoff, erosion and sedimentation of surrounding ecosystems.

Cumulative impacts

Impacts of WEF projects (including associated transmission infrastructure) in the area may cumulatively lead to the degradation and loss of dry and ephemeral watercourses (incl. drainage lines), although most impacts are expected to have local, or limited regional, consequences per facility. Due to climatic conditions, there are limited permanent watercourses or aquatic features present within the landscape.

The impact assessment for each phase can be seen in the tables below (Table D2.6):

Table D2.6. Impact Assessment: Dry and Ephemeral Watercourses

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
DRY AND EPHEMERAL WATERCOURSES															
CONSTRUCTION PHASE															
Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines).	Clearance of land and vegetation for the 132 kV powerline	Negative	Local	Short-term	Moderate	Likely	Low	Moderate	Moderate	No	Yes	<u>Design</u> Avoid placing pylons in identified sensitive dry and ephemeral watercourses, drainage lines and associated buffers. (The powerline pylons have a span distance of approximately 150 m, and must be placed to avoid the non-perennial Buffels River and its associated ephemeral wetlands). Routing should follow existing linear infrastructure and	Low	4	High

²⁰ Status: Positive (+) ; Negative (-)

²¹ Site; Local (<10 km); Regional (<100); National; International

²² Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
												disturbance corridors (e.g. roads) where possible. (Alternative 1 follows existing linear infrastructure and disturbance corridors, and is preferred). Construction Use existing Buffels River crossing for vehicles, including stringing vehicles. Avoid clearance of vegetation for the powerline servitude, minimise clearance of vegetation to the pylon foundations. Phased clearance of the area in order to reduce the amount and duration of bare soil exposure. Commence with restoration of disturbed, cleared land as soon as possible.			
Altered drainage patterns, increased		Negative	Regional	Long-	Moderat	Unlikely	Low	Moderate	Moderate	No	Yes	<u>Design</u>	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
runoff, erosion and sedimentation of surrounding ecosystems.				term	e							Avoid placing pylons in identified sensitive dry and ephemeral watercourses, drainage lines and associated buffers. (The powerline pylons have a span distance of approximately 150 m, and must be placed to avoid the non-perennial Buffels River and its associated ephemeral wetlands). Routing should follow existing linear infrastructure and disturbance corridors (e.g. roads) where possible. (Alternative 1 follows existing linear infrastructure and disturbance corridors, and is preferred). <u>Construction</u> Use existing Buffels River crossing for all vehicles, including stringing vehicles. Keep the footprint of the			

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												disturbed area to the minimum and designated areas only. Limit hard surfaces to reduce runoff. Commence with restoration of disturbed, cleared land as soon as possible (e.g. as soon as non-permanent construction gear and infrastructure are removed). Implement net barriers, active rehabilitation and other erosion control measures as needed, especially for pylons placed on steeper slopes.			
OPERATIONAL PHASE															
Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines).	Clearance of land and vegetation for the 132 kV powerline	Negative	Local	Short-term	Moderate	Likely	Low	Moderate	Moderate	No	Yes	Use existing Buffels River crossing for all vehicles. Avoid clearance of vegetation for the powerline servitude for maintenance. Service vehicles should keep to the servitude and follow	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
												existing roads and tracks where possible.			
Altered drainage patterns, increased runoff, erosion and sedimentation of surrounding ecosystems.		Negative	Regional	Long-term	Moderate	Unlikely	Low	Moderate	Moderate	No	Yes	Use existing Buffels River crossing for all vehicles. Avoid clearance of vegetation for the powerline servitude for maintenance. Service vehicles should keep to the servitude and follow existing roads and tracks where possible. Undertake periodic site inspections, especially after rainfall events, to verify and inspect the effectiveness and integrity of the storm water runoff control system and to specifically record the occurrence of any erosion on site or downstream. Correct or improve the runoff control system in the event of	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
												any erosion occurring.			
DECOMMISSIONING PHASE															
Physical disturbance and destruction of dry and ephemeral watercourses (incl. drainage lines).	Clearance of land and vegetation for the 132 kV powerline	Negative	Local	Short-term	Moderate	Likely	Low	Moderate	Low	No	Yes	Use existing Buffels River crossing for all vehicles. During decommissioning activities, avoid identified sensitive dry and ephemeral watercourses, drainage lines and associated buffers as far as possible. Commence with restoration of disturbed, cleared land as soon as permanent structures have been removed. Ecology specialist/ECO to monitor progress and success of rehabilitation.	Very Low	5	High
Altered drainage patterns, increased runoff, erosion and sedimentation of surrounding ecosystems.		Negative	Regional	Long-term	Moderate	Unlikely	Low	Moderate	Moderate	No	Yes	Use existing Buffels River crossing for all vehicles. During decommissioning activities, avoid identified sensitive dry and ephemeral watercourses, drainage lines	Low	4	High

Impact pathway	Nature of potential impact/risk	Status ²⁰	Extent ²¹	Duration ²²	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												and associated buffers as far as possible. Commence with restoration of disturbed, cleared land as soon as permanent structures have been removed. Ecology specialist/ECO to monitor progress and success of rehabilitation.			

Cumulative assessment

Impact pathway	Nature of potential impact/risk	Status ²³	Extent ²⁴	Duration ²⁵	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS: DRY AND EPHEMERAL WATERCOURSES															
Cumulative Impacts of powerline projects	Degradation of dry and ephemeral watercourses (incl. drainage lines).	Negative	Regional	Long-term	Moderate	Unlikely	Low	Moderate	Moderate	No	Yes	Adequate implementation of proposed mitigation measures and best practice to impacts to dry and ephemeral watercourses (incl. drainage lines) by all renewable energy projects in the area.	Low	4	High

²³ Status: Positive (+) ; Negative (-)

²⁴ Site; Local (<10 km); Regional (<100); National; International

²⁵ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

D.2.5 Visual Assessment

D.2.5.1 Findings of visual assessment

The visual assessment was conducted by Bernard Oberholzer Landscape Architect / Environmental Planner in association with Quinton Lawson MLB Architects / Urban designers (2018) to evaluate the potential visual impact from the proposed Kap Vley WEF and associated powerline. This report is attached as **Appendix E5**.

Three alternative routes for the connecting 132kV powerlines between the proposed Kap Vley WEF and the Gromis Substation, about 32 km to the north, have been provided. The potential visual impact of the transmission line would be similar for the three alternatives proposed. The alignments should ideally follow farm boundaries and existing or approved powerline routes, as well as avoid the 'Toringkop'. The expected visual significance of the powerline alternatives would be moderate before mitigation and moderate-low after mitigation.

The visual sensitivity for the proposed powerline is indicated below in Table D2.7:

Table D2.7. Viewpoints, Sensitive Receptors and Potential Visibility

Visual Criteria	Comments	Related Infra-structure	Connecting powerlines
Visibility of facilities	Visible from a number of farmsteads, Komaggas and Houthoop guest farm.	Low-med	Medium
Visual exposure	Viewshed extends across the plain, restricted by landforms to the east.	Low-med	Medium
Scenic resources and receptors	Low mountain ridgelines, dry river courses, farmsteads, guest farm.	Low-med	Medium
Landscape integrity	wilderness / rural character, previous disturbance by diamond-mining.	Low-med	Medium
Visual absorption capacity	Visually exposed plain, partly undulating. Low scrub vegetation, low visual absorption capacity.	Low-med	Medium
Impact intensity	Summary	Low-med	Medium

Cumulative Impacts

The proposed Kap Vley WEF site lies within a gazetted REDZ (REDZ 8) and is therefore within an identified wind development area for which cumulative visual impacts would be expected.

Cumulative visual effect of the WEF caused by powerlines crossing the landscape, as well as by other proposed energy facilities in the area, the nearest being the proposed 300 MW Eskom WEF near Kleinsee, the Project Blue WEF Phases 2 and 3 at Kleinsee, and the proposed 7.2 MW Koningnaas WEF 60 km south of Kleinsee. A 20 MW solar energy facility is proposed to the north-east of the site near Nababeep. A number of other solar energy facilities are proposed near Springbok, but these are not expected to have cumulative visual implications in relation to the proposed Kap Vley WEF.

The **overall conclusion** of the Visual Impact Assessment is that given the remoteness of the proposed Kap Vley WEF site, the sparsely populated area, the previous disturbance by diamond-mining, and the local scale of the project, no potential fatal flaws from a visual perspective are expected. However, the visual mitigations outlined in the Visual Assessment Report (included as Appendix E5) should be included in the EA (should this be granted) and EMPr to minimise potential adverse visual impacts.

6.1.1.1 Impact assessment

The field survey and study of the photographic panoramas indicated that the proposed Kap Vley WEF would be prominently visible on the skyline of the mountain ridgelines. However, the mountain range is fairly low (< 500 m above the surrounding plain), and only of local visual significance in the broader landscape context.

The following potential impacts to birds have been identified for the proposed Kap Vley WEF:

Construction Phase

- Potential visual intrusion, dust and noise affecting the rural sense of place.

Operational Phase

- Potential visual intrusion of transmission line on ridgelines.

Decommissioning Phase

- Potential visual effect of remaining roads, after decommissioning.

The impact assessment for each phase can be seen in the tables below (Table D2.8):

Table D2.8. Impact Assessment: Visual

Impact pathway	Nature of potential impact/risk	Status ²⁶	Extent ²⁷	Duration ²⁸	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
VISUAL															
CONSTRUCTION PHASE-Direct impacts															
Effect of construction activities	Visual intrusion, dust and noise.	Negative	Local	Short-term	Moderate	Very likely	High	Low	Moderate	No	Yes	Control of construction activities. Implementation of EMPr.	Moderate-Low	4	Medium
OPERATIONAL PHASE-Direct impacts															
Visual effect of transmission line on ridgelines	Visual intrusion of transmission line on ridgelines	Negative	Local	Long-term	Substantial	Very likely	Moderate-High	Low after decommissioning	Moderate	No	No	Avoidance of ridgelines where possible.	Moderate-Low	4	High
Visual effect of access roads	Visual clutter of infrastructure on the open landscape.	Negative	Local	Long-term	Moderate	Very likely	Moderate-High	Low after decommissioning	Moderate-Low	No	Yes	Use of existing roads where possible.	Low	4	High

²⁶ Status: Positive (+) ; Negative (-)

²⁷ Site; Local (<10 km); Regional (<100); National; International

²⁸ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ²⁶	Extent ²⁷	Duration ²⁸	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
DECOMMISSIONING PHASE-Direct impacts															
Removal of transmission line	Visual impacts of remaining roads.	Neutral	Local	Permanent	Slight	Very likely	Moderate-High	Low after decommissioning	Low	Yes	Yes	Regrading, ripping and revegetation.	Low	4	Medium

Impact pathway	Nature of potential impact/risk	Status ²⁹	Extent ³⁰	Duration ³¹	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS															
Combined visual effect of Eskom transmission line and related infrastructure and adjacent renewable energy projects.	Visual intrusion on character of the area.	Negative	Regional	Long-term	Substantial	Very Likely	High	Low	Moderate	No	No	Minimal potential for mitigation.	Moderate	3	Medium

²⁹ Status: Positive (+) ; Negative (-)

³⁰ Site; Local (<10 km); Regional (<100); National; International

³¹ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

D.2.6 Heritage Impact Assessment

D.2.6.1 Findings of heritage assessment

An assessment of the heritage features of the proposed site was conducted by Jayson Orton (2018) and attached as **Appendix 6**.

All aspects of the proposed development are relevant since excavations for foundations may impact on archaeological and/or palaeontological remains, while the above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

The Heritage Impact Assessment has shown that, although there are several types of heritage present in and around the study area, only two are of any concern in that impacts are more likely to occur. Archaeological sites are very likely to be present along all alignment alternatives, but, given the expected nature of these sites, mitigation would be easy to effect. Impacts to the landscape are not considered to be of high significance. The other aspects of heritage also considered but which will not be meaningfully affected, either through distance from the proposed development or because of the very low likelihood of impacts occurring, are palaeontology, graves and the built environment.

With mitigation the impact significance can always be reduced to very low, except in the case of the landscape impacts which will remain at the low level after mitigation.

The overall conclusion of the Heritage Impact Assessment is that the potential impacts are considered to be generally manageable and, from a heritage point of view, the development may proceed with any of the three proposed alternative alignments. In general, however, the shortest alignment – in this case Alternative 2 – would be favoured because of the reduced chances of sustaining archaeological impacts. Alternative 1, which runs alongside an existing approved electrical servitude for part of its length, would however be better from a visual point of view due to the grouping of power lines. Alternative 1 is also favoured by the proponent from a technical point of view.

As the impacts to heritage resources are manageable, it is recommended that the proposed electrical infrastructure should be authorised using any of the three alternatives within the 200 m wide assessed corridor. This should be subject to the following conditions which must be incorporated into the EA (should it be granted):

- Powerlines and service roads to avoid deflation hollows as far as possible;
- A pre-construction walk down of the final chosen alignment will need to be done with special emphasis on the deflation hollows; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

D.2.6.2 Palaeontology

A desktop assessment of the palaeontology of the proposed site was conducted by John Almond (2018) and attached as an annexure in **Appendix E6**.

The desktop study concludes that due to the low palaeontological potential of the hillslope colluvia and aeolian sands the impact of the construction of the proposed WEF and associated electrical

infrastructure on fossil heritage is considered to be Low. Notwithstanding, the history of these vast tracts of sands, gravels and pedocretes of the Northern Cape is very poorly known, with very few fossils to rely on. Hence, though of low probability, any find will be of considerable importance.

In view of the low fossil potential, monitoring of bulk earth works by a specialist is not justified. Notwithstanding, the sporadic fossil occurrences are then particularly important and efforts made to spot them are often rewarded. Buried archaeological material may also be encountered. It is recommended that a requirement to be alert for possible fossils and buried archaeological material be included in the EMP for the Construction Phase of the proposed powerline associated with the Kap Vley WEF, with a Fossil Finds Procedure in place. In the event of the exposure of fossil bones all work at that spot must cease and the ECO must inform SAHRA and a professional palaeontologist, who will then decide if avoidance or mitigation are preferred. Only a professional palaeontologist may excavate uncovered fossils with a valid mitigation permit from SAHRA.

D.2.6.3 Impact assessment

Both direct (destruction through the proposed project activities) and indirect (destruction through unintended consequences or deviations from the authorised work and footprint, and through visual intrusion into a sensitive area) impacts may occur during the construction, operation and decommissioning of the proposed powerline associated with the Kap Vley WEF.

The impacts to built heritage resources will not occur and are not considered further during the EIA phase. All other identified heritage resource types may be impacted at all phases of the development except for palaeontological resources which should not be affected during the operational phase.

The potential impacts identified during the Heritage Impact Assessment are:

Construction Phase

- Potential direct and indirect impacts to archaeological resources;
- Potential direct and indirect impacts to palaeontological resources;
- Potential direct and indirect impacts to graves; and
- Potential direct impacts to the cultural landscape and disruption of traditional activities.

Operational Phase

- Potential direct impacts to the cultural landscape and disruption of traditional activities.

Decommissioning Phase

- Potential direct impacts to the cultural landscape and disruption of traditional activities.

Cumulative impacts

- Potential impacts to archaeological resources;
- Potential impacts to palaeontological resources;
- Potential impacts to graves; and
- Potential visual intrusion into the cultural landscape.

The impact assessment for each phase can be seen in the tables below (Table D2.9):

Table D2.9. Impact Assessment: Heritage (including Archaeology, Palaeontology and Cultural landscape)

Impact pathway	Nature of potential impact/risk	Status ³²	Extent ³³	Duration ³⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
HERITAGE															
CONSTRUCTION PHASE (Direct impacts)															
Clearing of vegetation and excavation of powerline foundations	Destruction or disturbance of archaeological materials	Negative	Site	Permanent	Moderate	Very unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	High	No	Yes	Avoidance. Remain in authorised footprint. Reporting of chance finds. Excavation and sampling of affected archaeological sites.	Very low	5	High
	Destruction or disturbance of palaeontological materials	Negative	Site	Permanent	Severe	Likely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Low	No	Yes	Reporting of chance finds.	Very low	5	Medium
	Destruction or disturbance of	Negative	Site	Permanent	Extreme	Extremely	Non-reversible	High (heritage	Very low	No	Yes	Avoidance.	Very low	5	High

³² Status: Positive (+) ; Negative (-)

³³ Site; Local (<10 km); Regional (<100); National; International

³⁴ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ³²	Extent ³³	Duration ³⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
	graves			t		unlikely	(resources cannot be recreated)	resources are unique)				Remain in authorised footprint. Reporting of chance finds. Exhumation			
All activities	Visual intrusion into cultural landscape & disruption of traditional activities	Negative	Local	Long-term	Moderate	Very likely	Moderate (some landscaping scarring to remain)	High (heritage resources are unique)	Low	No	Yes	Minimise landscape scarring from cut and fill operations. Minimise overall footprint. Minimise fencing in communal lands.	Low	4	High
CONSTRUCTION PHASE (Indirect impacts)															
Any activities occurring outside of authorised footprint	Destruction or disturbance of archaeological materials	Negative	Site	Permanent	Substantial	Very unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Low	Yes	Yes	Remain in authorised footprint. Reporting of chance finds. Excavation and sampling of affected archaeological sites.	Very low	5	High
	Destruction or disturbance of palaeontological	Negative	Site	Permanent	Moderate	Extremely unlikely	Non-reversible (resources	High (heritage resources are	Very low	No	Yes	Reporting of chance finds.	Very low	5	Medium

Impact pathway	Nature of potential impact/risk	Status ³²	Extent ³³	Duration ³⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
	materials						cannot be recreated)	unique)							
	Destruction or disturbance of graves	Negative	Site	Permanent	Extreme	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very low	No	Yes	Remain in authorised footprint. Reporting of chance finds. Exhumation	Very low	5	High
OPERATIONAL PHASE (Direct impacts)															
Occurrence of powerlines in landscape	Visual intrusion into the cultural landscape	Negative	Local	Long term	Moderate	Very likely	Moderate (some landscape scarring likely to remain)	High (heritage resources are unique)	Low	No	No	Keep traffic on site to a minimum.	Low	4	High
DECOMMISSIONING PHASE (Direct Impacts)															
Removal of powerlines and rehabilitation of site	Destruction or disturbance of archaeological materials	Negative	Site	Permanent	Severe	Unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Moderate	Yes	Yes	Avoidance. Remain in authorised footprint. Reporting of chance finds. Excavation and sampling of affected archaeological sites.	Very low	5	High

Impact pathway	Nature of potential impact/risk	Status ³²	Extent ³³	Duration ³⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
	Destruction or disturbance of palaeontological materials	Negative	Site	Permanent	Moderate	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very low	Yes	Yes	Reporting of chance finds.	Very low	5	Medium
	Destruction or disturbance of graves	Negative	Site	Permanent	Extreme	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very low	Yes	Yes	Avoidance. Remain in authorised footprint. Reporting of chance finds. Exhumation	Very low	5	High
All activities	Visual intrusion into cultural landscape & disruption of traditional activities	Negative	Local	Short-term	Moderate	Very likely	Moderate (some landscaping scarring to remain)	High (heritage resources are unique)	Low	No	Yes	Ensure effective rehabilitation	Low	4	High
DECOMMISSIONING PHASE (Indirect Impacts)															
Any activities occurring outside of authorised footprint	Destruction or disturbance of archaeological materials	Negative	Site	Permanent	Substantial	Very unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Low	Yes	Yes	Remain in authorised footprint. Reporting of chance finds. Excavation and sampling of affected archaeological	Very low	5	High

Impact pathway	Nature of potential impact/risk	Status ³²	Extent ³³	Duration ³⁴	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												sites.			
	Destruction or disturbance of palaeontological materials	Negative	Site	Permanent	Moderate	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very low	No	Yes	Remain in authorised footprint. Reporting of chance finds.	Very low	5	Medium
	Destruction or disturbance of graves	Negative	Site	Permanent	Extreme	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very low	No	Yes	Remain in authorised footprint. Reporting of chance finds. Exhumation	Very low	5	High

Cumulative impacts: Heritage

Impact pathway	Nature of potential impact/risk	Status ³⁵	Extent ³⁶	Duration ³⁷	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS (Direct impacts)															
All activities	Destruction or disturbance of archaeological materials	Negative	Site	Permanent	Moderate	Unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Low	No	Yes	Avoidance. Remain in authorised footprint. Reporting of chance finds. Excavation and sampling of affected archaeological sites.	Very low	5	Medium
	Destruction or disturbance of palaeontological materials	Negative	Site	Permanent	Slight	Very unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very Low	No	Yes	Reporting of chance finds.	Very low	5	Medium

³⁵ Status: Positive (+) ; Negative (-)

³⁶ Site; Local (<10 km); Regional (<100); National; International

³⁷ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ³⁵	Extent ³⁶	Duration ³⁷	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
	Destruction or disturbance of graves	Negative	Site	Permanent	Slight	Extremely unlikely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Very Low	Yes	Yes	Avoidance. Remain in authorised footprint. Reporting of chance finds. Exhumation.	Very low	5	High
	Visual intrusion into the cultural landscape	Negative	Local	Long term	Moderate	Very likely	Non-reversible (resources cannot be recreated)	High (heritage resources are unique)	Low	No	Yes	Minimise landscape scarring Minimise overall footprint.	Low	4	High

D.2.7 Soils and Agricultural Potential

D.2.7.1 Findings of the Soils and Agricultural Assessment

The Soils and Agricultural Potential Impact Assessment was undertaken by Johann Lanz (2018) and is included as **Appendix E7** to this report.

The proposed development is located on land zoned and used for agriculture. South Africa has very limited arable land and it is therefore critical to ensure that development does not lead to an inappropriate loss of potentially arable land. The assessment has found that the proposed development will only impact agricultural land which is of extremely low agricultural potential and only suitable for low intensity grazing.

There are no agriculturally sensitive areas along the powerline routing and no parts of the proposed routing need to be avoided by the development. The significance of all agricultural impacts is kept low by two important factors. The first is that the actual footprint of disturbance of the electricity grid infrastructure is very small in relation to the available grazing land on the effected farm portions, and all agricultural activities in the study area can continue unaffected under power lines. The second is the fact that the proposed site is on land of extremely limited agricultural potential that is only viable for low intensity grazing.

All impacts were assessed as having very low significance. Cumulative impact was also assessed as low. Because of the low impact and the low sensitivity of the environment, and because of the uniformity of the environment, there is no significant difference between any of the 3 proposed power line route alternatives.

The overall significance of the impact on agriculture for the construction, operation and decommissioning phase is assessed as **very low (before and after mitigation)**.

Furthermore it is far more preferable to incur a loss of agricultural land in such a region, without cultivation potential, than to lose agricultural land that has a higher potential, to renewable energy development elsewhere in the country.

The Soils and Agricultural Potential Impact Assessment concludes that due to the low agricultural potential of the site, and the consequent low agricultural impact, there are no restrictions relating to agriculture which preclude authorisation of the proposed development and therefore, from an agricultural impact point of view, the development should be authorised.

There are no conditions resulting from this assessment that need to be included in the Environmental Authorisation, should this be granted.

D.2.7.2 Impact Assessment

Impacts to Agriculture and soil potential are assessed to **be Low to Very low** mostly (after mitigation). Cumulative impacts are likely to occur as a result of the regional loss of agricultural land and production because of other developments on agricultural land in the region. Because the loss of land is so small, and because the land is of low agricultural potential, the cumulative loss of agricultural resources is not significant either.

The potential impacts to agriculture and soil potential associated with the proposed Kap Vley WEF are listed below:

Construction Phase

- Minimal loss of agricultural land use under project footprint;
- Soil erosion;
- Loss of topsoil; and
- Degradation of veld vegetation.

Operational Phase

- Minimal loss of agricultural land use under project footprint; and
- Soil erosion.

Decommissioning Phase

- Soil erosion;
- Loss of topsoil; and
- Degradation of veld vegetation.

Cumulative impacts

- Regional loss of agricultural land under project footprint.

Impacts and mitigation measures are described in the table below (Table D2.10). Recommendations for the monitoring and review of all identified mitigation measures are described below, as well as in the EMP.

Table D2.10. Impact assessment: Agriculture and Soil Potential

Impact pathway	Nature of potential impact/risk	Status ³⁸	Extent ³⁹	Duration ⁴⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
AGRICULTURE AND SOIL POTENTIAL															
CONSTRUCTION PHASE-Direct impacts															
Occupation of the land by the project infrastructure	Minimal loss of agricultural land use under project footprint	Negative	Site	Short term	Moderate	Very Likely	Low	Low	Very Low	No	No	None	Very Low	5	High
Change in land surface characteristics.	Soil Erosion	Negative	Site	Medium-term	Slight	Unlikely	Low	Low	Very low	No	Yes	Implement an effective system of storm water run-off control. Maintain vegetation cover.	Very low	5	High
Construction activities that disturb the soil profile.	Loss of topsoil	Negative	Site	Medium-term	Slight	Unlikely	Low	Low	Very low	No	Yes	Strip, stockpile and re-spread topsoil during rehabilitation.	Very low	5	High

³⁸ Status: Positive (+) ; Negative (-)

³⁹ Site; Local (<10 km); Regional (<100); National; International

⁴⁰ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ³⁸	Extent ³⁹	Duration ⁴⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
Vehicle traffic and dust generation	Degradation of veld vegetation	Negative	Site	Short-term	Slight	Unlikely	Low	Low	Very Low	No	Yes	Control vehicle passage and control dust	Very Low	5	High
OPERATIONAL PHASE-Direct impacts															
Occupation of the land by the project infrastructure	Minimal loss of agricultural land use under project footprint	Negative	Site	Short term	Moderate	Very Likely	Low	Low	Very Low	No	No	None	Very Low	5	High
Change in land surface characteristics.	Soil Erosion	Negative	Site	Medium-term	Slight	Unlikely	Low	Low	Very low	No	Yes	Implement an effective system of storm water run-off control. Maintain vegetation cover.	Very low	5	High
DECOMMISSIONING PHASE-Direct impacts															
Change in land surface characteristics.	Soil Erosion	Negative	Site	Medium term	Slight	Unlikely	Low	Low	Very low	No	Yes	Maintain vegetation cover.	Very low	5	High
Constructional activities that disturb the soil profile.	Loss of topsoil	Negative	Site	Medium term	Slight	Unlikely	Low	Low	Very low	No	Yes	Strip, stockpile and re-spread topsoil during rehabilitation.	Very low	5	High

Impact pathway	Nature of potential impact/risk	Status ³⁸	Extent ³⁹	Duration ⁴⁰	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
Vehicle traffic and dust generation	Degradation of veld vegetation	Negative	Site	Short term	Slight	Unlikely	Low	Low	Very Low	No	Yes	Control vehicle passage and control dust	Very low	5	High

Cumulative impacts: Agriculture and Soil potential

Impact pathway	Nature of potential impact/risk	Status ⁴¹	Extent ⁴²	Duration ⁴³	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
CUMULATIVE IMPACTS															
Occupation of the land by the project infrastructure of multiple developments	Regional loss of agricultural land	Negative	Regional	Long term	Slight	Very Likely	High	Low	Very low	No	No	None	Very Low	5	High

⁴¹ Status: Positive (+) ; Negative (-)

⁴² Site; Local (<10 km); Regional (<100); National; International

⁴³ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

D.2.8 Socio-Economic

D.2.8.1 Findings of Socio-Economic Assessment

The Socio-Economic Assessment was undertaken by Surina Laurie of the CSIR (Appendix E8). The study was subject to a peer review process by an external reviewer (Elena Broughton, Urban-Econ Development Economists). This external review report is included as an appendix to the study. Please see Appendix E8 for the review letter and CV of the specialist attached. It must be noted that the recommendations for edits to be made to the study have been made post external review. Appendix E8 reflects how and where the edits requested by Urban-Econ Development Economists were addressed in the revised report. A sign-off letter was provided by the reviewer to confirm that they accept the changes to the report and approve of the study.

The Socio-Economic Impact Assessment has been undertaken to determine the potential social and economic impacts (both positive and negative) that may occur due to the development of the Kap Vley WEF and associated electrical infrastructure. The study found that the two key towns that will be affected by the proposed Kap Vley WEF are Kleinsee and Komaggas. The study shows that the two key towns' socio-economic structures differ significantly and potentially, the identified impacts may manifest differently or with a higher or lower impact significance within these two towns.

Socio-economic impacts and the respective significance of these impacts are highly dependent on the receiving social and economic environment or context in which the impacts occur. For example, a small community with high unemployment numbers and a declining economy would experience impacts differently compared to a community where everyone is fully employed and there is a growing economy with various economic drivers.

During the construction phase, it is anticipated that negative impacts may occur due to the influx of people and the presence of workers on site. Positive impacts during this phase may occur due to the employment opportunities that will be created and the project expenditure as part of the development of the WEF and associated electrical infrastructure. In terms of the economic opportunities, these are expected to be high (positive), should the recommended mitigation measures be implemented. The influx of people seeking employment opportunities will have a moderate negative impact, following mitigation. On a cumulative level, this impact is still considered to be a moderate negative impact.

On a cumulative level, the impacts of project expenditure and the diversification of the local economy are considered to be of a high positive significance and the negative impact on the Sense of Place is considered to be very low.

The overall conclusion of the Socio-Economic study is that based on the current socio-economic context of the area and the impacts identified, it is the opinion of the specialist that the project can go ahead, provided that the mitigation measures proposed are adopted and adhered to by the EA holder.

D.2.8.2 Impact Assessment

The potential impacts identified during the Socio-Economic Impact Assessment are:

Construction Phase

- Employment opportunities and skills development.

Operational-; Decommissioning- and Cumulative Impacts: The impacts are negligible.

The impact assessment for each phase can be seen in the tables below (Table D2.11):

Table D2.11: Impact assessment: Socio-Economic

Impact pathway	Nature of potential impact/risk	Status ⁴⁴	Extent ⁴⁵	Duration ⁴⁶	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
SOCIO-ECONOMIC															
CONSTRUCTION PHASE															
Employment opportunities	Employment opportunities and skills development	Positive	Regional	Medium - term	Substantial	Likely	Low	Moderate	Moderate	No	Yes	Implement a 'locals first' policy with regard to labour needs. Where possible, subcontract to local construction companies. Consultation with local authorities is essential so as to manage job creation expectations and ensure that all eligible workers in the primary study area are informed of the opportunities.	High (positive)	2	Medium

⁴⁴ Status: Positive (+) ; Negative (-)

⁴⁵ Site; Local (<10 km); Regional (<100); National; International

⁴⁶ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Cumulative impacts are negligible

D.2.9 Noise

D.2.9.1 Findings of the Noise Impact Assessment

The Noise Impact Assessment was undertaken by Morne de Jager (2018) and is included as **Appendix E9** to this report.

The **overall conclusion** of the Noise Impact Assessment is that considering the low significance of the noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed Kap Vley WEF and associated infrastructure, there is no reason that the proposed Kap Vley WEF should not be authorised.

D.2.9.2 Impact Assessment:

- A potential noise impact of a very low significance during the construction of the powerline (preferred corridor 1). There is no risk of a noise impact for the other two power line corridors; and
- A potential noise impact of a low significance (before and after mitigation) for the decommissioning of the powerline associated with the proposed Kap Vley WEF.

The following potential noise impacts have been identified:

Construction Phase

- Increase in ambient sound levels as a result of construction activities during the day.

Decommissioning Phase

- Increase in ambient sound levels as a result of decommissioning activities during the day.

The proposed project will result in increased noise levels in the area, but the noise levels will be low and is unlikely to impact on the quality of living for the surrounding receptors.

Table D2.12. Impact Assessment: Noise

Impact pathway	Nature of potential impact/risk	Status ⁴⁷	Extent ⁴⁸	Duration ⁴⁹	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
NOISE															
CONSTRUCTION PHASE-Direct impacts															
Noise pollution stemming from construction activities	Various construction activities taking place simultaneously during the day may increase ambient sound levels due to air-borne noises	Negative	Local	Short-term	Moderate	Improbable	High	Moderate	Very Low	No	Yes, but not required	Ensure equivalent A-weighted daytime noise levels below 52 dBA at potentially sensitive receptors. Ensure that maximum noise levels at potentially sensitive receptors be less than 65 dBA; Prevent the generation of disturbing or nuisance noises; Ensure acceptable noise levels at surrounding stakeholders and potentially	Very low	5	High

⁴⁷ Status: Positive (+) ; Negative (-)

⁴⁸ Site; Local (<10 km); Regional (<100); National; International

⁴⁹ Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

Impact pathway	Nature of potential impact/risk	Status ⁴⁷	Extent ⁴⁸	Duration ⁴⁹	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Potential mitigation measures	Significance of residual risk/ impact (after mitigation)	Ranking of impact/risk	Confidence level
												sensitive receptors; Ensuring compliance with the National Noise Control Regulations.			
DECOMMISSIONING PHASE-Direct impacts															
Noise pollution stemming from decommissioning of powerline	Various decommissioning activities taking place simultaneously during the day may increase ambient sound levels due to air-borne noises	Negative	Local	Short-term	Moderate	Improbable	High	N/A	Very Low	No	Yes, but required	Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 7 dBA; Ensure that total noise levels are less than 42 dBA at all potential noise-sensitive receptors; Prevent the generation of nuisance noises; Ensure acceptable noise levels at surrounding stakeholders and potentially sensitive receptors.	Very Low	5	High

D.2.10 Transportation

The Transportation Impact Assessment was undertaken by Mr. Christo Bredenhann of WSP Group Africa (Pty) Ltd (WSP). The study is included in **Appendix E10** to this report.

The routes between the origin of the material and labour and the powerline construction area is expected to be from the N7 via the R355, the Komaggas road, the WEF's internal road network and other local farm roads. The construction period will be approximately 12 – 18 months.

D.2.10.1 Impact Assessment

The potential transportation or traffic related issues identified for the proposed powerline are listed below.

Construction phase

- The construction phase of the powerline will generate the only notable vehicle volumes that require assessment. Construction traffic will include vehicles for deliveries (pylon components, foundation material, power cables, etc.), construction staff and all other associated personnel. Abnormal vehicle trips are unlikely.
- Therefore the construction phase traffic and associated impact is regarded as low.

Operational phase

- Negligible traffic will be generated to maintain the powerline, therefore there will be no traffic impact.

Decommissioning phase

- Following the initial 20-year operational period of the facilities, its continued economic viability may be investigated. If it is still deemed viable its life span may be extended; if not, it will be decommissioned. If it is completely decommissioned, the power line infrastructure may also be disassembled, reused and recycled or disposed of.
- It is not possible to determine the volume of traffic that will be generated during the decommissioning phase. It can however be expected that the volumes will be lower than during the construction phase, and the resultant traffic impact on the local road network will be negligible.
- There are no notable traffic related impacts associated with the proposed power line corridor, and therefore no impacts assessed on EMP recommendations made as part of the BA process for the power line corridor.

Note: The specialist confirmed that there are no notable traffic related impacts associated with the proposed power line corridor, and therefore no impacts were assessed or recommendations made to be included in the EMP for the power line corridor.

The overall conclusion of the Transportation Impact Assessment is that the proposed development should be authorised from a traffic and transportation impact point of view.

D.3 ENVIRONMENTAL IMPACT STATEMENT

D.3.1 Overall Impact Assessment including Alternatives 1, 2 and 3 of the Proposed Transmission Line Routing and Connection to the proposed Third Party Substation

This section provides a summary of the BA and conclusions drawn from the impacts identified as a result of the proposed project. It is important to note that only the findings of the main specialist studies are summarised in this section.

▪ **Terrestrial Ecology Impact Assessment:**

A Terrestrial Ecology Impact Assessment (Appendix E.1 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on the terrestrial ecology within the surrounding regions.

Table D3.1 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Terrestrial Ecology Impact Assessment.

Table D3.1. Summary of the Overall Impact Significance (Post Mitigation) for the Terrestrial Ecological Impact Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Construction Phase: Direct Impacts	Low
Operational Phase: Direct Impacts	Low-Moderate
Decommissioning Phase: Direct Impacts	Low
Cumulative Impacts	Low

Overall, the above impacts are predicted to be of a **low significance** with the implementation of mitigation measures. No impacts were assessed as being of high significance after the implementation of mitigation measures.

- **Alternative 1 is considered the preferred alternative as it traverses the least extent of sensitive habitat.**
- Alternative 2 is not the preferred alternative as it traverses a short extent of No-Go area. As such this considered an acceptable but not preferred option.
- Alternative 3 is not a considered a viable alternative as it traverses a large extent of habitat that is sensitive to disturbance and also cuts through the *Acacia erioloba* forest on the plains below the site.

▪ **Bird Impact Assessment:**

A Bird Impact Assessment (Appendix E.2 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on birds.

Table D3.2 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Bird Impact Assessment.

Table D3.2. Summary of the Overall Impact Significance (Post Mitigation) for the Bird Impact Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Construction Phase: Direct Impacts	Low
Operational Phase: Direct Impacts (Bird mortality due to collision with overhead powerlines)	High
Operational Phase: Direct Impacts	Low to Very Low
Decommissioning Phase: Direct Impacts	Low
Construction Phase: Cumulative Impacts	Low
Operational Phase: Cumulative Impacts	High

The mortality of birds due to collision with powerlines during the operational phase as well as cumulatively was assessed as being of high significance with the implementation of mitigation measures. This impact will be mitigated, where possible, by routing new powerlines along existing roads and/or power line servitudes. Bird Flight Diverters must be installed on new overhead power line spans identified during a pre-construction walk-through.

From a bird perspective, the preferred route for the power line is the shortest one, i.e. Alternative 2. However, the specialist notes that Alternative 1 and 3 are not fatally flawed from a bird perspective and can be installed.

▪ **Bat Impact Assessment:**

A Bat Impact Assessment (Appendix E.3 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on bats.

Table D3.3 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Bat Impact Assessment.

Table D3.3. Summary of the Overall Impact Significance (Post Mitigation) for the Bat Impact Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Construction Phase: Direct Impacts	Very Low
Operational Phase: Direct Impacts	Very Low to Low
Decommissioning Phase: Direct Impacts	Very Low
Construction Phase: Cumulative Impacts	Very Low
Operational Phase: Cumulative Impacts	Very Low to Low
Decommissioning Phase: Cumulative Impacts	Very Low

Overall, in terms of an average, the significance of all potential impacts identified after mitigation (including cumulative impacts) in the Bat Impact Assessment is assessed as **Very Low to Low**. No impacts were assessed as being of high significance with or without the implementation of mitigation.

The Bat Impact Assessment (Appendix E3) concludes that the powerline Alternative 1 is the preferred route as the other two routes could require the removal of more important bat habitat features.

▪ **Dry and Ephemeral Watercourses Impact Assessment:**

A Dry and Ephemeral Impact Assessment (Appendix E.4 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on the surrounding watercourses.

Table D3.4 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Dry and Ephemeral Impact Assessment.

Table D3.4. Summary of the Overall Impact Significance (Post Mitigation) for the Dry and Ephemeral Impact Assessment Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Construction Phase: Direct Impacts	Low
Operational Phase: Direct Impacts	Low
Decommissioning Phase: Direct Impacts	Very Low to Low
Cumulative Impacts	Low

The proposed construction, operational and decommissioning activities will potentially cause a low significance impact for either alternative if mitigation measures are successfully implemented. Furthermore, the overall significance of the cumulative impact on watercourses is also expected to be Low (with successful mitigation measures implemented). No impacts were assessed as being of high significance after the implementation of mitigation.

It should be noted that all three alternatives traverse the Buffels River towards Gromis Substation and there are no significant differences between the route alternatives in this area. Although the Buffels River is considered sensitive, the power line can be spanned across the river valley and direct impact on the riparian areas can certainly be avoided.

The Dry and Ephemeral Watercourses Impact Assessment (Appendix E4) concludes that Alternative 1 follows existing linear infrastructure and disturbance corridors, and is preferred from a dry and ephemeral watercourses perspective.

▪ **Visual Impact Assessment:**

A Visual Impact Assessment (Appendix E.5 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on the surrounding sensitive viewers and receptors.

Table D3.5 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Visual Impact Assessment.

Table D3.5. Summary of the Overall Impact Significance (Post Mitigation) for the Visual Impact Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Construction Phase: Direct Impacts	Moderate-Low
Operational Phase: Direct Impacts	Moderate-Low
	Low
Decommissioning Phase: Direct Impacts	Low
Cumulative Impacts	Moderate

The proposed construction and Operational activities will potentially cause a **Moderate to Low** significance visual impact for either alternative if mitigation measures are successfully implemented. The significance of the potential visual impact of the decommissioning of the proposed electrical infrastructure will be **Low**, if mitigation measures are successfully implemented. Furthermore, the overall significance of the cumulative visual impact on sensitive visual receptors is expected to be Moderate (with successful mitigation measures implemented). No impacts were assessed as being of high significance after the implementation of mitigation.

The study concludes that the potential visual impact of the transmission line would be similar for the three alternatives proposed and that any of the proposed three routings are therefore acceptable from a visual perspective.

▪ **Heritage Impact Assessment (Palaeontology, Archaeology and Palaeontology):**

A Heritage Impact Assessment (Appendix E.6 of this BA Report) was conducted as part of the BA process in order to identify and assess potential impacts associated with the construction, operation and decommissioning phases of the proposed project on the palaeontology, archaeology and the cultural landscape.

Table D3.6 below illustrates a summary of the overall impact significance, with the implementation of mitigation measures, identified in the Heritage Impact Assessment.

Table D3.6. Summary of the Overall Impact Significance (Post Mitigation) for the Heritage Impact Assessment (Alternative 1, 2 and 3)

Phase and Type of Impact	Overall Significance After Mitigation
Heritage	
Construction Phase: Direct Impacts	Very Low to Low
Construction Phase: Indirect Impacts	Very Low
Operational Phase: Direct Impacts	Low
Decommissioning Phase: Direct Impacts	Very Low to Low
Decommissioning Phase: Indirect Impacts	Low
Cumulative Impacts	Very Low
Cumulative Impacts: Visual intrusion in cultural landscape	Low
Palaeontology	
Construction Phase: Direct Impacts	Very Low
Construction Phase: Indirect Impacts	Very Low
Decommissioning Phase: Direct Impacts	Very Low
Decommissioning Phase: Indirect Impacts	Very Low
Cumulative Impacts	Very Low

Overall, the above potential impacts on Heritage and Palaeontology are predicted to be of a Very **low to Low significance** with the implementation of mitigation measures. The Heritage Impact Assessment notes that although a number of significant heritage resources have been identified in the vicinity of the proposed electrical infrastructure development, the most important ones have been avoided by all proposed development corridors and will be conserved *in situ*.

The Heritage Impact Assessment (Appendix E6) concludes that overall, the potential impacts are considered to be generally manageable and, from a heritage point of view, the development may proceed with any of the three proposed alternatives. In general, however, the shortest alternative – Alternative 2 in this case – would be favoured simply because of the slightly reduced chances sustaining archaeological impacts. However, **Alternative 1 runs alongside an existing approved electrical servitude for part of its length and would therefore be better from a visual point of view due to the grouping of power lines. Alternative 1 is also favoured by the proponent from a technical point of view.**

SECTION E: RECOMMENDATION OF PRACTITIONER

This BA Report has investigated and assessed the significance of potential positive and negative direct, indirect and cumulative impacts associated with the proposed Transmission Line project in support of the proposed Kap Vley WEF. No negative impacts have been identified within this BA that, in the opinion of the EAP who have conducted this BA process, should be considered “fatal flaws” from an environmental perspective, and thereby necessitate substantial re-design or termination of the project.

Based on the findings of the specialist studies, the proposed project is considered to have an overall very low to moderate negative environmental impact and an overall moderate positive socio-economic impact (with the implementation of respective mitigation and enhancement measures). All of the specialists have recommended that the proposed project receive EA (provided that the recommended mitigation measures are implemented).

As noted above, Alternatives 1, 2 and 3 of the proposed transmission line were assessed in this BA Report. It is understood, however, that only one alternative of the proposed transmission line routing and connection to the substation would be approved and included in an EA (should an EA be granted), based on the findings of the specialist studies and recommendation from the EAP. To this end, **Alternative 1 is recommended** mainly because:

- It traverses the least extent of sensitive habitat;
- It follows existing property boundaries and existing servitudes; and
- It traverses previously disturbed areas.

The overall conclusion of the Terrestrial Ecology study is that Alternative 1 and Alternative 2 are considered acceptable routes for the Kap Vley Grid Connection and would generate low post-mitigation impacts on fauna and flora. Alternative 3 would generate significantly higher impacts than the other alternatives and is not considered a viable option. All the other specialists confirmed that there are no fatal flaws associated with any of the alternatives.

Considering that Alternative 2 and 3 of the proposed Transmission Line routing has already been assessed in this BA process by the EAP and specialists, it is understood and likely that a non-substantive EA Amendment Application would be required for submission to the DEA, however this is subject to the environmental legislation promulgated at the time of this proposed amendment, the number of years that has lapsed since the EA was issued (should such authorisation be granted), and provided that the Alternative 2 or 3 routing, as assessed in this BA Project, does not change in any way. If it does change, it is expected that a substantive amendment would be required, especially if the proposed change results in impacts of a higher significance as noted in this BA Report.

In terms of the preferred site, as noted above, the location of the proposed Transmission Line and associated electrical infrastructure is dependent on the location of the proposed Kap Vley WEF, Gromis or new proposed Eskom Substation, environmental sensitivities, landowner willingness and feasibility in terms of cost effectiveness. The sites currently assessed as part of this BA process are considered to be suitable based on the aforementioned factors. An environmental features and sensitivity map has been produced (and included in Appendix B and the EMPR included in Appendix G of this BA Report).

This BA considered the nature, scale and location of the proposed development as well as the wise use of land (i.e. is this the right time and place for the development of this proposed project).

When considering the timing of this project, the IRP2010 proposes to secure 17 800 MW of renewable energy capacity by 2030. In August 2011, the DOE launched the REIPPPP and invited potential IPPs to submit proposals for the first 3 725 MW of various renewable energy projects (including solar and wind). The proposed Kap Vley Transmission Line project is therefore required as part of the bidding process to confirm that the proposed Kap Vley WEF is enabled and equipped with the necessary infrastructure to connect to the national grid. Therefore, overall the proposed Kap Vley Transmission Line project will fundamentally support and enable the functioning of the proposed Kap Vley WEF and it will ensure that it is allowed to contribute to the abovementioned renewable energy targets proposed by the DOE.

The development of wind energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability. On a municipal planning level, the proposed project does not go against any of the objectives set within the IDP. The proposed project will be in line with and supportive of the objectives of the IDP by assisting in local job creation during the construction phase of the project (and ultimately enable job creation as a result of the proposed Kap Vley WEF), if approved by the DEA. It should however be noted that employment during the construction phase will be temporary.

Taking into consideration the findings of the BA process, it is the opinion of the EAP, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Kleinsee/Komaggas region. The proposed project will play a key role in enabling and facilitating the construction of the proposed Kap Vley WEF project, which will add electricity to the national grid. Provided that the specified mitigation measures are applied effectively, it is recommended that the proposed powerline routing (Alternative 1) and associated electrical infrastructure receive EA in terms of the EIA Regulations promulgated under the NEMA.

It is understood that the information contained in this BA Report and appendices is sufficient to make a decision in respect of the activity applied for.

Section 24 of the Constitutional Act states 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 prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.” Based on this, this BA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures, and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site and through appropriate monitoring and management plans (refer to the EMPr in Appendix G of this BA Report).

In order to ensure the effective implementation of the mitigation and management actions, an EMPr has been compiled and is included in Appendix G of this BA Report. The mitigation measures necessary to ensure that the project is planned and carried out in an environmentally responsible manner are listed in this EMPr. The EMPr includes the mitigation measures noted in this report and the specialist studies. The EMPr is a dynamic document that should be updated as required and provides clear and implementable measures for the proposed project. Listed below are the main recommendations that should be considered (in addition to those in the EMPr and BA Report) for inclusion in the EA (should such authorisation be granted by the DEA):

- The final site extent of the proposed on-site substation and laydown area should be surveyed and physically demarcated, including all access roads to assist with further field reconnaissance.

- Careful planning of the location of the proposed on-site substation must be undertaken. The applicable 32 m zone of regulation around the freshwater resources in terms of NEMA must be adhered to in order to assist in minimising impacts on the freshwater resources in close proximity to the proposed on-site substation.
- Should project components or infrastructure be located within 500m from a watercourse a WULA must be submitted to DWS in accordance with NWA. The relevant authorisations required must be obtained in terms of Section 21 (c) and (i) of the NWA, and in terms of Regulation 509 of 2016 as it pertains to the NWA.
- Prior to the commencement of the construction phase, it is recommended that a suitable specialist is appointed to undertake a field reconnaissance (i.e. search and rescue) of the proposed project footprint to identify any floral or faunal components of value or significance that could potentially be impacted by the proposed project and thus need to be relocated or rescued. If any of the species are identified as being protected, then it is essential that the relevant permits required to remove/disturb the species are obtained from the relevant Authorities (i.e. the relocation of any floral or faunal components within the study area should be subject to consideration in terms of prevailing legislation prior to such relocation). Once the permits are obtained, a search and rescue programme must be implemented to allow for the successful transplantation or relocation of these species. It is anticipated that most species should be relocated to points distal from the construction site, but within the same property. In addition, the Provincial Department of Environment and Nature Conservation (DENC) and the Provincial DAFF should be contacted to discuss if any protected species are found during the search and rescue.
- A management protocol should be established relating to fauna and the implementation of measures to control the impact of faunal activities on the proposed infrastructure, as well as the impact of the construction and operational phase of the proposed project on the natural environment.
- The footprint required for the proposed project activities must be kept at a minimum. The proposed project footprint must be demarcated to reduce unnecessary disturbance beyond the proposed project area.
- The entire width of the Transmission Line servitude should not be cleared of vegetation. Vegetation removal should be kept to a minimum and cleared below the Transmission Line and from either side of the centre line based on the requirements of Eskom and standard operating procedures.
- Towards Gromis Substation, all three alternatives traverse the Buffels River and there are no significant differences between the route alternatives in this area. Although the Buffels River is considered sensitive, the power line can be spanned across the river valley and direct impact on the riparian areas can certainly be avoided.
- Clearing of vegetation at all impact sites must be kept to an absolute minimum, and strict alien vegetation controls must be implemented throughout all phases of the project. The re-growth of indigenous vegetation must be encouraged following construction.
- Strict erosion control and soil management measures must be implemented during the construction and operational phases, particularly in areas where vegetation has been removed.
- Proper stockpiling must be implemented during all phases of the proposed project in order to prevent erosion and concomitant impacts on the surrounding drainage lines.
- All construction, operational and decommissioning personnel must be made aware of the sensitivity and importance of the surrounding environment. The construction, operational and decommissioning personnel should be made aware and educated of the presence of fauna and bird species and their reliance on sensitive features, in order to avoid disrupting activities and collisions.
- All areas of increased ecological sensitivity should be marked as no-go areas, with recommended buffer areas, and be off limits to all unauthorised construction and maintenance vehicles and personnel.

- Environmental Awareness Training should be carried out at least once-off during the construction and decommissioning phases to ensure that staff is aware of environmental concerns and proper house-keeping recommendations.
- Waste management must be undertaken rigorously during all phases of the proposed project and any non-compliance must be recorded by the ECO. The designated waste stockpiling areas must be inspected frequently to ensure that the integrity is intact and the condition is not compromised. Waste disposal slips and waybills must be kept for all waste disposed at a registered waste disposal facility. As a general principle, waste manifests must be obtained to prove legal disposal of waste. A detailed record must be kept to track the amount of hazardous and general waste being temporarily stockpiled on site. Should the on-site stockpiling of general waste and hazardous waste respectively exceed 100 m³ and 80 m³, and a period exceeding 90 days, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to.
- Archaeological and palaeontological mitigation measures stipulated within this BA Report must be implemented during the construction phase. The contact details for SAHRA (for the Northern Cape) should be included in relevant documents/specifications provided to the Contractor, to ensure that these authorities are contacted timeously in the event of archaeological material and/or fossils being discovered during construction.
- Any areas not yet surveyed should be examined by both an archaeologist and a palaeontologist (as highlighted in the Heritage Impact Assessment (Appendix E6 of this BA Report)) in order to identify any areas or sites that should be protected or mitigated prior to commencement of construction (this includes parts of the assessed alignments or any alterations made after completion of this report).
- The ECO should be aware of the potential for fossils to be uncovered during excavations. As many excavations as possible should be monitored by the ECO during construction and if any fossils are uncovered they should be protected in situ and immediately reported to a palaeontologist in order to plan a way forward.
- If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the relevant provincial heritage management authority as soon as possible (i.e. SAHRA for the Northern Cape). This may require inspection by an archaeologist or palaeontologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.
- Implement an alien vegetation control program and ensure establishment of indigenous species within areas where alien vegetation is identified.
- Rehabilitation of cleared and disturbed areas must be undertaken. Rehabilitation measures should be instituted around the proposed on-site substation and laydown area that address exotic weed invasion, compaction of soils and maintenance of ecological function.
- Electric fencing, if associated with the proposed project, should be constructed so as to ensure that the lowest wire remains neutral. Electrified fences should be bound externally by a wire mesh fence. Fences should be inspected daily to ensure that no animals are trapped against such fences and any mortalities associated with fences should be recorded.
- Rehabilitation of points of disturbance along the proposed powerline should be subject to rehabilitation measures and vegetation control procedures.
- The relevant authorisations required must be obtained in terms of Section 21 (c) and (i) of the NWA, and in terms of Regulation 509 of 2016 as it pertains to the NWA.
- Careful planning of the location of pylons must be undertaken, taking into consideration the locality of riparian habitats (i.e. the Buffels river and the Komaggas river) and as much as possible, avoid placement of monopoles within riparian habitat, and powerlines are preferably to span the relevant resource. If at all possible, all monopoles should be developed above the relevant zone of regulation in terms of Regulation GN 509 of the NWA.

- Where it is impossible to avoid placing infrastructure within riparian habitat, flow connectivity must be retained by preventing fragmentation of the riparian habitat.
- An Avifaunal Specialist must be appointed to undertake a pre-construction walk-through of the final alignment of the proposed Transmission Line in order to identify any Red Data nests, sensitive areas and sections that require mitigation. The results of the pre-construction walk-through may inform the final construction schedule in close proximity to a specific sensitive area, including abbreviating the construction time, scheduling activities around avian breeding and/or movement schedules, and lowering levels of associated noise.
- An Avifaunal Specialist should be appointed to certify the proposed powerline design as bird-friendly before construction commences.
- Ensure the fitting of Bird Flight Diverters on the pre-identified sections and quarterly line inspections by the Avifaunal Specialist to record collision-related mortality.
- A maintenance plan for buildings and structures should be followed to ensure that structures remain as non-reflective as possible. Maintenance of access and service roads should not cause further disturbance and damage to the surrounding landscape.

NAME OF EAP: Minnelise Levendal



April 2018

SIGNATURE OF EAP

DATE



Basic Assessment for the Proposed Construction
and Operation of Electrical Grid Infrastructure to
support the juwi Kap Vley Wind Energy Facility,
near Kleinzee, Northern Cape Province

DRAFT BASIC ASSESSMENT REPORT

A photograph of a desert landscape. A dirt road with tire tracks leads from the foreground into the distance. The road is flanked by low, scrubby vegetation. The horizon is flat under a clear blue sky. The image is framed by large, curved, abstract shapes in shades of blue and magenta.

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APPENDIX A: Details of EAP, Expertise and Declaration

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Curriculum Vitae: Paul Lochner – Technical Advisor and Quality Assurance (EAPSA) Certified

Name of firm	CSIR
Name of staff	Paul Lochner
Profession	Environmental Assessment and Management
Position in firm	Manager: CSIR Environmental Management Services
Years' experience	24 years
Nationality	South African

Biographical Sketch

Paul Lochner commenced work at CSIR in 1992, after completing a degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at CSIR focused on sediment dynamics and soft engineering applications in the coastal zone, in particular, beach and dune management. He conducted several shoreline erosion analyses and prepared coastal zone management plans for beaches. He also prepared wetland management plans.

As the market for environmental assessment work grew, he led Environmental Impact Assessments (EIAs), in particular for coastal resort developments and large-scale industrial developments located on the coast; and Environmental Management Plans (EMPs), in particular for wetlands, estuaries and coastal developments. He has also been involved in researching and applying higher-level approaches to environmental assessment and management, such as Strategic Environmental Assessment (SEA). In 1998-1999, he coordinated the SEA research programme within the CSIR, which led to him being a lead author of the Guideline Document for SEA in South Africa, published by CSIR and national Department of Environmental Affairs (DEA) in February 2000.

In 1999 and 2000, he was the project manager for the legal, institutional, policy, financial and socio-economic component of the Cape Action Plan for the Environment ("CAPE"), a large-scale multi-disciplinary study to ensure the sustainable conservation of the Cape Floral Kingdom. This was funded by the Global Environmental Fund (GEF) and prepared for WWF-South Africa. The study required extensive stakeholder interaction, in particular with government institutions, leading to the development of a Strategy and Action Plan for regional conservation.

In July 2003, he was certified as an Environmental Assessment Practitioner by the Interim Certification Board for Environmental Assessment Practitioners of South Africa.

He has authored several guidelines for government. In 2004, he was lead author of

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the *Overview of IEM* document in the updated Integrated Environmental Management (IEM) Information Series published by national Department of Environmental Affairs and Tourism (DEAT). In 2005, he was part of the CSIR team that prepared the series entitled *Guidelines for involving specialists in EIA processes* for the Western Cape Department of Environmental Affairs and Development Planning (DEADP); and he authored the *Guideline for Environmental Management Plans* published by Western Cape government in 2005. In 2006-2007, he worked closely with the (then) Dept of Minerals and Energy (DME) of South Africa to prepare a Guideline for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa.

Over the past 20 years has been closely involved with several environmental studies for industrial and port-related projects in Coega Industrial Development Zone (IDZ), near Port Elizabeth. This included the SEA for the establishment of the Coega IDZ in 1996/7, an EIA and EMP for a proposed aluminium smelter in 2002/3, and assistance with environmental permit applications for air, water and waste. At the Coega IDZ and port, he has also conducted environmental assessments for port development, LNG storage and a combined cycle gas turbine power plant, manganese export, rail development, marine pipelines, and wind energy projects.

Since 2009, he has undertaken numerous EIAs for the renewable energy sector, in particular for wind and solar photovoltaic energy projects. In these EIAs, he has been project leader and integrated the specialist findings from a range of specialist disciplines.

He is currently project leader on two Strategic Environmental Assessments (SEAs) that are being undertaken for national DEA. These SEAs are to support the implementation of the Strategic Integrated Projects (SIPs) that are being promoted by the Presidential Infrastructure Coordinating Committee (PICC). The SEA for Wind and Solar Photovoltaic Energy for South Africa is being conducted over 2013-2014, and the SEA for electricity grid infrastructure commenced January 2014.

Since 2009, Paul has been the manager of the Environmental Management Services (EMS) group within CSIR. This group currently consists of approximately 20 environmental assessment practitioners and a group assistant, with offices in Stellenbosch and Durban. EMS focuses on conducting complex environmental studies in challenging environments, such as remote and data poor regions in Africa (e.g. Cameroon, Gabon, Angola, Namibia and Ethiopia). We also specialise in environmental studies for emerging and innovative technologies, drawing on research and applied scientific expertise within CSIR. Our role is to assist in ensuring the sustainability of projects in terms of environmental and social criteria, by providing a range of environmental services that extend across the project lifecycle, from the pre-feasibility stage through to feasibility, commissioning, operations and closure. We provide this service to government, international agencies, private sector and non-government organisations.

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EMPLOYMENT TRACK RECORD

The following table presents a sample of the projects that Paul Lochner has been involved in to this date:

Completion Date	Project description	Role	Client
In progress	SEA for Aquaculture Development in South Africa (marine and freshwater)	Project leader	DEA and DAFF
In progress	SEA for the Square Kilometre Array radio-telescope in the Karoo, South Africa	Project leader	DEA and DST
2015-2017	SEA for Shale Gas Development in South Africa	Project co-leader	Dept of Environmental Affairs (DEA), DMR, DOE, DST, DWS
2015-2016	SEA for the development of Electrical Grid Infrastructure for South Africa	Project leader	DEA
2016-2017	EIA for the 75 MW x 12 solar photovoltaic energy projects near Dealesville, Free State	Project Leader	Mainstream Renewable Power SA
2014-2015	SEA of planning for the far south Cape Peninsula	Project Leader	City of Cape Town
2013-2015	EIA for the Ishwati Emoyeni 140 MW wind energy project and supporting electrical infrastructure near Murraysburg, Western Cape	Project Leader	Windlab
2013-2015	EIA for the Saldanha marine outfall pipeline	Project Leader	Frontier Saldanha Utilities
2012-2015	SEA for identification of renewable energy zones for wind and solar PV projects in South Africa	Project leader	DEA
2012-2013	Environmental Screening Study for a desalination plant for the City of Cape Town	Project leader	City of Cape Town & WorleyParsons
2012-2013	EIA for LNG Import to the Mossel Bay Gas-to-Liquid refinery (stopped end of Scoping)	Project leader	PetroSA
2012-2013	EIA for the desalination plant for the Saldanha area	Project leader	West Coast District Municipality & WorleyParsons
2012-2013	EIA for the manganese export terminal at the Port of Ngqura and Coega IDZ	Project leader	Transnet
2011 - 2012	EIA for the 100 MW solar photovoltaic project proposed by Mainstream Renewable Power at Blocuso, near Keimoes in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the 100 MW solar photovoltaic project proposed by Mainstream Renewable Power at Roode Kop Farm, near Douglas, in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the 75 MW solar photovoltaic project proposed by Solaire Direct at GlenThorne , near Bloemfontein in the Free State	Project leader	Solaire Direct
2011 – 2012	EIA for the 75 MW solar photovoltaic project proposed by SolaireDirect at	Project leader	Solaire Direct

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Completion Date	Project description	Role	Client
	Valleydora , near Springfontein in the Free State		
2010-2011	More than 10 Basic Assessments (BAs) for solar photovoltaic projects in the western cape, Northern Cape, Eastern Cape and Free State	Project leader	Various clients including Dutch, German, French and South African companies
2010/2011	EIA for the Langerfontein wind project near Darling, Western Cape.	Project leader	Mr Herman Oelsner, Khwe Khoa
2010/2011	EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands in the Eastern Cape	Project leader	WindCurrent SA (German-based company)
2010/2011	EIA for the proposed 143 MW Biotherm wind energy project near Swellendam , Western Cape, South Africa	Project leader	Biotherm South Africa (Pty) Ltd
2010/2011	EIA for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW) , Western Cape, South Africa	Project leader	InnoWind South Africa (Pty) Ltd
2009/2010	EIA for the proposed Electrawinds wind energy facility of 45-75 MW capacity in the Coega IDZ, Eastern Cape	Project leader	Electrawinds N.V. (Belgium)
2009/2010	EIA for proposed 180 MW Jeffreys Bay wind energy project , Eastern Cape	Project Leader and co-author	Mainstream Renewable Power South Africa
2009/2010	Basic Assessment for the national wind Atlas for South Africa	Project leader	SANERI and SA Wind Energy Programme, Dept of Energy
2009/2010	EIA for the proposed Gecko soda plant , Otjivalunda and Arandis, Namibia (cancelled)	Project leader	Gecko, Namibia
2009-2010	EIA for the proposed desalination plant at Swakopmund, Namibia	Project leader	NamWater, Namibia
2009	EMP for the Operational Phase of the Berg River Dam , Franschoek, South Africa	Project leader and report co-author	TCTA, South Africa
2009/2010 (on hold)	EIA for the proposed crude oil refinery at Coega, South Africa	Project leader and lead author	PetroSA, South Africa
2008	Environmental Risk Review for proposed LNG/CNG import to Mossel Bay, South Africa	Project leader and lead author	PetroSA, South Africa
2008	Review of the Business Plan for catchment management for the Berg Water Dam Project, Franschhoek, South Africa	Project reviewer and co-author	TCTA, South Africa
2007 – 2010	EIA for proposed Jacobsbaai Tortoise Reserve eco-development , Saldanha, Western Cape	Project Leader and co-author	Jacobsbaai Tortoise Reserve (Pty) Ltd
2007 – 2010	Independent reviewer for the EIA proposed Amanzi lifestyle development, Port Elizabeth	Independent reviewer appointed to advise EAP	Public Process Consultants and Pam Golding
2007 – 2008	EIA for proposed 18 MW Kouga wind energy project , Eastern Cape	Project Leader and co-author	Genesis Eco-Energy (Approved by DEDEA in

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Completion Date	Project description	Role	Client
			March 2009)
2007	Review of EIA for the proposed Hanglip Eco-Development , Plettenberg Bay, Western Cape	Co-author of review of EIA, undertaken on behalf of DEADP	Dept of Environmental Affairs & Development Planning, Western Cape
2006-2007	Scoping phase for the EIA for the proposed Coega LNG-to-Power Project at the Port of Ngqura, Coega IDZ	Project Leader and co-author	Eskom and iGas
2006-2007	Guideline for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa	Project leader and co-author	Dept of Minerals and Energy (DME), South Africa
2006	Environmental Impact Assessment (EIA) for the extension of the Port of Ngqura, Eastern Cape	Project Leader and co-author	Transnet
2006	Integrating Sustainability Into Strategy: Handbook (Version 1)	Project Leader and co-author	CSIR (STEP research report)
2005	Technology Review for the proposed aluminium smelter at Coega, South Africa	Project Leader and lead author	Alcan, Canada
2005	Environmental and Social Impact Assessment (ESIA) report for the proposed alumina refinery near Sosnogorsk, Komi Republic, Russia	Project manager and co-author	Komi Aluminium, Russia, IFC, EBRD
2005	Guideline for Environmental Management Plans (EMPs) for the Western Cape province, including conducting a training course for provincial government	Author	Dept of Environmental Affairs & Development Planning, Western Cape
2005	Guideline for the review of specialist studies undertaken as part of environmental assessments	Member of Steering Committee and project facilitator	Dept of Environmental Affairs & Development Planning, Western Cape
2004	Review of Strategic Management Plan for Table Mountain National Park (2001-2004)	Reviewer and co-author	South African National Parks
2004	Strategic Needs Assessment Process for mainstreaming sustainable development into business operations	Researcher and co-author	CSIR (internal research)
2004	Environmental Monitoring Committees booklet in the IEM Information Series for DEAT	Contributing author	Department of Environmental Affairs and Tourism (DEAT)
2004	Overview of Integrated Environmental Management (IEM) booklet in the IEM Information Series	Lead author and researcher	DEAT
2003	Environmental Screening Study for gas power station, South Africa	Project Manager and lead author	Eskom, iGas and Shell
2003	Environmental Management Programme (EMP) Framework for the proposed Coega Aluminium Smelter; and assistance with preparing permit and licence applications	Project Manager and lead author	Pechiney, France
2003	Environmental Management Plan for the Operational Phase of the wetlands and canals at Century City, Cape Town	Project leader and lead author	Century City Property Owners' Association

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Completion Date	Project description	Role	Client
2002	Environmental Impact Assessment for the proposed Pechiney aluminium smelter at Coega, South Africa	Project Manager and lead author	Pechiney, France
2002 - 2003	Research project: Ecological impact of large-scale groundwater abstraction on the Table Mountain Group aquifer	Project Manager	Water Research Commission
2002	Environmental Management Plan for the Eskom Wind Energy Demonstration Facility in the Western Cape	Co-author	Eskom
2001-2002	Environmental Impact Assessment for the Eskom Wind Energy Demonstration Facility in the Western Cape	Quality control & co-author	Eskom
2001	Environmental Due Diligence study of four strategic oil storage facilities in South Africa	Project manager and co-author	SFF Association
2000	Cape Action Plan for the Environment: a biodiversity Strategy and Action Plan for the Cape Floral Kingdom - legal, institutional, policy, financial and socio-economic component	Project manager and contributing writer	World Wide Fund for Nature (WWF): South Africa
1999	Environmental Management Plan for the establishment phase of the wetlands and canals at Century City, Cape Town	Project manager and lead author	Monex Development Company
1999	Environmental Management Programme for the Thesen Islands development, Knysna	Process design and Co-author	Chris Mulder Associates Inc; Thesen and Co.
1999	Management Plan for the coastal zone between the Eerste and Lourens River, False Bay, South Africa	Project manager and lead author	Heartland Properties and Somchem (a Division of Denel)
1998	Environmental Assessment of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique	Project manager and author.	SNC-Lavalin-EMS
1998	Strategic Environmental Assessment (SEA) for the Somchem industrial complex at Krantzkop, South Africa	Project manager and co-author	Somchem, a Division of Denel
1997	Strategic Environmental Assessment (SEA) for the proposed Industrial Development Zone and Harbour at Coega, Port Elizabeth, South Africa	SEA project manager and report writer	Coega IDZ Initiative Section 21 Company
1996	Environmental Impact Assessment of Development Scenarios for Thesen Island, Knysna, South Africa	Project manager and report writer	Thesen and Co.
1996	Environmental Impact Assessment of the Management Options for the Blouvlé wetlands, Cape Town	Project manager and report writer	Ilco Homes Ltd (now Monex Ltd)
1995	Environmental Impact Assessment for the Saldanha Steel Project, South Africa	Report writing and management of specialist studies	Saldanha Steel Project
1994	Environmental Impact Assessment for the upgrading of resort facilities on Frégate Island, Seychelles	Member of the project management team, co-author, process	Schneid Israelite and Partners

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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Completion Date	Project description	Role	Client
		facilitator	
1994	Environmental Impact Assessment for exploration drilling in offshore Area 2815, Namibia	Project manager and co-author	Chevron Overseas (Namibia) Limited
1994	Management Plan for the Rietvlei Wetland Reserve, Cape Town	Project manager and lead author	Southern African Nature Foundation (now WWF-SA)
1993	Beach management plan for Stilbaai beachfront and dunes, South Africa	Project manager and lead author	Stilbaai Municipality
1993	Beach and dune management plan for Sedgefield for the beach east of the mouth of the Swartvlei estuary	Project manager and lead author	Nel and De Kock Planners, George
1993	Coastal Stability analysis and beach management plan for the Table View coastline north of Blaauwberg Road, Cape Town.	Project manager and lead author	Milnerton Municipality

EMPLOYMENT RECORD

- **1992 to present** Involved in coastal engineering studies; and various forms of environmental assessment and management studies. Council for Scientific and Industrial Research – Environmental Management Services (EMS) - Stellenbosch

QUALIFICATIONS/EDUCATION

- M. Phil. Environmental Science (University of Cape Town)
- B.Sc. Civil Engineering (awarded with Honours) (University of Cape Town)

LANGUAGE CAPABILITY

LANGUAGES	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Moderate	Moderate	Moderate

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

CSIR
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Curriculum Vitae: Minnelise Levendal – Project Leader

Name of firm	CSIR
Name of staff	Minnelise Rouchelle-Ann Levendal
Profession	Environmental Assessment Practitioner/Project Manager
Position in firm	Senior Environmental Assessment Practitioner
Years' experience	17 years
Nationality	South African
Languages	Afrikaans and English
Licence	Code EB (22 years)

BIOSKETCH:

Minnelise has been working in the Environmental Management sector for 17 years. She completed her BSc degree in Botany at the University of the Western Cape in 1994 and her Masters (MSc) in Botany at the University of Stellenbosch in 1998. After completing her Honours degree she lectured Mycology at the Peninsula Technicon (now known as the Cape Peninsula University of Technology (CPUT) in 1995. She then lectured Botany to second year students at the University of the Western Cape (UWC) in 1996.

Following the completion of her Masters Degree she was selected as one of 20 students from third world countries to attend a course on desertification in 1999 sponsored by the Shalom programme at the Ramon Science Center, Sede Boqer, Mitrani Department of Desert Ecology, Bengurion University of the Negev, Israel. After successfully completing the one-month course, she worked at the said institution as a research assistant for two months. The research she conducted led to the publication of an article that was published in the Journal of Arid Environments in 2004-see list of publications.

Following her studies and research work at the Bengurion University, she was appointed as an Environmental Officer at the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) in November 1999. Her work included commenting on Environmental Impact Assessments (EIAs), Basic Assessments (BAs) and Environmental Management Plans (EMPs) to ensure that environmental issues are adequately addressed in development applications. At DEA&DP she also worked in the Biodiversity unit to promote the mainstreaming of biodiversity issues into environmental decision-making, policies and planning. From 2003 until 2004 she was the secretary for the Interim Western Cape Coastal Coordinating Committee (IWCCC). She was also a member of the IAIA (Western Cape) steering committee from 2001 to 2002. At DEA&DP she attended numerous courses on Environmental Management (including Environmental Law)-a full list of courses is available on request.

Minnelise is currently a Senior Environmental Assessment Practitioner (EAP) in the Environmental Management Services (EMS) Group at the Council for Scientific and Industrial Research (CSIR) in Stellenbosch. She joined the CSIR in 2004. Her current work entails managing EIAs and BAs to ensure that environmental criteria are

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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

adequately assessed in development applications, including monitoring and evaluation. She also prepares proposals and writes reports.

She is currently managing various EIAs for renewable energy projects in South Africa, including wind and solar. She was the project manager for ten BAs for wind monitoring masts in South Africa as part of the National Wind Atlas Project of the Department of Energy. Environmental Authorisation for these 10 BAs were granted by the national Department of Environmental Affairs (DEA) in 2010. She was the CSIR project manager for the 100 MW Ubuntu Wind Energy Facility near Jeffrey's Bay (Environmental Authorisation granted in June 2012), as well as the 50 MW Banna Ba Pifhu Wind Energy proposed by WKN Windcurrent near Humansdorp in the Eastern Cape (Environmental Facility Authorisation granted in July 2014). She also managed seven EIAs for seven solar Photovoltaic (PV) Facilities near Kenhardt for Mulilo Renewable Project Developments (2015-2016). She is currently managing two EIAs for two wind energy facilities near Victoria West in the Northern Cape for Mainstream Renewable Power Developments.

Minnelise is currently managing the Special Needs and Skills Development Programme of DEA (2014-2016) which provide *pro bono* environmental services to applicants with special needs. This involves mentoring interns and Junior Environmental Assessment Practitioners.

In addition to the EIAs and BAs undertaken by Minnelise, she was also the Project Manager of other diverse projects to promote environmental management including *inter alia*:

- Biodiversity Management Plan for the African Lion (*Panthera leo*) (2014);
- Development of a National Management Plan and Strategy for Invasive Alien species (2014);
- South Africa's Second National Communication under the United Nations Framework Convention on Climate change (2010); and
- The development of protocols for the monitoring and evaluation of benefits arising from the Working for Water Programme (2008).

In undertaking these projects, Minnelise has developed a keen grasp of national and international sustainability issues which affect people and the environment. She has a good knowledge of environmental legislation and environmental management in general.

EDUCATION

▪ M.Sc. (Botany)	Stellenbosch University	1998
▪ B.Sc. (Hons.) (Botany)	University of the Western Cape	1994
▪ B.Sc. (Education)	University of the Western Cape	1993

MEMBERSHIPS:

- International Association for Impact Assessment (IAIA), Western Cape (member of their steering committee from 2001-2002).
- Professional Natural Scientist (Pr.Sci.Nat)-registration imminent)

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

EMPLOYMENT RECORD:

Name of current employer	Position	From	To
CSIR (Environmental Management Services; Implementation Unit)	Senior Environmental Assessment Practitioner	2006	Present
CSIR (Natural Resources and the Environment)	Environmental Researcher	2004	2006
Western Cape Department of Environmental Affairs and Development Planning (DEA&DP)	Assistant Director	2003	2004
	Principal Environmental Officer	2002	2003
	Principal Environmental Officer	2002	2003
	Senior Environmental Officer	2001	2002
	Environmental Officer	1999	2000
University of the Western Cape	Junior Lecturer	1996	1996
Cape Peninsula University of Technology (CPUT)	Junior Lecturer	1995	1995

KEY COURSES

- Public Participation in Environmental Authorisation in South Africa: IAIA workshop presented by Tisha Greyling and Erika Du Plessis (2016).
- Environmental Law: Shepstone Wylie Attorneys; Presented by Janice Tooley (2015).
- Sharpening the Tool: New techniques and methods in Environmental Impact Assessment: Sustainable Environmental Solutions (Pty) Ltd (2015).
- Effective Skills for Challenging Meetings & Engagements: Conflict Dynamics (2015).
- Science Communication and Working with the Media: Proof Communications/Jive Media Africa (2014).
- Leadership, Innovation and Change Management: University of Stellenbosch (Business School) (2013).
- MS Project: CILLA (2011).
- Project Management I and II: CILLA (2005)
- Social Impact Assessment: IAIA workshop (2002)
- Environmental Law ("The New Environmental Law Course for Environmental Managers): University of Potchefstroom: Center for Environmental Management) (2002).
- Implementing Environmental Management Systems (SABS/ISO 14001:1996): University of Potchefstroom: Center for Environmental Management (2002).
- Conflict Management in Environmental Issues: University of Potchefstroom: Center for Environmental Management) (2001).

PROJECT EXPERIENCE RECORD:

The following table presents a list of the main projects undertaken at the CSIR to date as well as the role played in each project:

Environmental Impact Assessment (EIAs) and Basic Assessments (BAs)-including their respective Environmental Management Programmes (EMPRs):

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Completion Date	Project description	Role	Client
2016-present	EIA for the proposed Platberg Wind Energy Facility near Victoria West in the Northern Cape	Project Manager and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2016-present	EIA for the proposed Teekloof Wind Energy Facility near Victoria West in the Northern Cape	Project Manager and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2015-2016	EIA for the Gemsbok Solar Photovoltaic, PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 5 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 6 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 2 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2014-2016	Special Needs and Skills Development Programme	Project Manager	DEA
2010-2011 (EA Granted)	EIA for the proposed Ubuntu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	EIA for the proposed Banna Ba Pifhu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	BA for a powerline for a WEF near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010-2011 (EA Granted)	EIA for a proposed wind farm near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010 (EAs granted)	Basic Assessment for the erection of two wind monitoring masts near Swellendam and Bredasdorp in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010 (complete)	Basic Assessment for the erection of two wind monitoring masts near Jeffrey's Bay in the Eastern Cape	Project Manager	Windcurrent (Pty Ltd)
2009-2010 (EAs granted)	Basic Assessment Process for the proposed erection of 10 wind monitoring masts in SA as part of the national wind atlas project	Project Manager	Department of Energy through SANERI; GEF
2009 (EAs granted)	Basic Assessment Report for a proposed boundary wall at the Port of Port Elizabeth, Eastern Cape	Project Manager	Transnet Ltd
Other Environmental Assessments, Strategies, Biodiversity Management Plans, Frameworks and Reporting tools:			
2013-2014	Development of a National Management Plan and Strategy for Invasive Alien	Project Manager	DEA

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Completion Date	Project description	Role	Client
	species		
2012-2014	Development of a Biodiversity Management Plan for the African Lion (<i>Panthera leo</i>)	Project Manager	DEA
2010	South Africa's Second National Communication under the United Nations Framework Convention on Climate Change	Project Manager	SANBI
2006-2008	Monitoring and Evaluation of aspects of Biodiversity	Project Leader	Internal project awarded through the Young Researchers Fund
2006	Integrated veldfire management in South Africa. An assessment of current conditions and future approaches.	Co- author	Working on Fire
2004-2005	Biodiversity Strategy and Action Plan Wild Coast, Eastern Cape, SA	Co-author	Wilderness Foundation
2005	Western Cape State of the Environment Report: Biodiversity section. (Year One).	Co- author and Project Manager	Department of Environmental Affairs and Development Planning

AWARDS:

- 2008: Best presentation Award at Arid Zone Conference (Northern Cape)
- 2015: CSIR award for Human Capital Development: Special Needs and Skills Development Programme

CONFERENCE PRESENTATIONS & PAPERS

- **Levendal, M.** (2012). "Challenges in the Environmental Assessment of Renewable Energy Projects in South Africa" In IAIA (Portugal) Conference Proceedings.
- **Bowie, M.** (née Levendal) (1998). "Ecophysiological responses of four succulent Karoo species under different temperature and water regimes." In *Arid Zone Conference (Northern Cape) Conference Proceedings*.

PUBLICATIONS:

Bowie, M. (née Levendal) and Ward, D. (2004). Water status of the mistletoe *Plicosespalus acaciae* parasitic on isolated Negev Desert populations of *Acacia raddiana* differing in level of mortality. *Journal of Arid Environments* 56: 487-508.

Ward, S.J.E., Esler, K.J. and **Bowie, M.R.** (2001). Seasonal photosynthetic temperature responses and changes in ¹³C under varying temperature regimes in leaf-succulent and drought-deciduous shrubs from the Succulent Karoo, South Africa. *South African Journal of Botany* 67:235-243.

Bowie, M.R., Ward, S.J.E. and Esler, K.J. (2000). Seasonal gas exchange responses under three different temperature treatments in a leaf-succulent and a drought-deciduous shrub from the Succulent Karoo. *South African Journal of Botany* 66:118-123.

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

LANGUAGE CAPABILITY

<i>Language</i>	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
<i>English</i>	<i>Excellent</i>	<i>Excellent</i>	<i>Excellent</i>
<i>Afrikaans</i>	<i>Excellent</i>	<i>Excellent</i>	<i>Excellent</i>

REFERENCES

Mr Henri Fortuin

Director: Land Management: Department of Environmental Affairs & Development Planning; Western Cape (DEA&DP); (ex-colleague at CSIR)

Tel: 021 483 2787 / 083 226 9127

Email: henri.fortuin@westerncape.gov.za

Mr Patrick Morant

Independent (Private) Consultant

Tel: 021 888 2480

Cell: 076 266 033

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Minnelise Levendal

March 2018

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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Declaration of Independence of EAP

APPENDIX 9 9.1 DECLARATION OF THE EAP

I, Minne/ise Lerendal, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 18 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the competent authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Minne/ise Lerendal
Signature of the environmental assessment practitioner

CSIR
Name of company:

7 April 2018
Date

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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

APPENDIX 9

9.2 UNDERTAKING UNDER OATH/ AFFIRMATION

I, Minnelise Levendal, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Minnelise Levendal

Signature of the environmental assessment practitioner

CSIR

Name of company

07/ April 2018

Date

[Signature]

Signature of the commissioner of oaths

Date



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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

BASIC ASSESSMENT REPORT

APPENDIX B: Maps

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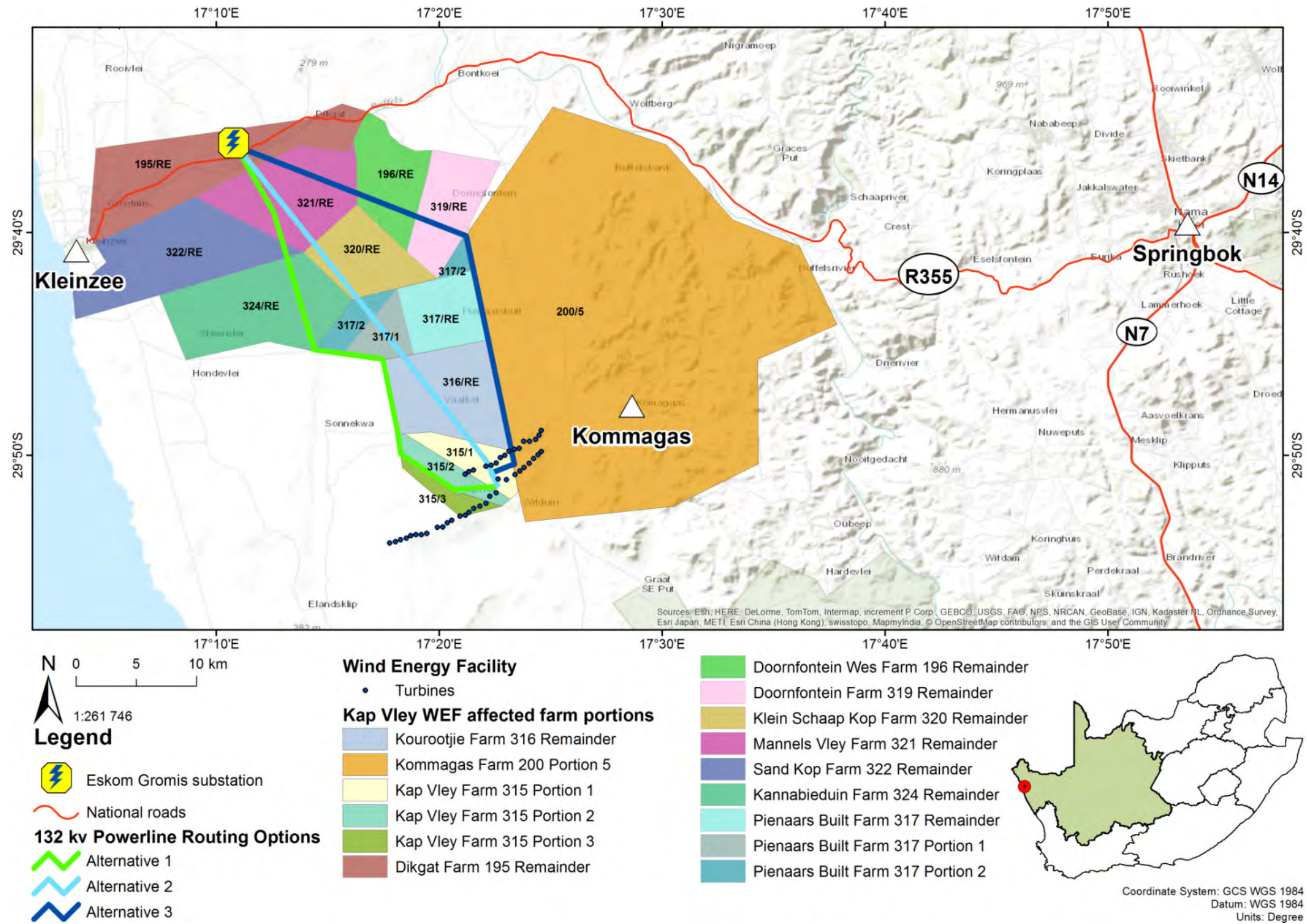


Figure B1: Locality map of the proposed 132 kV Transmission Line (showing the affected farm portions traversed by the three transmission line routing alternatives)

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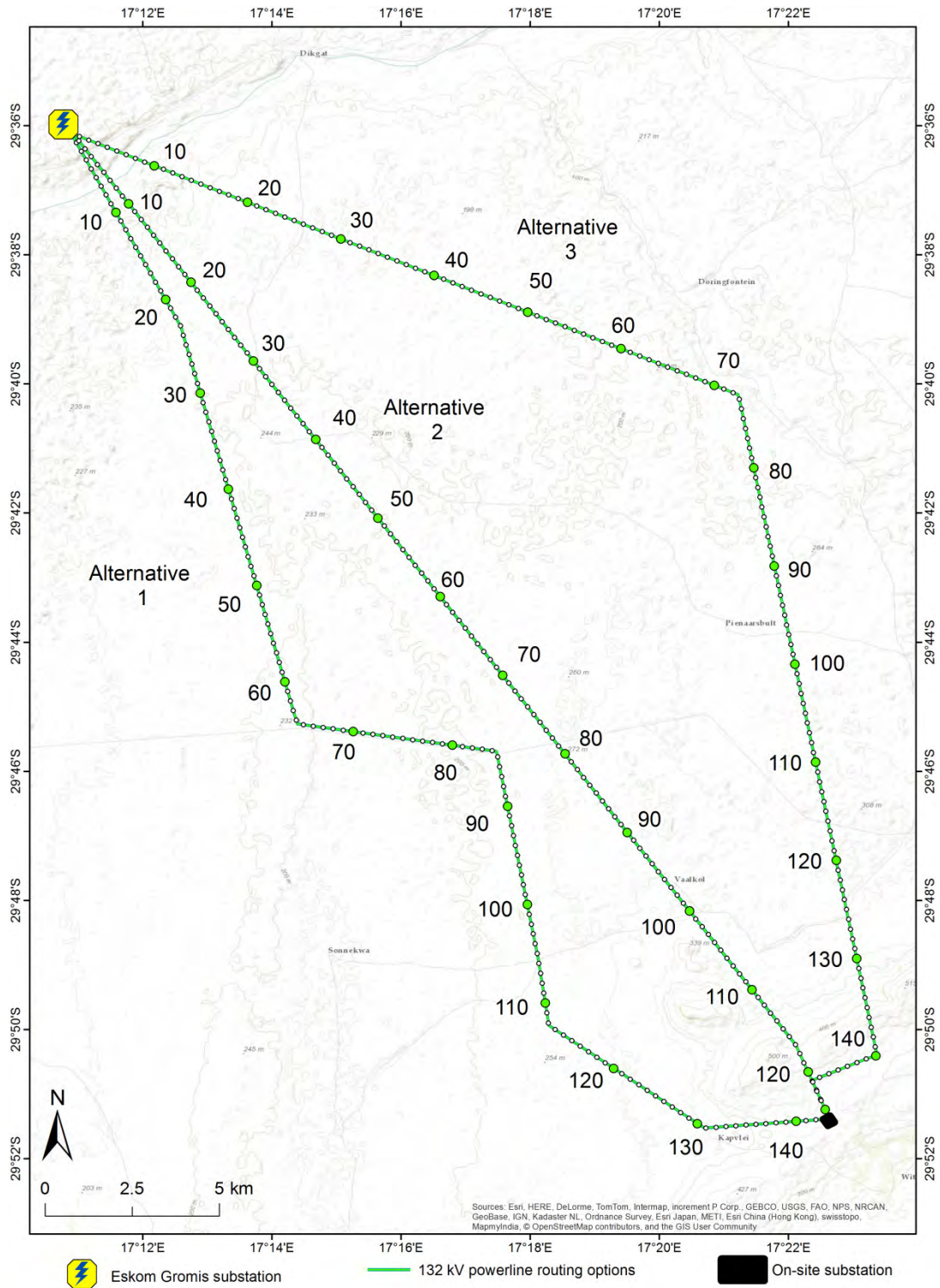


Figure B2: Coordinates along the Transmission Line Routing Alternatives

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Table B1: Coordinates along the Transmission Line Alternative 1

ALTERNATIVE 1		
Point	Longitude	Latitude
1	17° 10' 49.030" E	29° 35' 59.483" S
2	17° 10' 53.151" E	29° 36' 6.735" S
3	17° 10' 57.273" E	29° 36' 13.988" S
4	17° 11' 1.395" E	29° 36' 21.240" S
5	17° 11' 5.518" E	29° 36' 28.492" S
6	17° 11' 9.640" E	29° 36' 35.745" S
7	17° 11' 13.763" E	29° 36' 42.997" S
8	17° 11' 17.885" E	29° 36' 50.250" S
9	17° 11' 22.008" E	29° 36' 57.502" S
10	17° 11' 26.131" E	29° 37' 4.754" S
11	17° 11' 30.254" E	29° 37' 12.007" S
12	17° 11' 34.377" E	29° 37' 19.259" S
13	17° 11' 38.501" E	29° 37' 26.512" S
14	17° 11' 42.624" E	29° 37' 33.764" S
15	17° 11' 46.748" E	29° 37' 41.016" S
16	17° 11' 50.872" E	29° 37' 48.269" S
17	17° 11' 54.995" E	29° 37' 55.521" S
18	17° 11' 59.120" E	29° 38' 2.773" S
19	17° 12' 3.244" E	29° 38' 10.025" S
20	17° 12' 7.368" E	29° 38' 17.278" S
21	17° 12' 11.493" E	29° 38' 24.530" S
22	17° 12' 15.617" E	29° 38' 31.782" S
23	17° 12' 19.742" E	29° 38' 39.034" S
24	17° 12' 23.867" E	29° 38' 46.287" S
25	17° 12' 27.992" E	29° 38' 53.539" S
26	17° 12' 32.117" E	29° 39' 0.791" S
27	17° 12' 35.834" E	29° 39' 8.174" S
28	17° 12' 38.128" E	29° 39' 16.010" S
29	17° 12' 40.421" E	29° 39' 23.847" S
30	17° 12' 42.715" E	29° 39' 31.683" S
31	17° 12' 45.009" E	29° 39' 39.520" S
32	17° 12' 47.303" E	29° 39' 47.356" S
33	17° 12' 49.597" E	29° 39' 55.193" S
34	17° 12' 51.892" E	29° 40' 3.030" S
35	17° 12' 54.186" E	29° 40' 10.866" S
36	17° 12' 56.480" E	29° 40' 18.703" S
37	17° 12' 58.775" E	29° 40' 26.540" S
38	17° 13' 1.069" E	29° 40' 34.376" S
39	17° 13' 3.364" E	29° 40' 42.213" S
40	17° 13' 5.659" E	29° 40' 50.050" S
41	17° 13' 7.953" E	29° 40' 57.886" S
42	17° 13' 10.248" E	29° 41' 5.723" S
43	17° 13' 12.543" E	29° 41' 13.560" S
44	17° 13' 14.838" E	29° 41' 21.396" S
45	17° 13' 17.133" E	29° 41' 29.233" S
46	17° 13' 19.429" E	29° 41' 37.070" S
47	17° 13' 21.724" E	29° 41' 44.907" S
48	17° 13' 24.019" E	29° 41' 52.743" S
49	17° 13' 26.315" E	29° 42' 0.580" S

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ALTERNATIVE 1		
Point	Longitude	Latitude
50	17° 13' 28.610" E	29° 42' 8.417" S
51	17° 13' 30.906" E	29° 42' 16.254" S
52	17° 13' 33.202" E	29° 42' 24.091" S
53	17° 13' 35.498" E	29° 42' 31.928" S
54	17° 13' 37.793" E	29° 42' 39.764" S
55	17° 13' 40.089" E	29° 42' 47.601" S
56	17° 13' 42.386" E	29° 42' 55.438" S
57	17° 13' 44.682" E	29° 43' 3.275" S
58	17° 13' 46.978" E	29° 43' 11.112" S
59	17° 13' 49.274" E	29° 43' 18.949" S
60	17° 13' 51.571" E	29° 43' 26.786" S
61	17° 13' 53.867" E	29° 43' 34.623" S
62	17° 13' 56.164" E	29° 43' 42.460" S
63	17° 13' 58.460" E	29° 43' 50.297" S
64	17° 14' 0.757" E	29° 43' 58.134" S
65	17° 14' 3.054" E	29° 44' 5.971" S
66	17° 14' 5.351" E	29° 44' 13.808" S
67	17° 14' 7.648" E	29° 44' 21.645" S
68	17° 14' 9.945" E	29° 44' 29.482" S
69	17° 14' 12.242" E	29° 44' 37.319" S
70	17° 14' 14.539" E	29° 44' 45.156" S
71	17° 14' 16.837" E	29° 44' 52.993" S
72	17° 14' 19.134" E	29° 45' 0.830" S
73	17° 14' 21.432" E	29° 45' 8.667" S
74	17° 14' 24.214" E	29° 45' 16.112" S
75	17° 14' 33.449" E	29° 45' 17.336" S
76	17° 14' 42.678" E	29° 45' 18.600" S
77	17° 14' 51.907" E	29° 45' 19.863" S
78	17° 15' 1.136" E	29° 45' 21.126" S
79	17° 15' 10.366" E	29° 45' 22.389" S
80	17° 15' 19.595" E	29° 45' 23.652" S
81	17° 15' 28.824" E	29° 45' 24.915" S
82	17° 15' 38.054" E	29° 45' 26.177" S
83	17° 15' 47.283" E	29° 45' 27.440" S
84	17° 15' 56.513" E	29° 45' 28.702" S
85	17° 16' 5.742" E	29° 45' 29.964" S
86	17° 16' 14.972" E	29° 45' 31.226" S
87	17° 16' 24.202" E	29° 45' 32.488" S
88	17° 16' 33.431" E	29° 45' 33.750" S
89	17° 16' 42.661" E	29° 45' 35.011" S
90	17° 16' 51.891" E	29° 45' 36.272" S
91	17° 17' 1.121" E	29° 45' 37.534" S
92	17° 17' 10.351" E	29° 45' 38.795" S
93	17° 17' 19.581" E	29° 45' 40.056" S
94	17° 17' 28.753" E	29° 45' 41.575" S
95	17° 17' 30.354" E	29° 45' 49.541" S
96	17° 17' 31.955" E	29° 45' 57.507" S
97	17° 17' 33.556" E	29° 46' 5.473" S
98	17° 17' 35.158" E	29° 46' 13.439" S
99	17° 17' 36.759" E	29° 46' 21.405" S
100	17° 17' 38.360" E	29° 46' 29.371" S
101	17° 17' 39.962" E	29° 46' 37.337" S

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ALTERNATIVE 1		
Point	Longitude	Latitude
102	17° 17' 41.563" E	29° 46' 45.303" S
103	17° 17' 43.164" E	29° 46' 53.269" S
104	17° 17' 44.766" E	29° 47' 1.235" S
105	17° 17' 46.368" E	29° 47' 9.201" S
106	17° 17' 47.969" E	29° 47' 17.167" S
107	17° 17' 49.571" E	29° 47' 25.133" S
108	17° 17' 51.173" E	29° 47' 33.099" S
109	17° 17' 52.775" E	29° 47' 41.066" S
110	17° 17' 54.377" E	29° 47' 49.032" S
111	17° 17' 55.979" E	29° 47' 56.998" S
112	17° 17' 57.581" E	29° 48' 4.964" S
113	17° 17' 59.183" E	29° 48' 12.930" S
114	17° 18' 0.785" E	29° 48' 20.897" S
115	17° 18' 2.387" E	29° 48' 28.863" S
116	17° 18' 3.989" E	29° 48' 36.829" S
117	17° 18' 5.592" E	29° 48' 44.796" S
118	17° 18' 7.191" E	29° 48' 52.762" S
119	17° 18' 8.476" E	29° 49' 0.772" S
120	17° 18' 9.762" E	29° 49' 8.781" S
121	17° 18' 11.047" E	29° 49' 16.790" S
122	17° 18' 12.332" E	29° 49' 24.800" S
123	17° 18' 13.618" E	29° 49' 32.809" S
124	17° 18' 14.903" E	29° 49' 40.818" S
125	17° 18' 16.189" E	29° 49' 48.828" S
126	17° 18' 17.951" E	29° 49' 56.597" S
127	17° 18' 25.376" E	29° 50' 1.511" S
128	17° 18' 32.802" E	29° 50' 6.425" S
129	17° 18' 40.227" E	29° 50' 11.340" S
130	17° 18' 47.653" E	29° 50' 16.254" S
131	17° 18' 55.079" E	29° 50' 21.168" S
132	17° 19' 2.505" E	29° 50' 26.081" S
133	17° 19' 9.931" E	29° 50' 30.995" S
134	17° 19' 17.358" E	29° 50' 35.909" S
135	17° 19' 24.784" E	29° 50' 40.823" S
136	17° 19' 32.211" E	29° 50' 45.736" S
137	17° 19' 39.638" E	29° 50' 50.650" S
138	17° 19' 47.065" E	29° 50' 55.563" S
139	17° 19' 54.493" E	29° 51' 0.476" S
140	17° 20' 1.920" E	29° 51' 5.389" S
141	17° 20' 9.348" E	29° 51' 10.302" S
142	17° 20' 16.775" E	29° 51' 15.215" S
143	17° 20' 24.203" E	29° 51' 20.128" S
144	17° 20' 31.632" E	29° 51' 25.041" S
145	17° 20' 39.060" E	29° 51' 29.954" S
146	17° 20' 47.700" E	29° 51' 31.270" S
147	17° 20' 57.018" E	29° 51' 30.575" S
148	17° 21' 6.335" E	29° 51' 29.880" S
149	17° 21' 15.653" E	29° 51' 29.186" S
150	17° 21' 24.970" E	29° 51' 28.490" S
151	17° 21' 34.287" E	29° 51' 27.795" S
152	17° 21' 43.605" E	29° 51' 27.100" S
153	17° 21' 52.922" E	29° 51' 26.404" S

SECTION F: APPENDICES

ALTERNATIVE 1		
Point	Longitude	Latitude
154	17° 22' 2.239" E	29° 51' 25.709" S
155	17° 22' 11.557" E	29° 51' 25.013" S
156	17° 22' 20.874" E	29° 51' 24.317" S
157	17° 22' 30.191" E	29° 51' 23.621" S
158	17° 22' 37.12" E	29° 51' 25.20" S

Table B2: Coordinates along the Transmission Line Alternative 2

ALTERNATIVE 2		
Point	Longitude	Latitude
1	17° 10' 49.030" E	29° 35' 59.483" S
2	17° 10' 54.305" E	29° 36' 6.151" S
3	17° 10' 59.580" E	29° 36' 12.819" S
4	17° 11' 4.856" E	29° 36' 19.487" S
5	17° 11' 10.132" E	29° 36' 26.155" S
6	17° 11' 15.407" E	29° 36' 32.823" S
7	17° 11' 20.683" E	29° 36' 39.491" S
8	17° 11' 25.960" E	29° 36' 46.159" S
9	17° 11' 31.236" E	29° 36' 52.827" S
10	17° 11' 36.513" E	29° 36' 59.495" S
11	17° 11' 41.789" E	29° 37' 6.163" S
12	17° 11' 47.066" E	29° 37' 12.831" S
13	17° 11' 52.343" E	29° 37' 19.499" S
14	17° 11' 57.620" E	29° 37' 26.166" S
15	17° 12' 2.898" E	29° 37' 32.834" S
16	17° 12' 8.175" E	29° 37' 39.502" S
17	17° 12' 13.453" E	29° 37' 46.170" S
18	17° 12' 18.731" E	29° 37' 52.837" S
19	17° 12' 24.009" E	29° 37' 59.505" S
20	17° 12' 29.287" E	29° 38' 6.173" S
21	17° 12' 34.566" E	29° 38' 12.840" S
22	17° 12' 39.844" E	29° 38' 19.508" S
23	17° 12' 45.123" E	29° 38' 26.175" S
24	17° 12' 50.402" E	29° 38' 32.843" S
25	17° 12' 55.681" E	29° 38' 39.510" S
26	17° 13' 0.960" E	29° 38' 46.177" S
27	17° 13' 6.239" E	29° 38' 52.845" S
28	17° 13' 11.519" E	29° 38' 59.512" S
29	17° 13' 16.798" E	29° 39' 6.179" S
30	17° 13' 22.078" E	29° 39' 12.847" S
31	17° 13' 27.358" E	29° 39' 19.514" S
32	17° 13' 32.638" E	29° 39' 26.181" S
33	17° 13' 37.919" E	29° 39' 32.848" S
34	17° 13' 43.199" E	29° 39' 39.515" S
35	17° 13' 48.480" E	29° 39' 46.182" S
36	17° 13' 53.761" E	29° 39' 52.849" S
37	17° 13' 59.042" E	29° 39' 59.517" S
38	17° 14' 4.323" E	29° 40' 6.184" S
39	17° 14' 9.604" E	29° 40' 12.850" S
40	17° 14' 14.886" E	29° 40' 19.517" S
41	17° 14' 20.167" E	29° 40' 26.184" S
42	17° 14' 25.449" E	29° 40' 32.851" S

SECTION F: APPENDICES

ALTERNATIVE 2		
Point	Longitude	Latitude
43	17° 14' 30.731" E	29° 40' 39.518" S
44	17° 14' 36.013" E	29° 40' 46.185" S
45	17° 14' 41.296" E	29° 40' 52.852" S
46	17° 14' 46.578" E	29° 40' 59.518" S
47	17° 14' 51.861" E	29° 41' 6.185" S
48	17° 14' 57.144" E	29° 41' 12.852" S
49	17° 15' 2.427" E	29° 41' 19.518" S
50	17° 15' 7.710" E	29° 41' 26.185" S
51	17° 15' 12.993" E	29° 41' 32.851" S
52	17° 15' 18.277" E	29° 41' 39.518" S
53	17° 15' 23.560" E	29° 41' 46.184" S
54	17° 15' 28.844" E	29° 41' 52.851" S
55	17° 15' 34.128" E	29° 41' 59.517" S
56	17° 15' 39.412" E	29° 42' 6.184" S
57	17° 15' 44.697" E	29° 42' 12.850" S
58	17° 15' 49.981" E	29° 42' 19.516" S
59	17° 15' 55.266" E	29° 42' 26.183" S
60	17° 16' 0.551" E	29° 42' 32.849" S
61	17° 16' 5.836" E	29° 42' 39.515" S
62	17° 16' 11.121" E	29° 42' 46.181" S
63	17° 16' 16.406" E	29° 42' 52.848" S
64	17° 16' 21.692" E	29° 42' 59.514" S
65	17° 16' 26.977" E	29° 43' 6.180" S
66	17° 16' 32.263" E	29° 43' 12.846" S
67	17° 16' 37.549" E	29° 43' 19.512" S
68	17° 16' 42.835" E	29° 43' 26.178" S
69	17° 16' 48.121" E	29° 43' 32.844" S
70	17° 16' 53.408" E	29° 43' 39.510" S
71	17° 16' 58.695" E	29° 43' 46.176" S
72	17° 17' 3.981" E	29° 43' 52.841" S
73	17° 17' 9.268" E	29° 43' 59.507" S
74	17° 17' 14.555" E	29° 44' 6.173" S
75	17° 17' 19.843" E	29° 44' 12.839" S
76	17° 17' 25.130" E	29° 44' 19.505" S
77	17° 17' 30.418" E	29° 44' 26.170" S
78	17° 17' 35.706" E	29° 44' 32.836" S
79	17° 17' 40.994" E	29° 44' 39.502" S
80	17° 17' 46.282" E	29° 44' 46.167" S
81	17° 17' 51.570" E	29° 44' 52.833" S
82	17° 17' 56.858" E	29° 44' 59.498" S
83	17° 18' 2.147" E	29° 45' 6.164" S
84	17° 18' 7.436" E	29° 45' 12.829" S
85	17° 18' 12.725" E	29° 45' 19.495" S
86	17° 18' 18.014" E	29° 45' 26.160" S
87	17° 18' 23.303" E	29° 45' 32.826" S
88	17° 18' 28.593" E	29° 45' 39.491" S
89	17° 18' 33.882" E	29° 45' 46.156" S
90	17° 18' 39.172" E	29° 45' 52.821" S
91	17° 18' 44.462" E	29° 45' 59.487" S
92	17° 18' 49.752" E	29° 46' 6.152" S
93	17° 18' 55.042" E	29° 46' 12.817" S
94	17° 19' 0.333" E	29° 46' 19.482" S

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ALTERNATIVE 2		
Point	Longitude	Latitude
95	17° 19' 5.624" E	29° 46' 26.147" S
96	17° 19' 10.914" E	29° 46' 32.812" S
97	17° 19' 16.205" E	29° 46' 39.477" S
98	17° 19' 21.496" E	29° 46' 46.142" S
99	17° 19' 26.788" E	29° 46' 52.807" S
100	17° 19' 32.079" E	29° 46' 59.472" S
101	17° 19' 37.371" E	29° 47' 6.137" S
102	17° 19' 42.662" E	29° 47' 12.802" S
103	17° 19' 47.954" E	29° 47' 19.467" S
104	17° 19' 53.247" E	29° 47' 26.132" S
105	17° 19' 58.539" E	29° 47' 32.797" S
106	17° 20' 3.831" E	29° 47' 39.461" S
107	17° 20' 9.124" E	29° 47' 46.126" S
108	17° 20' 14.417" E	29° 47' 52.791" S
109	17° 20' 19.710" E	29° 47' 59.455" S
110	17° 20' 25.003" E	29° 48' 6.120" S
111	17° 20' 30.296" E	29° 48' 12.784" S
112	17° 20' 35.589" E	29° 48' 19.449" S
113	17° 20' 40.883" E	29° 48' 26.114" S
114	17° 20' 46.177" E	29° 48' 32.778" S
115	17° 20' 51.471" E	29° 48' 39.442" S
116	17° 20' 56.765" E	29° 48' 46.107" S
117	17° 21' 2.059" E	29° 48' 52.771" S
118	17° 21' 7.353" E	29° 48' 59.436" S
119	17° 21' 12.648" E	29° 49' 6.100" S
120	17° 21' 17.943" E	29° 49' 12.764" S
121	17° 21' 23.238" E	29° 49' 19.428" S
122	17° 21' 28.533" E	29° 49' 26.093" S
123	17° 21' 33.828" E	29° 49' 32.757" S
124	17° 21' 39.123" E	29° 49' 39.421" S
125	17° 21' 44.419" E	29° 49' 46.085" S
126	17° 21' 49.715" E	29° 49' 52.749" S
127	17° 21' 55.011" E	29° 49' 59.413" S
128	17° 22' 0.307" E	29° 50' 6.077" S
129	17° 22' 5.603" E	29° 50' 12.741" S
130	17° 22' 9.498" E	29° 50' 20.049" S
131	17° 22' 12.912" E	29° 50' 27.577" S
132	17° 22' 16.327" E	29° 50' 35.104" S
133	17° 22' 19.742" E	29° 50' 42.632" S
134	17° 22' 23.157" E	29° 50' 50.160" S
135	17° 22' 26.572" E	29° 50' 57.688" S
136	17° 22' 29.987" E	29° 51' 5.216" S
137	17° 22' 33.402" E	29° 51' 12.744" S
138	17° 22' 36.818" E	29° 51' 20.272" S
139	17° 22' 37.12" E	29° 51' 25.20" S

SECTION F: APPENDICES

Table B3: Coordinates along the Transmission Line Alternative 3

ALTERNATIVE 3		
Point	Longitude	Latitude
1	17° 10' 52.434" E	29° 36' 6.472" S
2	17° 11' 1.111" E	29° 36' 9.875" S
3	17° 11' 9.789" E	29° 36' 13.278" S
4	17° 11' 18.466" E	29° 36' 16.681" S
5	17° 11' 27.144" E	29° 36' 20.083" S
6	17° 11' 35.821" E	29° 36' 23.486" S
7	17° 11' 44.498" E	29° 36' 26.889" S
8	17° 11' 53.176" E	29° 36' 30.292" S
9	17° 12' 1.853" E	29° 36' 33.694" S
10	17° 12' 10.531" E	29° 36' 37.097" S
11	17° 12' 19.208" E	29° 36' 40.500" S
12	17° 12' 27.885" E	29° 36' 43.903" S
13	17° 12' 36.563" E	29° 36' 47.305" S
14	17° 12' 45.240" E	29° 36' 50.708" S
15	17° 12' 53.918" E	29° 36' 54.111" S
16	17° 13' 2.595" E	29° 36' 57.514" S
17	17° 13' 11.272" E	29° 37' 0.916" S
18	17° 13' 19.950" E	29° 37' 4.319" S
19	17° 13' 28.627" E	29° 37' 7.722" S
20	17° 13' 37.305" E	29° 37' 11.125" S
21	17° 13' 45.982" E	29° 37' 14.527" S
22	17° 13' 54.659" E	29° 37' 17.930" S
23	17° 14' 3.337" E	29° 37' 21.333" S
24	17° 14' 12.014" E	29° 37' 24.736" S
25	17° 14' 20.692" E	29° 37' 28.138" S
26	17° 14' 29.369" E	29° 37' 31.541" S
27	17° 14' 38.047" E	29° 37' 34.944" S
28	17° 14' 46.724" E	29° 37' 38.347" S
29	17° 14' 55.401" E	29° 37' 41.749" S
30	17° 15' 4.079" E	29° 37' 45.152" S
31	17° 15' 12.756" E	29° 37' 48.555" S
32	17° 15' 21.434" E	29° 37' 51.958" S
33	17° 15' 30.111" E	29° 37' 55.360" S
34	17° 15' 38.788" E	29° 37' 58.763" S
35	17° 15' 47.466" E	29° 38' 2.166" S
36	17° 15' 56.143" E	29° 38' 5.569" S
37	17° 16' 4.821" E	29° 38' 8.971" S
38	17° 16' 13.498" E	29° 38' 12.374" S
39	17° 16' 22.175" E	29° 38' 15.777" S
40	17° 16' 30.853" E	29° 38' 19.180" S
41	17° 16' 39.530" E	29° 38' 22.582" S
42	17° 16' 48.208" E	29° 38' 25.985" S
43	17° 16' 56.885" E	29° 38' 29.388" S
44	17° 17' 5.562" E	29° 38' 32.791" S
45	17° 17' 14.240" E	29° 38' 36.193" S
46	17° 17' 22.917" E	29° 38' 39.596" S
47	17° 17' 31.595" E	29° 38' 42.999" S
48	17° 17' 40.272" E	29° 38' 46.402" S
49	17° 17' 48.949" E	29° 38' 49.805" S
50	17° 17' 57.627" E	29° 38' 53.207" S

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ALTERNATIVE 3		
Point	Longitude	Latitude
51	17° 18' 6.304" E	29° 38' 56.610" S
52	17° 18' 14.982" E	29° 39' 0.013" S
53	17° 18' 23.659" E	29° 39' 3.416" S
54	17° 18' 32.337" E	29° 39' 6.818" S
55	17° 18' 41.014" E	29° 39' 10.221" S
56	17° 18' 49.691" E	29° 39' 13.624" S
57	17° 18' 58.369" E	29° 39' 17.027" S
58	17° 19' 7.046" E	29° 39' 20.429" S
59	17° 19' 15.724" E	29° 39' 23.832" S
60	17° 19' 24.401" E	29° 39' 27.235" S
61	17° 19' 33.078" E	29° 39' 30.638" S
62	17° 19' 41.756" E	29° 39' 34.040" S
63	17° 19' 50.433" E	29° 39' 37.443" S
64	17° 19' 59.111" E	29° 39' 40.846" S
65	17° 20' 7.788" E	29° 39' 44.249" S
66	17° 20' 16.465" E	29° 39' 47.651" S
67	17° 20' 25.143" E	29° 39' 51.054" S
68	17° 20' 33.820" E	29° 39' 54.457" S
69	17° 20' 42.498" E	29° 39' 57.860" S
70	17° 20' 51.175" E	29° 40' 1.262" S
71	17° 20' 59.852" E	29° 40' 4.665" S
72	17° 21' 8.530" E	29° 40' 8.068" S
73	17° 21' 14.191" E	29° 40' 14.102" S
74	17° 21' 16.223" E	29° 40' 23.197" S
75	17° 21' 18.138" E	29° 40' 32.319" S
76	17° 21' 20.053" E	29° 40' 41.441" S
77	17° 21' 21.968" E	29° 40' 50.563" S
78	17° 21' 23.883" E	29° 40' 59.685" S
79	17° 21' 25.798" E	29° 41' 8.807" S
80	17° 21' 27.713" E	29° 41' 17.929" S
81	17° 21' 29.628" E	29° 41' 27.051" S
82	17° 21' 31.543" E	29° 41' 36.173" S
83	17° 21' 33.457" E	29° 41' 45.295" S
84	17° 21' 35.372" E	29° 41' 54.417" S
85	17° 21' 37.287" E	29° 42' 3.538" S
86	17° 21' 39.202" E	29° 42' 12.660" S
87	17° 21' 41.117" E	29° 42' 21.782" S
88	17° 21' 43.032" E	29° 42' 30.904" S
89	17° 21' 44.947" E	29° 42' 40.026" S
90	17° 21' 46.862" E	29° 42' 49.148" S
91	17° 21' 48.777" E	29° 42' 58.270" S
92	17° 21' 50.692" E	29° 43' 7.392" S
93	17° 21' 52.606" E	29° 43' 16.514" S
94	17° 21' 54.521" E	29° 43' 25.636" S
95	17° 21' 56.436" E	29° 43' 34.758" S
96	17° 21' 58.351" E	29° 43' 43.879" S
97	17° 22' 0.266" E	29° 43' 53.001" S
98	17° 22' 2.181" E	29° 44' 2.123" S
99	17° 22' 4.096" E	29° 44' 11.245" S
100	17° 22' 6.011" E	29° 44' 20.367" S
101	17° 22' 7.926" E	29° 44' 29.489" S
102	17° 22' 9.840" E	29° 44' 38.611" S

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ALTERNATIVE 3		
Point	Longitude	Latitude
103	17° 22' 11.755" E	29° 44' 47.733" S
104	17° 22' 13.670" E	29° 44' 56.855" S
105	17° 22' 15.585" E	29° 45' 5.977" S
106	17° 22' 17.500" E	29° 45' 15.099" S
107	17° 22' 19.415" E	29° 45' 24.220" S
108	17° 22' 21.330" E	29° 45' 33.342" S
109	17° 22' 23.245" E	29° 45' 42.464" S
110	17° 22' 25.160" E	29° 45' 51.586" S
111	17° 22' 27.075" E	29° 46' 0.708" S
112	17° 22' 28.989" E	29° 46' 9.830" S
113	17° 22' 30.904" E	29° 46' 18.952" S
114	17° 22' 32.819" E	29° 46' 28.074" S
115	17° 22' 34.734" E	29° 46' 37.196" S
116	17° 22' 36.649" E	29° 46' 46.318" S
117	17° 22' 38.564" E	29° 46' 55.440" S
118	17° 22' 40.479" E	29° 47' 4.562" S
119	17° 22' 42.394" E	29° 47' 13.683" S
120	17° 22' 44.309" E	29° 47' 22.805" S
121	17° 22' 46.224" E	29° 47' 31.927" S
122	17° 22' 48.138" E	29° 47' 41.049" S
123	17° 22' 50.053" E	29° 47' 50.171" S
124	17° 22' 51.968" E	29° 47' 59.293" S
125	17° 22' 53.883" E	29° 48' 8.415" S
126	17° 22' 55.798" E	29° 48' 17.537" S
127	17° 22' 57.713" E	29° 48' 26.659" S
128	17° 22' 59.628" E	29° 48' 35.781" S
129	17° 23' 1.543" E	29° 48' 44.903" S
130	17° 23' 3.458" E	29° 48' 54.024" S
131	17° 23' 5.372" E	29° 49' 3.146" S
132	17° 23' 7.287" E	29° 49' 12.268" S
133	17° 23' 9.202" E	29° 49' 21.390" S
134	17° 23' 11.117" E	29° 49' 30.512" S
135	17° 23' 13.032" E	29° 49' 39.634" S
136	17° 23' 14.947" E	29° 49' 48.756" S
137	17° 23' 16.862" E	29° 49' 57.878" S
138	17° 23' 18.777" E	29° 50' 7.000" S
139	17° 23' 20.692" E	29° 50' 16.122" S
140	17° 23' 21.043" E	29° 50' 24.348" S
141	17° 23' 12.205" E	29° 50' 27.307" S
142	17° 23' 3.535" E	29° 50' 30.729" S
143	17° 22' 54.876" E	29° 50' 34.176" S
144	17° 22' 46.216" E	29° 50' 37.624" S
145	17° 22' 37.556" E	29° 50' 41.072" S
146	17° 22' 28.897" E	29° 50' 44.519" S
147	17° 22' 22.586" E	29° 50' 48.913" S
148	17° 22' 26.438" E	29° 50' 57.401" S
149	17° 22' 30.290" E	29° 51' 5.888" S
150	17°22'37.12"E	29°51'25.20"S

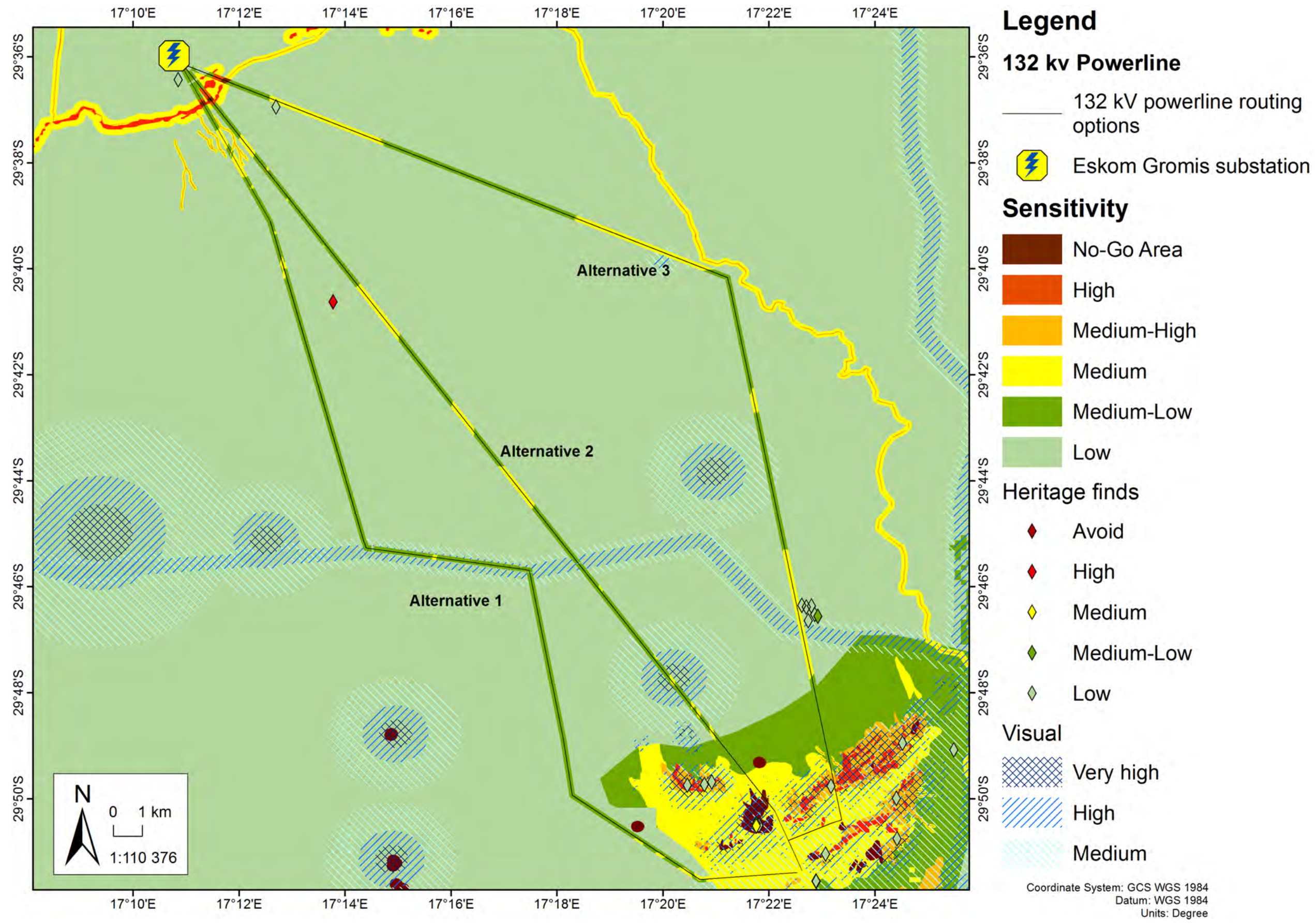


Figure B3: Environmental sensitivity map in relation to the proposed Transmission Line Routing Alternatives

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

BASIC ASSESSMENT REPORT

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Figure 2: Indicative drawing of the proposed on-site substation	3

SECTION F: APPENDICES

Figure 1: Indicative drawings of the pylon structures being considered for the proposed 132kV Transmission Line



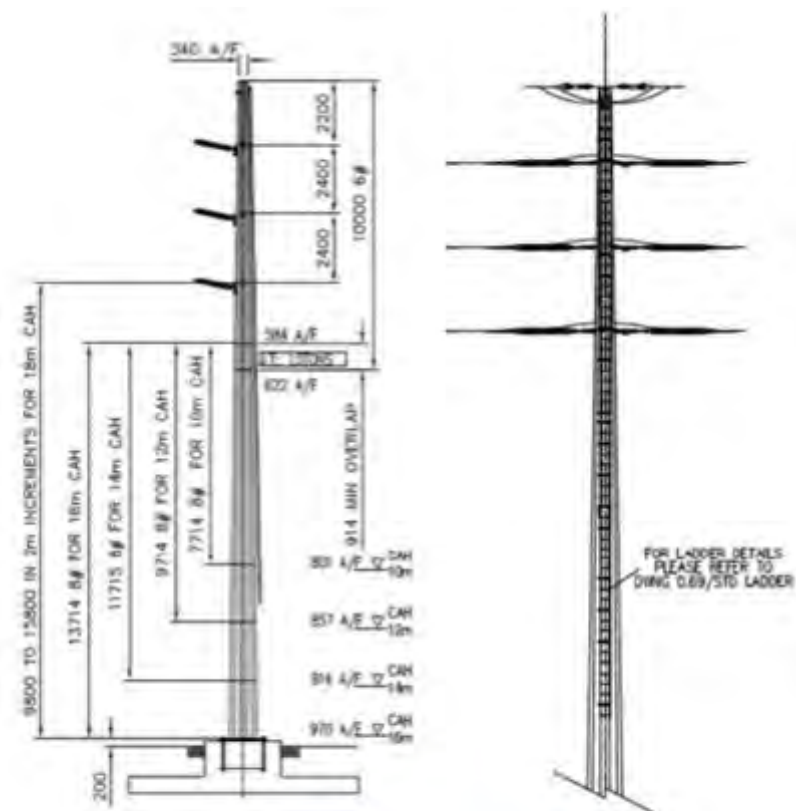
Guyed 7622

Option A: Guyed Monopoles (also known as Hybrid Monopoles)



Modified 7611

Option B: Self-Supporting suspension structures

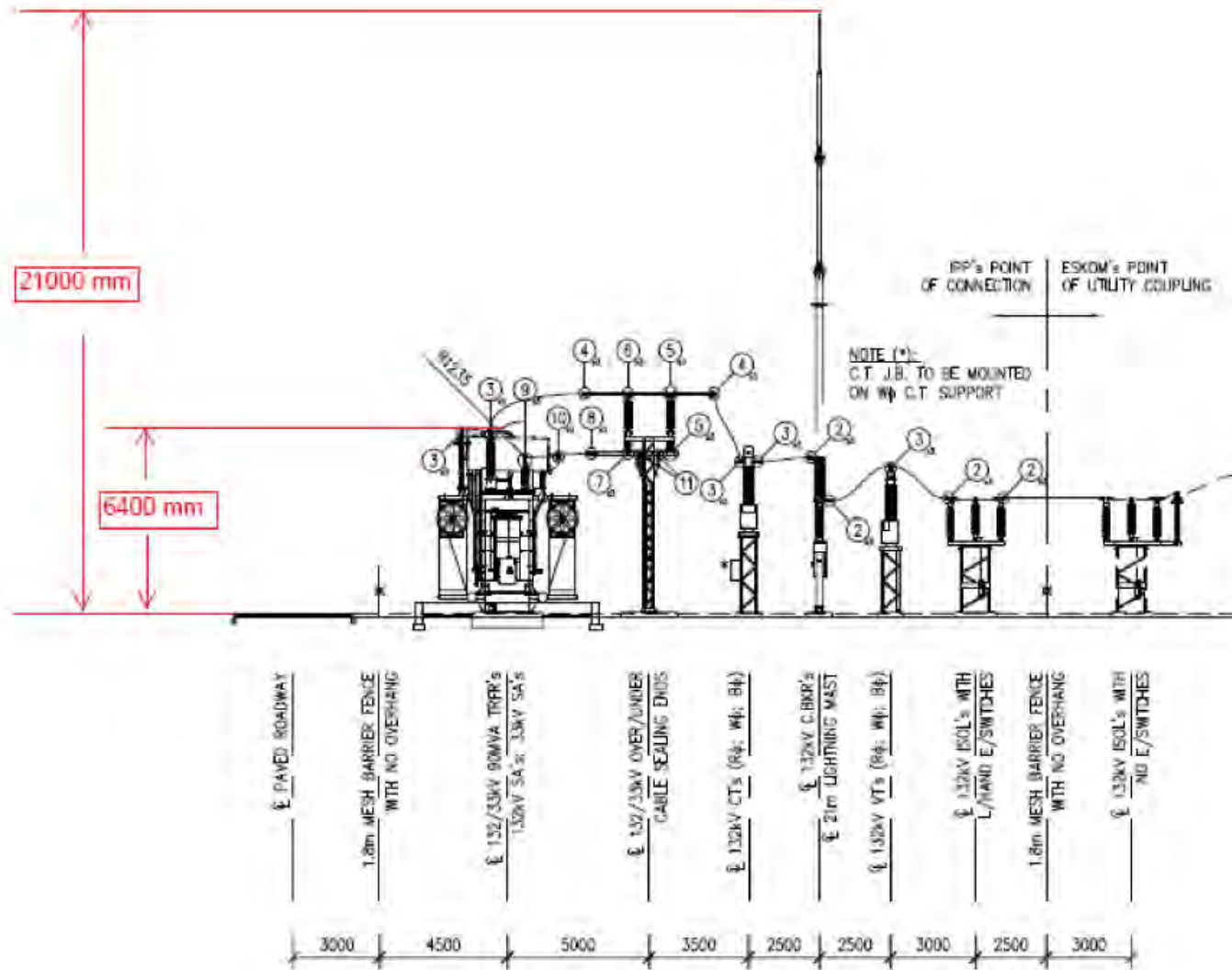


T2002 Strains

The strain structures are still the same for both options of monopoles (132kV)

SECTION F: APPENDICES

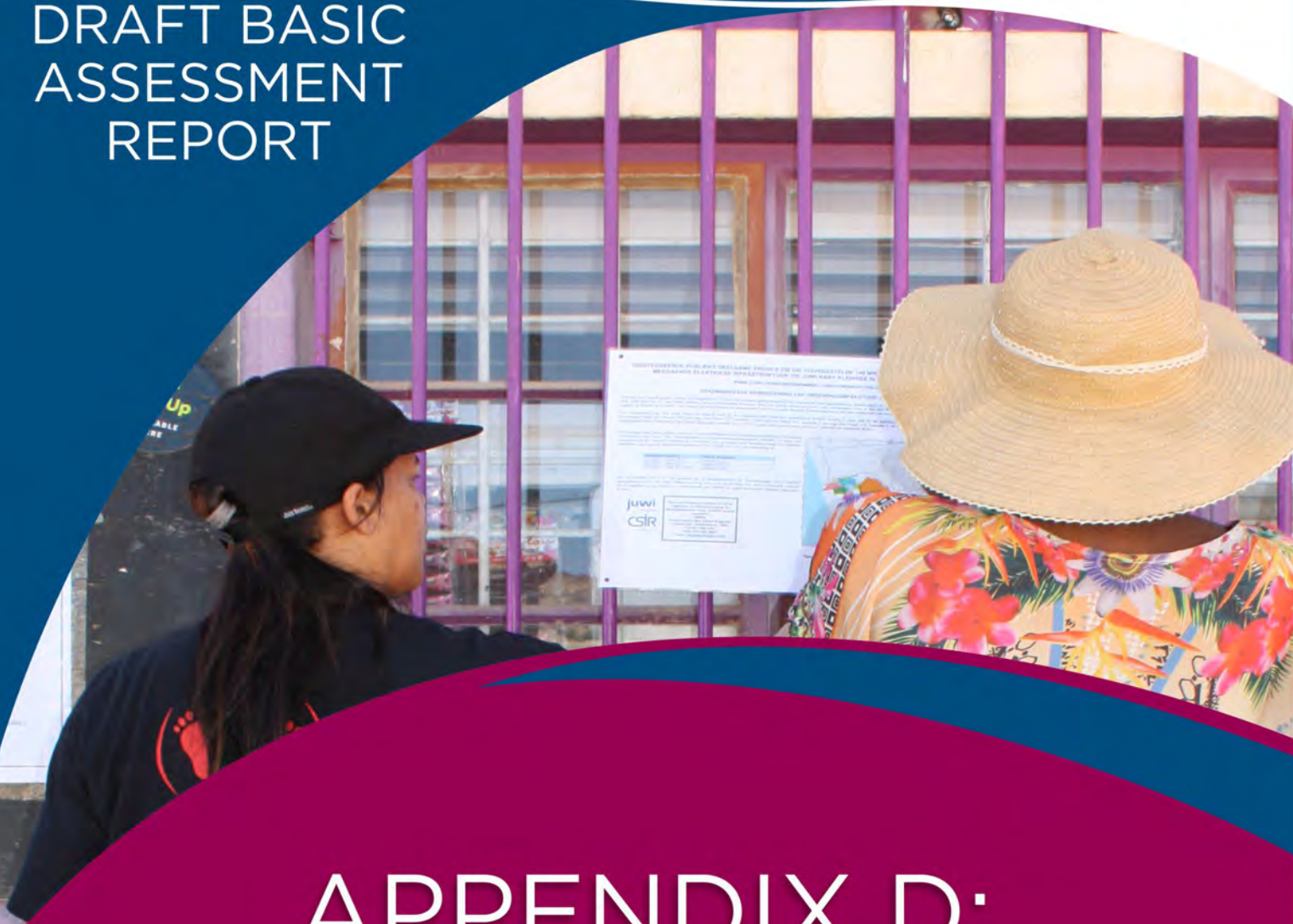
Figure 2: Indicative drawing of the proposed on-site substation





Basic Assessment for the Proposed Construction and Operation of Electrical Grid Infrastructure to support the juwi Kap Vley Wind Energy Facility, near Kleinsee, Northern Cape Province

DRAFT BASIC ASSESSMENT REPORT



APPENDIX D: Public Participation

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

D1: NOTICE BOARDS

Site Notice Board-English

INTEGRATED PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED DEVELOPMENT OF 300 MW KAP VLEY WIND ENERGY FACILITY AND SUPPORTING ELECTRICAL INFRASTRUCTURE NEAR KLEINSEE, NORTHERN CAPE

CSIR/IU/EMS/IR/2017/0010/A

JOINT NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

Notice is given in terms of the Environmental Impact Assessment (EIA) Regulations, under sub-regulation 41 (2) (a), published in Government Gazette (GG) No 40772 of 7 April 2017, of the National Environmental Management Act 1998 (Act No. 107 of 1998, as amended) (NEMA), that juwi Renewable Energies' (Pty) Ltd (hereinafter referred to as "juwi") proposes to construct and operate a Wind Energy Facility with a generating capacity of 300 MW and associated electrical infrastructure (132 kV transmission line). The latter will be part of a separate Basic Assessment (BA) process which will commence at a later stage. The proposed Kap Vley WEF will be constructed on the following land portions for which consent to commence an EIA has been secured by juwi: Portion 5 (RE) of Kommagas Farm 200, Remaining Extent (RE) Kap Vley Farm 315, Portion 1 of Kap Vley Farm 315, Portion 2 of Kap Vley Farm 315, Portion 3 of Kap Vley Farm 315 and RE Gra'water Farm 331. The proposed WEF will be connected to the Gromis Substation via a proposed 132 kV transmission power line that will be approximately 30 km long.

A full Scoping and EIA Process is required for the construction of the wind energy facility and the development of the proposed transmission lines. The CSIR has been appointed by juwi to undertake the required Scoping and EIA Process for the proposed WEF and the BA for the proposed construction of the powerline. The need for BA, Scoping and EIA is triggered by the following potential listed activities listed in GN 324,325 and 327:

Government Notice	Listed Activity Number
GN R327 – 7 April 2017	Activity 11 (i)
GN R325 – 7 April 2017	Activity 1 & 15
GN R324 – 7 April 2017	Activity 12 (d)

To ensure that you are included on the project register as an Interested and Affected Party (I&AP), as well as to raise any issues and concerns for inclusion in the Scoping/EIA Reports, you are kindly requested to register your interest in the projects and submit any comments you may have to the CSIR (at the details indicated below).



To obtain further information or to register as Interested and Affected Party (I&AP), please contact:
CSIR
Reinett Mogotshi
PO Box 320, Stellenbosch, 7599
Tel: 021 888 2432/
Fax: 021 888 2693
Email: rmogotshi@csir.co.za

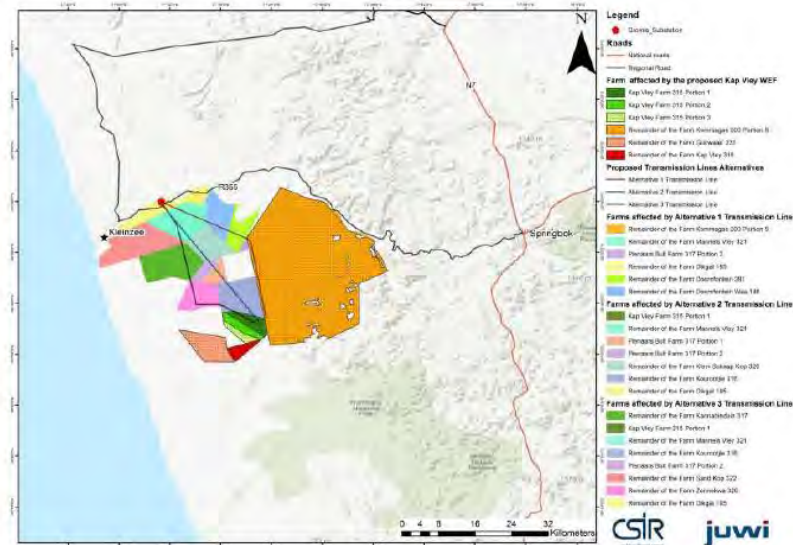


Figure: Locality Map depicting the location of the proposed 300 MW Kap Vley Wind Energy Project

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Site Notice Board-Afrikaans

GEINTEGREERDE PUBLIEKE DEELNAME PROSES VIR DIE VOORGESTELDE 300 MW KAP VLEY WIND PLAAS PROJEN EN MEEGAANDE ELEKTRIESE INFRASTRUKTUUR VIR JUWI NABY KLEINSEE IN DIE NOORD-KAAP PROVINSIE

WNNR (CSIR) VERWYSINGSNOMMER: CSIR/IU/EMS/IR/2017/0010/A

GEKOMBINEERDE KENNISGEWING VAN OMGEWINGSIMPAKSTUDIE (OIS) PROSES

Hiermee word kennis gegee in terme van Regulasie 41 (2) van die Omgewingsimpakstudie (OIS) Regulasies soos gepubliseer in Staatskoerant No 40772 op 7 April 2017, van die Nasionale Omgewingsbeheer Wet, 1998 (Wet No 107 van 1998) (NEMA), dat juwi Renewable Energies' (Pty) Ltd (hierna verwys as "juwi") van voornemens is om 'n 300 MW Wind Plaas en meegaande elektriese infrastruktuur (132 kV kraglyn) te installeer en te bedryf. Die kraglyn sal deel uitmaak van geassesseerde word in 'n aparte Basiese Evalueeringsproses wat later onderneem sal word.

Die voorgestelde Kap Vley Wind Plaas sal opgerig word op die volgende plase waarvoor goedkeuring alreeds ontvang is deur juwi vir die aanvang van die Omgewingsimpakstudie: Gedeelte 5 (RE) of Kommagras Plaas 200, Restant (RE) van Kap Vley Plaas 315, Gedeelte 1 van Kap Vley Plaas 315, Gedeelte 2 van Kap Vley Plaas 315, Gedeelte 3 van Kap Vley Plaas 315 en RE Gra water Plaas 331. Die voorgestelde Wind Plaas sal by die Gromis Substasie aansluit via 'n 132 kV kraglyn wat opgerig gaan word oor 'n afstand van ongeveer 30 km.

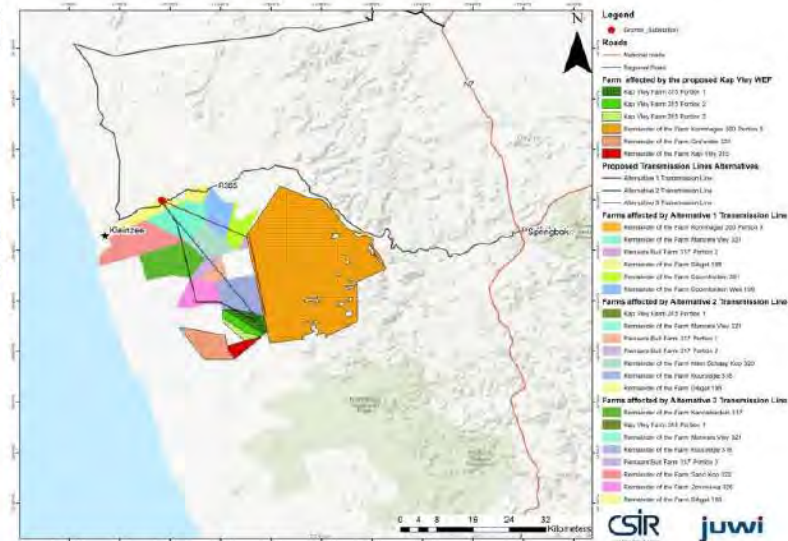
Die beoogde wind plaas projek vereis dat 'n Omvangsbepaling en Omgewingsbeoordeling (OIE) proses onderneem moet word. Die Wetenskaplike en Nywerheidsnavorsingsraad (WNNR) is deur juwi aangestel om die vereiste prosesse te onderneem. Die prosesse word benodig omdat die volgende aktiwiteite soos gelys in Staatskennisgewings R 324, R 325 en R 327 van toepassing is:

Staatskennisgewing	Gelyste aktiwiteite
GN R327 – 7 April 2017	Aktiwiteit 11 (i)
GN R325 – 7 April 2017	Aktiwiteit 1 & 15
GN R324 – 7 April 2017	Aktiwiteit 12 (d)

Om te verseker dat u vir die projekte as 'n Belangstellende en Geaffekteerde Party (B&GP) geregistreer word om enige kwessie uit te lig wat u met die projekte het, word u vriendelik versoek om te registreer vir die projek en u kommentaar aan WNNR se projek bestuurder (inligting hieronder) te stuur.



Om meer inligting te bekom om te registreer as Geïnteresseerde en Belanghebbende Party (G&BP), kontak asseblief:
WNNR
Projek Bestuurder: Reinet Mogotshi
Posbus 320, Stellenbosch, 7599
Tel: 021 888 2432
Faks: 021 888 2693
E-pos: rmogotshi@csir.co.za



Figuur: Terrein Kaart wat die ligging van die voorgestelde 300 MW Kap Vley Wind Energie Plaas aandui

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Site Notice board placed at the entrance of Hazra General Dealer in Kleinsee
(Co-Ordinates: 29°40'49.18"S and 17° 4'11.51"E)



Site Notice board placed at the entrance of Helpmekaar Kafee in Komaggas
(Co-ordinates 29°47'44.40"S and 17°29'9.50"E)



SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Site Notice board placed at one of the entrance of the Farm
(Co-ordinates 29°52'4.30"S and 17°23'39.90"E)



SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinzee, Northern Cape Province

Site Notice board placed at one of the entrance of the Farm
(Co-ordinates: 29°51'27.40"S 17°15'6.60"E)



Site Notice board placed at one of the entrance of the Farm
(Co-ordinates: 29°49'28.04"S and 17°21'52.05"E)



SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

D2: NEWSPAPER ADVERTISEMENT ("DIE PLATTELANDER" DATED 27 OCTOBER 2017) IN ENGLISH AND AFRIKAANS

Bladsy 8	[DIE PLATTELANDER - NUUS VIR ALMAL OP DIE N-7 & N-14]	27 Oktober 2017
KENNISGEWING VAN BASIESE EVALUERINGS, OMGEWINGSBEPALINGS EN OMGEWINGSIMPAAKEVALUERINGS PROSESSE VIR DIE VOORGESTELDE KAP VLEY WIND ENERIE FASILITEIT EN MEEGAANDE ELEKTRIESE INFRASTRUKTUUR NABY KLEINZEE IN DIE NOORD-KAAP CSIR VERWYSING: CSIR/IU/EMS/IR/2017/0010/A U word hiermee in kennis gestel dat juwi Renewable Energies' (Pty) Ltd ("juwi") deur die projekmaatskappy Kap Vley Wind Farm (Pty) Ltd van voorneme is om die Kap Vley wind plaas sowel as meegaande elektriese infrastruktuur ('n 132 kV oorhoofse kraglyn van ongeveer 30 km) te installeer en bedryf 30 km suid-oos van Kleinsee in die Noord-Kaap. Die elektriese infrastruktuur komponent sal deel uitmaak en geassesseer word in 'n aparte Basiese Evalueeringsproses wat later onderneem sal word. Juwi het die Wetenskaplike en Nywerheidsnavorsingsraad (WNNR; CSIR) aangestel om die vereiste omgewingsimpakevalueerings prosesse te onderneem. Kennis van hierdie projekte word gegee in terme van die Nasionale Wet op Omgewingsbestuur (Wet 107 van 1998, soos gewysig) (NEMA) en die 2014 NEMA Omgewings Impak Studie (OIS) Regulasies, soos gewysig, onder sub-regulasie 41 (2) (a) gepromulgeer in Staatskoerant No. 40772 van 7 April 2017. Die voorgestelde Kap Vley wind plaas sal opgerig word op die volgende plase: • Gedeelte 5 (RE) van Kamaggas Plaas 200, Restant (RE) van Kap Vley Plaas 315, Gedeelte 1, 2 en 3 van Kap Vley Plaas 315, Gedeelte 3 van Platvley Plaas 314, RE Kouroontjie Plaas 316 en RE Gra'water Plaas 331. Die voorgestelde Kap Vley wind plaas sal by die Gromis Substasie of die nuwe Eskom substasie aansluit via 'n 132 kV kraglyn wat opgerig gaan word. In terme van NEMA en die 2014 NEMA OIS Regulasies, soos gewysig, gepromulgeer in Staatskennisgewing (GNR 324, 325 en 327) in Staatskoerant No 40772, vereis die wind plaas projek dat 'n Omgewingsbepaling en Omgewingsvalueering proses onderneem moet word. Die beoogde kraglyn en elektriese komponent vereis dat 'n Basiese Evalueeringsproses onderneem moet word. U word hiermee genooi om as 'n belangstellende en/of geaffekteerde party te registreer. Dit sal ons in staat stel om u op ons projek databasis by te voeg en ook sodat u enige kommentaar of kwelpunte aangaande die projek kan opper. Hierdie kommentaar sal by die Omgewingsbepalingverslag ingesluit word. Vir verdere inligting en/of om as 'n belangstellende en geaffekteerde party te registreer, kontak: Ms Reinett Mogotshi (Omgewings Impak Asseserings Konsultant van WNNR (CSIR)) Posadres: Posbus 320, Stellenbosch, 7599. Tel: (021) 888 2432. Faks: (021) 888 2693. E-pos: rmogotshi@csir.co.za Die konsep Basiese Evalueerings verslag word tans vrygestel vir 'n 30 dae kommentaar periode wat eindig op 30 November 2017. Kommentaar op hierdie verslag moet op of voor hierdie datum verskaf word aan Ms Reinett Mogotshi by bogenoemde kontak besonderhede. Die verslag kan afgelaai word vanaf https://www.csir.co.za/environmental-impact-assessment juwi CSIR	NOTICE OF BASIC ASSESSMENT AND SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESSES THE PROPOSED DEVELOPMENT OF THE KAP VLEY WIND ENERGY FACILITY NEAR KLEINZEE IN THE NORTHERN CAPE CSIR Reference No: CSIR/IU/EMS/IR/2017/0010/A You are hereby notified that juwi Renewable Energies' (Pty) Ltd ("juwi") through its project company Kap Vley Wind Farm (Pty) Ltd proposes to construct and operate the Kap Vley Wind Energy Facility (WEF) and associated electrical infrastructure (a 132 kV overhead transmission line of approximately 30 km) south east of Kleinsee in the Northern Cape. The associated transmission line and electrical infrastructure will be assessed as part of a separate Basic Assessment (BA) process which will commence at a later stage. Notice of these projects is given in terms of the 2014 National Environmental Management Act 1998 (Act No. 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations as amended, under sub-regulation 41 (2) (a), published in Government Gazette (GG) No 40772 of 2017. The CSIR has been appointed by juwi to undertake the required EIA and BA processes. The proposed Kap Vley WEF will be developed on the following land portions: • Remainder (RE) Kamaggas Farm 200 Portion 5; RE Kap Vley Farm 315; Portion 1, 2 and 3 of Kap Vley Farm 315; Portion 3 of Platvley Farm 314; RE Kouroontjie Farm 316; and RE Gra'water Farm 331. The proposed Kap Vley WEF will be connected to the Gromis Substation or the New Eskom substation for which the location still needs to be finalised via a 132 kV powerline. In terms of the NEMA and the 2014 NEMA EIA Regulations (as amended) published in Government Notice Regulation (GNR) 324 and 327 on 7 April 2017 Government Gazette No 40772, the proposed WEF requires a full Scoping and EIA Process. The proposed powerline and electrical infrastructure associated with the WEF requires a BA process. To ensure that you are included on the project register as an Interested and Affected Party (I&AP), as well as to raise any issues and concerns for inclusion in the Scoping/EIA Reports, you are kindly requested to register your interest in the projects and submit any comments you may have to the CSIR (at the details indicated below): Ms. Reinett Mogotshi, CSIR, PO Box 320, Stellenbosch 7599, Phone: (021) 888 2432, Fax: (021) 888 2693 or Email: rmogotshi@csir.co.za. The Draft Scoping Report is currently being released for a 30-day commenting period ending 30 November 2017. The report can be downloaded from: https://www.csir.co.za/environmental-impact-assessment Please submit any comments you may have on this report to Ms Mogotshi before or on this date using the contact details provided above. juwi CSIR	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

D3: CORRESPONDENCE SENT TO I&APS AND PROOF THEREOF

Copies and Proof of Correspondence Sent to I&APs for the Release of the Draft Scoping Report for Review

CSIR Environmental Management Services
P.O. Box 120, Stellenbosch, 7539
Tel: 021 888 2412
Fax: 021 888 2692
Email: mogotshi@csir.co.za



30 October 2017

Dear Interested and Affected Party

RE: RELEASE OF THE DRAFT SCOPING REPORT FOR COMMENT FOR THE DEVELOPMENT OF THE PROPOSED KAP VLEY WIND ENERGY FACILITY 30 KM SOUTH EAST OF KLEINSEE, NORTHERN CAPE PROVINCE

Juwi Renewable Energies (Pty) Ltd (hereinafter referred to as "Juwi"), through its project company Kap Vley Wind Farm (Pty) Ltd, proposes to construct and operate a Wind Energy Facility (WEF) and associated electrical infrastructure (subject to a separate Basic Assessment (BA) Process) 30 km south east of Kleinsee in the Northern Cape. The proposed Kap Vley WEF will be connected to the Gromis Substation, or to the new Eskom substation for which the location still needs to be finalised, via a 132 kV powerline.

The proposed Kap Vley WEF will be developed on the following land portions:

- Remainder (RE) Kamaggas Farm 200 Portion 5;
- RE Kap Vley Farm 315;
- Portion 1 of Kap Vley Farm 315;
- Portion 2 of Kap Vley Farm 315;
- Portion 3 of Kap Vley Farm 315;
- Portion 3 of Platvley Farm 314;
- RE Kouroutjie Farm 316; and
- RE Gra'water Farm 331.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations, as amended, promulgated in Government Gazette 40772 and Government Notice (GN) R327, R326, R325 and R324 on 7 April 2017, a full Scoping and EIA Process is required for the construction of the Kap Vley WEF. A separate Basic Assessment Process is required and will be undertaken for the development of the proposed transmission line, associated electrical infrastructure and connection to the Gromis or the new Eskom substation. The Council for Scientific and Industrial Research (CSIR) has been appointed by the Project Applicant to undertake the separate required Basic Assessment as well as the Scoping and EIA Processes for the proposed project.

Juwi South Africa is part of the international Juwi Group, one of the world's leading companies in the area of renewable energy. Juwi South Africa focuses on Solar Energy and Wind Energy and works with landowners, project developers, technology providers, regulators and investors to source and develop renewable energy projects.

The proposed project will entail the erection of wind turbines (20-56) with a hub height of 80 - 150 m and rotor diameter of 100 - 160 m; buildings, electrical infrastructure, internal access roads, and associated infrastructure.

As a registered I&AP on the project database, you are hereby notified of the release of the Draft Scoping Report for the proposed Kap Vley WEF to all registered I&APs and stakeholders for a 30-day review period, ending on **30 November 2017**. Please submit your comments before or on this date to Ms Reinett Mogotshi at the contact details provided above.

A hard copy of the Scoping Report is available for public viewing at the Kleinsee Library as well as at the Kleinsee Police Station. The Draft Scoping Report can also be downloaded from the following website: <https://www.csir.co.za/environmental-impact-assessment>

All comments received during this 30 day review period will be recorded and included in the Final Scoping Report for submission to the National DEA for decision-making in line with Regulations 21 and 22 of the 2014 NEMA EIA Regulations, as amended (GN R326). As a registered I&AP on the project database, you will be notified of the submission of the Final Scoping Report to the DEA for decision-making.

Should you have any queries or require additional information please do not hesitate to contact the undersigned using the contact details provided above.

Sincerely,

Minnelise Levendal
Project Leader
CSIR Environmental Management Services

Reinett Mogotshi
Project Manager
CSIR Environmental Management Services

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinzee, Northern Cape Province



I&AP COMMENT & REGISTRATION FORM

PROPOSED CONSTRUCTION OF THE KAP VLEY WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR KLEINZEE, NORTHERN CAPE PROVINCE

Please provide your full contact details:	
First Name:	Surname:
Organisation:	Designation:
Postal Address:	Street Address:
Postal Code:	Street Code:
Phone: ()	Fax: ()
Cell:	Email:

Please indicate if you want to be registered as an Interested and Affected Party (I&AP) for the proposed projects (please tick the appropriate box). PLEASE NOTE: Registration as an I&AP is required in order to receive further correspondence regarding the EIA Process			
YES		NO	
Please clearly state any interest (business, financial, personal or other) you may have in the projects and/or the applications for Environmental Authorisation:			

Please describe any issues or concerns you may have which you think should be considered during the Scoping and Environmental Impact Assessment Process:	

Please provide details of any other individuals or organisations that should be registered as I&APs:	

Please return all completed I&AP Comment & Registration Forms to Reinett Mogotshi at:

CSIR | PO Box 320 | Stellenbosch | 7599

Tel: (021) 888 2432 **Fax:** (021) 888 2693 **Email:** rmogotshi@csir.co.za

Please visit the project website at:

<https://www.csir.co.za/environmental-impact-assessment>

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Proof of delivery of Draft Scoping Report

Proof of emails

Proof of email delivery dated 31/10/2017 to notify I&APs of the release of the Draft Scoping Report for comment

From: Reinett Mogotshi
To:
BC MRabothata@environment.gov.za; HAlberts@environment.gov.za;
Wlutsch@environment.gov.za; nyaphi@ncpg.gov.za; mmathe@ncpg.gov.za;
sdelafontaine@gmail.com; elsabe.dtec@gmail.com; rob.blake@debeersgroup.com;
peebe@kingsley.co.za; izak@rumboll.co.za; victor.cloete@debeersgroup.com;
louise@visagie.net; peter.carrick@uct.ac.za; maureen.ouret@namakhoi.gov.za;
paulus.vanreenen@namakhoi.gov.za; maureen.ouret@namakhoi.gov.za; MeiM@dwa.gov.za;
CloeteS@dws.gov.za; SchwartzC@dws.gov.za; mndzilili@ncpg.gov.za;
smbanjwa@ncpg.gov.za; onyndzumo@gmail.com; rapelangK@dws.gov.za;
peter.denc87@gmail.com; ltoolsbernado@ncpg.gov.za; MashuduMa@daff.gov.za;
ThokoB@daff.gov.za; nhlakad@daff.gov.za; annelizac@nda.agric.za; JacolineMa@daff.gov.za;
aditeme@agri.ncape.gov.za; peter.buys@nersa.org.za; klawrence@trpw.ncape.gov.za;
waltjc@nra.co.za; AbrahamsN@nra.co.za; monica.lepheane@labour.gov.za;
nwarie@ncpg.gov.za; ratha.timothy@gmail.com; strohl@caa.co.za; GeerinJH@eskom.co.za;
LeaskK@eskom.co.za; WyngaaJO@eskom.co.za; sharon@nccci.co.za;
Mayvyn.Bhana@transnet.net; Clive.Stephenson@transnet.net; rredelstorff@sahra.org.za;
Kgauta.Mokoena@dmr.gov.za; esibeko@dtps.gov.za; chris@salt.ac.za; atiplady@ska.ac.za;
raoul@salt.ac.za; advocacy@birdlife.org.za; lntsolo@sanbi.org.za; admin@grasslands.org.za;
wep@ewt.org.za; joh.henschel@saeon.ac.za; pruplal@icasa.org.za; meisie@3i.co.za;
meisie@3i.co.za; koosbisschoff@gmail.com; mkruger846@gmail.com;
howard.hendricks@sanparks.org; ptiger@ncpg.gov.za; Minnelise Levendal; van der Westhuizen
Corne; ncagric@worldonline.co.za; ontvang@agric.co.za
Date: 31/10/2017 15:59
Subject: juwi Kap Vley WEF project; release of DSR for public comment
Attachments: JUWI IAPS LETTER 1 RELEASE OF DSR_30Oct2017.pdf

Dear Stakeholder,

RE: Release of the Draft Scoping Report for comment for the development of the proposed Kap Vley Wind Energy Facility 30 km south east of Kleinsee, Northern Cape Province

Please see attached letter notifying you that an application for Environmental Authorisation has been submitted to the national Department of Environmental Affairs for the proposed Kap Vley Wind Energy Facility near Kleinsee and of the availability of the Draft Scoping Report for public comment. In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) the 2014 NEMA Environmental Impact Assessment (EIA) Regulations, as amended, promulgated in Government Gazette 40772 and Government Notice (GN) R327, R326, R325 and R324 on 7 April 2017, a full Scoping and EIA Process is required for the construction of the Kap Vley WEF. A separate Basic Assessment Process is required and will be undertaken for the development of the associated electrical infrastructure including a transmission line to connect the wind farm to the Gromis or the new Eskom substation. The Council for Scientific and Industrial Research (CSIR) has been appointed by the Project Applicant to undertake the separate required Basic Assessment as well as the Scoping and EIA Processes for the proposed project.

A hard copy of the Draft Scoping Report is available for public viewing at the Kleinsee Library as well as at the Kleinsee Police Station. The Draft Scoping Report can also be downloaded from the following website: <https://www.csir.co.za/environmental-impact-assessment>

As a registered I&AP on the project database, you are hereby notified of the release of the Draft Scoping Report for the proposed Kap Vley WEF for a 30-day review period, ending on 30 November 2017. Please submit your comments before or on this date to Ms Reinett Mogotshi at the contact details provided below.

Kindly contact the undersigned for further information or for any queries relating to the above.

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Reinett Mogotshi
CSIR Project Manager
CSIR Stellenbosch
Tel: 021 888 2432
PO Box 320, Stellenbosch, 7599
Email: rmogotshi@csir.co.za

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

			relayed
 dwa.gov.za	Transferred	31/10/2017 15:59	
BC: MeiM@dwa.gov.za(MeiM@dwa.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 dws.gov.za	Transferred	31/10/2017 15:59	
BC: CloeteS@dws.gov.za(CloeteS@dws.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
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 environment.gov.za	Transferred	31/10/2017 15:59	
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 eskom.co.za	Transferred	31/10/2017 15:59	
BC: GeerinJH@eskom.co.za(GeerinJH@eskom.co.za)	Transferred	31/10/2017 16:10	2.0.0 message relayed
BC: LeaskK@eskom.co.za(LeaskK@eskom.co.za)	Undeliverable	31/10/2017 16:00	
BC: WyngaaJO@eskom.co.za(WyngaaJO@eskom.co.za)	Transferred	31/10/2017 16:10	2.0.0 message relayed
 ewt.org.za	Transferred	31/10/2017 15:59	
BC: wep@ewt.org.za(wep@ewt.org.za)	Delivered	31/10/2017 15:59	
 gmail.com	Transferred	31/10/2017 15:59	
BC: elsabe.dtec@gmail.com(elsabe.dtec@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: koosbisschoff@gmail.com(koosbisschoff@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: mkruger846@gmail.com(mkruger846@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: onyndzumo@gmail.com(onyndzumo@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: peter.denc87@gmail.com(peter.denc87@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

BC: ratha.timothy@gmail.com(ratha.timothy@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: sdelafontaine@gmail.com(sdelafontaine@gmail.com)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 grasslands.org.za	Transferred	31/10/2017 15:59	
BC: admin@grasslands.org.za(admin@grasslands.org.za)	Undeliverable	31/10/2017 15:59	
 icasa.org.za	Transferred	31/10/2017 15:59	
BC: pruplal@icasa.org.za(pruplal@icasa.org.za)	Transferred	31/10/2017 16:03	2.0.0 message relayed
 juwi.co.za	Transferred	31/10/2017 15:59	
BC: van der Westhuizen Corne(corne.vanderwesthuizen@juwi.co.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 kingsley.co.za	Transferred	31/10/2017 15:59	
BC: peebea@kingsley.co.za(peebea@kingsley.co.za)	Undeliverable	31/10/2017 16:00	
 labour.gov.za	Transferred	31/10/2017 15:59	
BC: monica.lepheane@labour.gov.za(monica.lepheane@labour.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 namakhoi.gov.za	Transferred	31/10/2017 15:59	
BC: maureen.ouret@namakhoi.gov.za(maureen.ouret@namakhoi.gov.za)	Undeliverable	31/10/2017 16:03	
BC: paulus.vanreenen@namakhoi.gov.za(paulus.vanreenen@namakhoi.gov.za)	Transferred	31/10/2017 16:03	2.0.0 message relayed
 ncp.gov.za	Transferred	31/10/2017 15:59	
BC: ltoolsbernado@ncpg.gov.za(ltoolsbernado@ncpg.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: mmathews@ncpg.gov.za(mmathews@ncpg.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: mndzilili@ncpg.gov.za(mndzilili@ncpg.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
BC: nyaphi@ncpg.gov.za(nyaphi@ncpg.gov.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
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SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

 nda.agric.za	Transferred	31/10/2017 15:59	
BC: annelizac@nda.agric.za(annelizac@nda.agric.za)			
 nersa.org.za	Transferred	31/10/2017 15:59	
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 nocci.co.za	Transferred	31/10/2017 15:59	
BC: sharon@nocci.co.za(sharon@nocci.co.za)			
 nra.co.za	Transferred	31/10/2017 15:59	
BC: AbrahamsN@nra.co.za(AbrahamsN@nra.co.za)			
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 salt.ac.za	Transferred	31/10/2017 15:59	
BC: chris@salt.ac.za(chris@salt.ac.za)			
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BC: raoul@salt.ac.za(raoul@salt.ac.za)			
	Transferred	31/10/2017 15:59	2.6.0 message relayed
 sanbi.org.za	Transferred	31/10/2017 15:59	
BC: l.ntsolo@sanbi.org.za(l.ntsolo@sanbi.org.za)			
	Undeliverable	31/10/2017 15:59	
 sanparks.org	Transferred	31/10/2017 15:59	
BC: howard.hendricks@sanparks.org(howard.hendricks@sanparks.org)			
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 ska.ac.za	Transferred	31/10/2017 15:59	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

BC: atiplady@ska.ac.za(atiplady@ska.ac.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 transnet.net	Transferred	31/10/2017 15:59	
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 trpw.ncape.gov.za	Transferred	31/10/2017 15:59	
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 uct.ac.za	Transferred	31/10/2017 15:59	
BC: peter.carrick@uct.ac.za(peter.carrick@uct.ac.za)	Transferred	31/10/2017 16:03	2.0.0 message relayed
 visagie.net	Transferred	31/10/2017 15:59	
BC: louise@visagie.net(louise@visagie.net)	Transferred	31/10/2017 15:59	2.0.0 message relayed
 worldonline.co.za	Transferred	31/10/2017 15:59	
BC: ncagric@worldonline.co.za(ncagric@worldonline.co.za)	Transferred	31/10/2017 15:59	2.0.0 message relayed

Post Offices

Post Office	Delivered	Route
3i.co.za		3i.co.za
agri.ncape.gov.za		agri.ncape.gov.za
agric.co.za		agric.co.za
birdlife.org.za		birdlife.org.za
caa.co.za		caa.co.za
daff.gov.za		daff.gov.za
debeersgroup.com		debeersgroup.com
dmr.gov.za		dmr.gov.za
dtps.gov.za		dtps.gov.za
dwa.gov.za		dwa.gov.za
dws.gov.za		dws.gov.za
environment.gov.za		environment.gov.za
eskom.co.za		eskom.co.za
ewt.org.za		ewt.org.za
gmail.com		gmail.com
grasslands.org.za		grasslands.org.za
icasa.org.za		icasa.org.za
juwi.co.za		juwi.co.za
kingsley.co.za		kingsley.co.za
labour.gov.za		labour.gov.za
namakhoi.gov.za		namakhoi.gov.za

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

ncpg.gov.za		ncpg.gov.za
nda.agric.za		nda.agric.za
nersa.org.za		nersa.org.za
nocci.co.za		nocci.co.za
nra.co.za		nra.co.za
nra.co.za		nra.co.za
POBOX1.STELLBOS	31/10/2017 15:59	csir.co.za
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sahra.org.za		sahra.org.za
salt.ac.za		salt.ac.za
sanbi.org.za		sanbi.org.za
sanparks.org		sanparks.org
ska.ac.za		ska.ac.za
transnet.net		transnet.net
trpw.ncape.gov.za		trpw.ncape.gov.za
uct.ac.za		uct.ac.za
visagie.net		visagie.net
worldonline.co.za		worldonline.co.za

Files

File	Size	Date & Time
JUWI IAPS LETTER 1 RELEASE OF DSR_30Oct2017.pdf	113 KB (116639 Bytes)	31/10/2017 13:08
MESSAGE	3 KB (3758 Bytes)	31/10/2017 15:59
TEXT.htm	7 KB (7905 Bytes)	31/10/2017 15:59

Options

Auto Delete:	No
Concealed Subject:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested By:	None
Security:	Standard
To Be Delivered:	Immediate

Record Id

Record Id:	59F89DE5.STELLBOS.POBOX1.100.1383869.1.388F.1
Common Record Id:	59F881C5.STELLBOS.POBOX1.200.20000A4.1.4945A.1

Proof of courier waybills

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province



0861 348 343
www.globeflight.com
Reg No: 1988-009052-07 / VAT NO: 4650175351

2718710561

Document

DATE	ACCOUNT NUMBER	COST CENTRE	SHIPPER'S REFERENCE	ORIGIN	DESTINATION	No. OF P.I.C.
30/10/2017	P01521		Enslin 2/4un 02100/021st			1

SHIPPER (YOUR NAME)
Penet Magatshi

COMPANY NAME
CSIR - STELLENBOSCH

STREET ADDRESS
11 JAN CILLIERS STR
STELLENBOSCH
CAPE TOWN
COUNTRY: RSA

TELEPHONE NUMBER & E-MAIL
021 888 2400

TO (RECIPIENT'S NAME)
Shaun Clete

COMPANY NAME
Department of Water & Sanitation

STREET ADDRESS
Louisvale Road, Upington

CITY
Upington

COUNTRY
South Africa

TELEPHONE NUMBER & E-MAIL
054 338 5846

POST/ZIP CODE
7559

POST/ZIP CODE
880

GLOBAL DOCUMENT EXPRESS	GLOBAL PARCEL EXPRESS	SPECIALS	AIRFREIGHT	CROSS BORDER ROAD FREIGHT	CUSTOMS VALUE
☐	☐	☐	☐	☐	☐

OVERNIGHT EXPRESS	IN CITY DELIVERY	BUDGET CARGO 21-48 HRS	ROAD FREIGHT 48-96 HRS
☒	☐	☐	☐

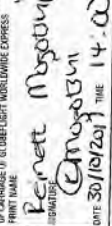
HAZARDOUS CARGO? YES ☐ NO ☐

INSURANCE YES ☐ NO ☐

AMOUNT

WE HAVE SEEN AND AGREE TO THE STANDARD CONDITIONS:

PRINT NAME Penet Magatshi

SIGNATURE 

DATE 30/10/2017 **TIME** 14:00

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS	RECEIVED IN GOOD ORDER AND CONDITION
☐	☐

PRINT NAME

SIGNATURE

DATE

PRINT NAME

SIGNATURE

DATE

GlobeFlight reserves the right to choose the service "Budget" should no service label be selected

Please note indemnity clause in Terms & Conditions.

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods:

COURIER: 0718710561

Waybill No.: GlobeFlight

1. Name and address of consignee:

Shaun Cloete, Department of Water and Sanitation, Louisvale Road, Upington, 8601

2. Method of dispatch:

Air Freight ☐

Sea Freight ☐

Courier ☒

3. Is Insurance required?

Yes ☐

No ☐

Value: R _____

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐

No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
ems0142	02100	02156	ROU	

7. Transport and delivery charges to be paid by:

CSIR ☒

Consignee ☐

8. Description and number of items per container:

Documents

9. No. of cases/boxes/packages: 1

Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: Reinet Moshiri

EXTENTION: 2432

DATE: 30/10/2017

ou: 10-ems

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province



0861 344 883
www.globe-flight.com
Ref No: 1908/00015/07 / VAT NO: 465475361

DATE 30/10/2017

SHIPPER (YOUR NAME) Reinette Magashu

COMPANY NAME CSIR - STELLENBOSCH

STREET ADDRESS 11 JAN CILLIERS STR

CITY STELLENBOSCH

CAPE TOWN

COUNTRY RSA

TELEPHONE NUMBER & E-MAIL 021 888 2400

ACCOUNT NUMBER P01521

SHIPPER'S REFERENCE EMS01422(KUN) 09100 / 00136

TO (RECIPIENT'S NAME) Onwabile Natung

COMPANY NAME Provincial Department of Environment & Nature Conservation

STREET ADDRESS 110 Voortrekkers and Magashu Street

CITY Springsbok

COUNTRY South Africa

TELEPHONE NUMBER & E-MAIL 027 718 8800

ORIGIN

POST/ZIP CODE 7599

POST/ZIP CODE 8240

DESTINATION No. of Pallets: 1

GLOBAL DOCUMENT EXPRESS

GLOBAL PARCEL EXPRESS

SPECIALS

AIRFREIGHT

CROSS BORDER ROAD FREIGHT

CUSTOMS VALUE

HAZARDOUS CARGO? YES ☐ NO ☐

INSURANCE YES ☐ NO ☐

AMOUNT

OVERNIGHT EXPRESS

IN CITY DELIVERY

BUDGET CARGO 21-48 HRS

ROAD FREIGHT 48-96 HRS

WE HAVE SEEN AND AGREE TO THE STANDARD CONDITIONS OF CARRIAGE OF GLOBEFLIGHT WORLDWIDE EXPRESS

PRINT NAME Reinette Magashu

SIGNATURE [Signature]

DATE 30/10/2017

TIME 14:00

SAME DAY

DAWN DELIVERY BY 09H00

SATURDAY DELIVERY

AFTER HOURS

PUBLIC HOLIDAY

PREPARE IN GOOD ORDER AND CONDITION

PRINT NAME

SIGNATURE

DATE

TIME

IMPORT & EXPORT CODE

Documents

Please note indemnity clause in Terms & Conditions.

GlobeFlight reserves the right to choose the service "Budget" should no service label be selected

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods:

COURIER: Globe Flight

Waybill No.: 2718710559

1. Name and address of consignee:

Onwabile Ndumbe, Provincial Department of
Environment and Nature Conservation
410 Voortrekker and Magasin Street, Springsbok, 8240

2. Method of dispatch:

Air Freight ☐

Courier ☒

Sea Freight ☐

3. Is Insurance required?

Yes ☐

Value: R _____

No ☐

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐

No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
EM5014201010002156	RU1			

7. Transport and delivery charges to be paid by:

CSIR ☒

Consignee ☐

8. Description and number of items per container: Documents

9. No. of cases/boxes/packages: 1 Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: R. Magothi EXTENTION: 2432

DATE: 30/10/2017 OU: 10-EM5

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

0801 388 883
www.globeflight.com
Reg. No. 1998/0095207 / VAT NO. 4150175351

Globeflight
Safeserver 3007

DATE: 30/10/2017

SHIPPER (YOUR NAME): Reinett Magosoni

COMPANY NAME: CSIR - STELLENBOSCH

STREET ADDRESS: 11 JAN CILLIERS STR

CITY: STELLENBOSCH

COUNTRY: CAPE TOWN

TELEPHONE NUMBER & E-MAIL: 021 888 2400

ACCOUNT NUMBER: F01521

SHIPPER'S REFERENCE: 6MS0142/2017

TO (RECIPIENT'S NAME): Muhammad Essop

COMPANY NAME: National Department of Environmental Affairs

STREET ADDRESS: Environmental House, 473 Steve Biko Road, Airside 9.

CITY: Pretoria

COUNTRY: South Africa

TELEPHONE NUMBER & E-MAIL: 012 399 9406

ORIGIN: CAPE TOWN

DESTINATION: PRETORIA

POST/ZIP CODE: 7599

POST/ZIP CODE: 0001

IMPORT & EXPORT CODE

IMPORT & EXPORT CODE

2718710560

GLOBAL DOCUMENT EXPRESS

GLOBAL PARCEL EXPRESS

SPECIALS

AIRFREIGHT

CROSS BORDER ROAD FREIGHT

CUSTOMS VALUE

OVERNIGHT EXPRESS

IN CITY DELIVERY

BUDGET CARGO 21-48 HRS

ROAD FREIGHT 48-96 HRS

WE HAVE SEEN AND AGREE TO THE STANDARD CONDITIONS OF CARRIAGE OF GLOBEFLIGHT WORLDWIDE EXPRESS

PRINT NAME: Reinett Magosoni

SIGNATURE: Reinett Magosoni

DATE: 30/10/2017 TIME: 14:00

HAZARDOUS CARGO? YES ☐ NO ☐

INSURANCE YES ☐ NO ☐

AMOUNT: _____

DAWN DELIVERY BY 08:00

SATURDAY DELIVERY

AFTER HOURS

PUBLIC HOLIDAY

RECEIVED IN GOOD ORDER AND CONDITION

PRINT NAME: _____

SIGNATURE: _____

DATE: _____ TIME: _____

Please note indemnity clause in Terms & Conditions.

Globeflight reserves the right to choose the service "Budget" should no service label be selected

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods: COURIER: Globe Flight

Waybill No.: 2718710560

1. Name and address of consignee:

Muhammad Essop, National Department of Environmental Affairs - Environmental House, 473 Steve Biko Road, Arcadia, Pretoria, 0001.

2. Method of dispatch:

Air Freight ☐
Sea Freight ☐

Courier ☒

3. Is Insurance required?

Yes ☐
No ☐

Value: R _____

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐
No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
ems0142	02100021	SEZUN		

7. Transport and delivery charges to be paid by:

CSIR ☒
Consignee ☐

8. Description and number of items per container: Documents

9. No. of cases/boxes/packages: 1 Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: Reineke Moshini EXTENTION: _____

DATE: 30/10/2017 OU: IU-ems

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province



0861 348 881
www.globeflight.com
Reg. No. 15963/089652/07 / VAT NO. 4650175351

DATE 30/10/2017 **ACCOUNT NUMBER** P01521 **SHIPPER'S REFERENCE** EMS 0143/2401 03100/0143c

SHIPPER (YOUR NAME) Reinett Masetshi
COMPANY NAME CSIR - STELLENBOSCH
STREET ADDRESS 11 JAN CILLIERS STR
CITY STELLENBOSCH
POST/ZIP CODE 7569
COUNTRY SOUTH AFRICA
TELEPHONE NUMBER & E-MAIL 021 888 2400

TO (RECIPIENT'S NAME) Jacqueline Mans
COMPANY NAME Department of Agriculture, Forestry & Fisheries
STREET ADDRESS Louisvale Road, Upington
CITY Upington
POST/ZIP CODE 8800
COUNTRY SOUTH AFRICA
TELEPHONE NUMBER & E-MAIL 051 338 5860

GLOBAL DOCUMENT EXPRESS ☐ **GLOBAL PARCEL EXPRESS** ☐ **SPECIALS** ☐ **AIRFREIGHT** ☐

CUSTOMS VALUE ☐ **CROSS BORDER ROAD FREIGHT** ☐

HAZARDOUS CARGO? YES ☐ NO ☐ **INSURANCE** YES ☐ NO ☐

AMOUNT

OVERNIGHT EXPRESS ☒ **IM CITY DELIVERY** ☐ **BUDGET CARGO 21-48 HRS** ☐

ROAD FREIGHT 48-96 HRS ☐

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS ☐ **PRINT NAME**

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS ☐ **PRINT NAME**

SIGNATURE **DATE** 30/10/2017 **TIME** 14:00

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS ☐ **PRINT NAME**

SIGNATURE **DATE** **TIME**

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS ☐ **PRINT NAME**

SIGNATURE **DATE** **TIME**

2718710563

1

Document

Please note indemnity clause in Terms & Conditions.

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods: COURIER: Globe Flight

Waybill No.: 2718 710563

1. Name and address of consignee:

Jacoline Mans, Department of Agriculture,
Forestry and Fisheries, Louisvale Road, Upington
8801

2. Method of dispatch:

Air Freight ☐

Courier ☒

Sea Freight ☐

3. Is Insurance required?

Yes ☐

Value: R _____

No ☐

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐

No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
EMS0142021000813E2UM				

7. Transport and delivery charges to be paid by:

CSIR ☒

Consignee ☐

8. Description and number of items per container: Documents

9. No. of cases/boxes/packages: 1

Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: Reinett Magoori EXTENTION: 2432

DATE: 30/10/2017 OU: IU-EMS

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods:

COURIER: Siobeflight

Waybill No.: 2718710558

1. Name and address of consignee:

Kaptein Beslaar, Kleinsee Polisie Stasie
Fredericks Drive, Gade Street, Kleinsee
8282.

2. Method of dispatch:

Air Freight ☐

Sea Freight ☐

Courier ☒

3. Is Insurance required?

Yes ☐

No ☐

Value: R _____

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐

No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
Ems0142021000315E2017				

7. Transport and delivery charges to be paid by:

CSIR ☐

Consignee ☐

8. Description and number of items per container:

Documents

9. No. of cases/boxes/packages: 1

Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: Reinette Musatshi

EXTENTION: 32432

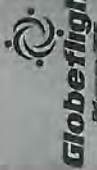
DATE: 30/10/2017

OU: IU-Ems

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province



0861 363 883
www.globeflight.com
Reg No: 1993/0305207 / VAT NO: 4080175351

2718710558



DATE	ACCOUNT NUMBER	COST CENTRE	SHIPPER'S REFERENCE	ORIGIN	DESTINATION	NO. OF PIECES
30/10/2017	P01521		EMSC1421R0N 0310010315C			1

SHIPPER (YOUR NAME)
CSIR - STELLENBOSCH
STREET ADDRESS
11 JAN CILLIERS STR
STELLENBOSCH
CITY
CAPE TOWN
COUNTRY: RSA
TELEPHONE NUMBER & E-MAIL
021 888 2400

TO (RECIPIENT'S NAME)
Kaptein Beslaar
COMPANY NAME
Kleinsee
STREET ADDRESS
Fredericks Drive, 6de str
CITY
Kleinsee
COUNTRY: South Africa
TELEPHONE NUMBER & E-MAIL
021 877 0574

POST/ZIP CODE: 7599

POST/ZIP CODE: 8282

GLOBAL DOCUMENT EXPRESS		OVERNIGHT EXPRESS		BUDGET CARGO		ROAD FREIGHT	
☐	☐	☒	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐

HAZARDOUS CARGO? YES ☐ NO ☐

INSURANCE YES ☐ NO ☐

AMOUNT R

REINERT MYSILU
SIGNATURE
DATE 30/10/17 TIME 14:00

WE HAVE SEEN AND AGREE TO THE FOLLOWING CONDITIONS
PRINT NAME
REINERT MYSILU
SIGNATURE
DATE 30/10/17 TIME 14:00

RECEIVED BY GLOBEFLIGHT WORLDWIDE EXPRESS
PRINT NAME
REINERT MYSILU
SIGNATURE
DATE 30/10/17 TIME 14:00

CUSTOMS VALUE		RECEIVED IN GOOD ORDER AND CONDITION	
☐	☐	☐	☐
☐	☐	☐	☐
☐	☐	☐	☐
☐	☐	☐	☐

IMPORT & EXPORT CODE

SPECIAL INSTRUCTIONS

DESIGNATION OF CONTENTS
Documents

ACTUAL WEIGHT

Please note indemnity clause in Terms & Conditions.

GlobeFlight reserves the right to choose the service "Budget" should no service label be selected

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

GlobeFlight
0861 348 883
www.globeflight.com
Reg. No. 1998/003052/07 / VAT NO. 4850175351

2718710555

Document

DATE	ACCOUNT NUMBER	COST CENTRE	SHIPPER'S REFERENCE	ORIGIN	DESTINATION	No. OF PIECES
09/11/2017	P01521		0850142/PUN 08100/08156			
SHIPPER (YOUR NAME) Reinett Mogotshi COMPANY NAME CSIR - STELLENBOSCH STREET ADDRESS 11 JAN CILLIERS STR STELLENBOSCH CITY CAPE TOWN COUNTRY RSA TELEPHONE NUMBER & E-MAIL 021 888 2400						
TO (RECIPIENT'S NAME) Stanley Tsitshungulomoni COMPANY NAME Environmental Affair STREET ADDRESS Environmental house, 473 Steve Biko Road, Arcadia CITY Pretoria COUNTRY South Africa TELEPHONE NUMBER & E-MAIL 0812 399 9000						
POST/ZIP CODE 7599						
POST/ZIP CODE 0001						

GLOBAL DOCUMENT EXPRESS		OVERNIGHT EXPRESS		RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	
GLOBAL DOCUMENT EXPRESS	☐	OVERNIGHT EXPRESS	☒	RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
GLOBAL PARCEL EXPRESS	☐	IN CITY DELIVERY	☐	RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
SPECIALS	☐	BUDGET CARGO 21-48 HRS	☐	RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
ANFRIGHT	☐	ROAD FREIGHT 48-96 HRS	☐	RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
CUSTOMS BORDER ROAD FREIGHT	☐		☐	RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
CUSTOMS VALUE				RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
HAZARDOUS CARGO?	YES ☐ NO ☒			RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
INSURANCE	YES ☐ NO ☒			RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME
AMOUNT				RECEIVED BY GLOBEFLIGHT WOLLENDRE EXPRESS	PRINT NAME

SHIPPER'S SIGNATURE
Reinett Mogotshi
DATE 09/11/2017 TIME 14:00

CONSIGNEE SIGNATURE

DATE _____ TIME _____

Please note indemnity clause in Terms & Conditions.

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

QF-LM-010 Rev 1

DISPATCH OF GOODS

CSIR 261 C FORM

Kindly arrange for dispatch of the following goods: COURIER: GlobeFlight

Waybill No.: 2718710555

1. Name and address of consignee:

Stanley Tshituk Molamoni, National Department
of Environmental Affairs, Environmental House,
473 Steve Biko Road, Arcadia, Pretoria, 0001

2. Method of dispatch:

Air Freight ☐
Sea Freight ☐

Courier ☒

3. Is Insurance required?

Yes ☐
No ☐

Value: R _____

4. Value for customs purposes:

R _____

5. Will goods be re-imported?

Yes ☐
No ☐

6. Project to be debited:

Project	OU	Depart	Activity	X-Ref
EMS0142021D0021SEKUN				

7. Transport and delivery charges to be paid by:

CSIR ☒
Consignee ☐

8. Description and number of items per container: Document

9. No. of cases/boxes/packages: 1 Weight _____ kg

10. Reason for dispatch _____

11. Special instructions: _____

PRINT NAME: Reinett Mogotsui EXTENSION: 2432

DATE: 09/11/2017 OU: 14-EMS

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Proof of registered mail sent

Name & Signature of person responsible for post:

11 Items – Registered Post (Juwi – 30 October 2017) Reinett Mogotshi 021 888 2432
EMS0142 / RUN / 02100 / 0215E

F. HARTOGH



30.10.2017

W Mthibi Northern Cape Department of Agriculture and Rural Development Private Bag X5018 Kimberley 8300	Justine Wyngaardt Eskom Road, Brackenfell, Western Cape 7561	Angus Burns WWF P O Box 23273 Claremont 7735
Lizell Stroh South African Civilian Aviation Authority Private Bag X73 Halfway House 1685	Mike Knight SANParks P O Box 76693 Port Elizabeth 6000	Rene de Kock South African Roads Agency Limited (SANRAL) Northern Cape (Western Region) Private Bag X19 Bellville, 7535
Christiaan Fortuin Namakwa District Municipality – Municipality Manager Private Bag X20 Springbok 8240	Paulus Vanreenen Nama Khoi Ward 8 Councillor P O Box 178 Kleinsee 8282	Aubrey Baartman Nama Khoi Municipality – Municipal Manager P O Box 178 Kleinsee 8282
Wilma Lutsch National Department of Environmental Affairs: Biodiversity and Conservation Private Bag X447 Pretoria 0001	Adrian Tiplady SKA SA 17 Baker Street Rosebank Johannesburg South Africa 2196	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

ORDINARY PARCEL PE 859 628 322 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Christiaan Fortuin</u> Geadresseer aan: <u>Namaqualand District Municipality</u> <u>Private Bag Springbok 8140</u> Contents / Inhoud: Value / Waarde:	ORDINARY PARCEL PE 859 628 146 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>SKA SA-Adrian Tiplady</u> Geadresseer aan: <u>17 Baker Street</u> <u>Postbank Johannesburg</u> <u>South Africa 2196</u> Contents / Inhoud: Value / Waarde:
ORDINARY PARCEL PE 859 628 407 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Lizell Shroh</u> Geadresseer aan: <u>South African Civilian</u> <u>Aviation Authority</u> <u>Private Bag 73 Halfway House</u> <u>1685</u> Contents / Inhoud: Value / Waarde:	ORDINARY PARCEL ShareCall 0800 111 502 www.sapo.co.za PE 859 628 225 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Justine Wynngaardt</u> Geadresseer aan: <u>Eskom Holdings Limited Eskom</u> <u>Distribution Western Operating</u> <u>Unit Eskom Power Generation</u> <u>Western Cape 7601</u> Contents / Inhoud: Value / Waarde:
ORDINARY PARCEL PE 859 628 469 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Angus Burns</u> Geadresseer aan: <u>WIFE</u> <u>9 AF 23273</u> <u>Laxmont</u> <u>7735</u> Contents / Inhoud: Value / Waarde:	ORDINARY PARCEL ShareCall 0800 111 502 www.sapo.co.za PE 859 628 248 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>N. Mthibi</u> Geadresseer aan: <u>Northern Cape Department</u> <u>of Agriculture and Rural</u> <u>Development Private Bag 25018</u> <u>8300</u> Contents / Inhoud: Value / Waarde:
ORDINARY PARCEL PE 859 628 367 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Paulus Vanreenen</u> Geadresseer aan: <u>Namaqualand District Municipality</u> <u>Councilor P.O. Box 178</u> <u>Kleinsee 8282</u> Contents / Inhoud: Value / Waarde:	ORDINARY PARCEL PE 859 628 340 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Rene de Kock</u> Geadresseer aan: <u>SANRAL</u> <u>Northern Cape Western Region</u> <u>Private Bag 19 Ballville</u> <u>7335</u> Contents / Inhoud: Value / Waarde:
ORDINARY PARCEL PE 859 628 305 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Aubrey Baartman</u> Geadresseer aan: <u>Namaqualand District Municipality</u> <u>Municipality Manager</u> <u>P.O. Box 178 Kleinsee</u> <u>8282</u> Contents / Inhoud: Value / Waarde:	ORDINARY PARCEL ShareCall 0800 111 502 www.sapo.co.za PE 859 628 384 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Mike Knight</u> Geadresseer aan: <u>SANParks P.O. Box 26693</u> <u>Port Elizabeth</u> <u>6000</u> Contents / Inhoud: Value / Waarde:
ORDINARY PARCEL ShareCall 0800 111 502 www.sapo.co.za PE 859 628 282 ZA BOOK COPY (Must be completed by sender / Moet deur afsender ingevul word) Addressed to: <u>Wilma Leusch</u> Geadresseer aan: <u>National Department of Environmental Affairs</u> <u>Biodiversity and Conservation</u> <u>Environment P.O. Box 113</u> <u>Stellenbosch 7601</u> Contents / Inhoud: Value / Waarde:	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Name & Signature of person responsible for post: F. HARTOGH
 29 items – Registered Post (Juwi – 31 October 2017) Reinett Mogotshi 021 888 2432

EMS0142 / RUN / 02100 / 0215E

31.10.2017

Gear Simon PO Box 515 Randburg, 2194	Yaphi A Private Bag X6102 Kimberley 8300	De la Fontaine Samantha Private Bag X6102 Kimberley 8300
Swart Elsabe Private Bag X6102 Kimberley 8300	Buys Pieter PO Box 40343, Arcadia, 0007	Blake Rob P O Box 116 Kleinsee 8282
Wessels Dudley P O Box 51 Koinaas 8249	Adams Rodrille P O Box 90 Komaggas 8242	Cosmos Bugan P O Box 90 Komaggas 8242
Rumboll Izak P O Box 211 Malmesbury 7299	Cloete Victor P O Box 149 Kleinsee 8282	Engelbrecht Willem P O Box 157 Kleinsee 8282
Visagie Louise P O Box 78 Kleinsee 8282	Randwedzi Mashudu Private Bag X5912 Upington 8800	Melinda Mei Private Bag X5912 Upington 8800
Bertus and Susan Brand P O Box 24 Koinaas 8249	The Director Department of Energy Northern Cape Private Bag X6093 Kimberley, 8300	Molefe Morokane Private Bag x 59 ARCADIA 0007

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Mthombeni Thuli 90 Long street Sasko Building Kimberly 8300	Odette Basson P.O. Box 01 Kleinsee, 8282	Nogwini Kholekile P.O. Box 3132 Kimberley 8300
Marubini Mashudu Private Bag X120, Pretoria 0001	Danie and Meisie Engelbrecht P O Box 137, Rooivlei Farm, Kleinsee, 8282	Ditame Ali Private Bag X 5018, Kimberley, 8300
Collett Anneliza Private Bag X120, Pretoria 0001	Geeringh John P.O.Box 1091 Johannesburg 2157	Kotze Deon P O Box 601, Springbok, 8240
Titus S P O Box 17, Springbok, 8240	Albertus Johannes Roux P O Box 49, Kammieskroon, 8241	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Wessels Duellay PO Box 51 Koingnaas 8249		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
RC2530876672A CUSTOMER COPY 301028R Klientalskrif		Initial of accepting officer _____ Date stamp _____ Paraaf van aanneem-beampte _____ Datumstempel _____	
REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Swart Elsabe Private Bag 86107 Kimberley 8300		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
RC2530876752A CUSTOMER COPY 301028R Klientalskrif		Initial of accepting officer _____ Date stamp _____ Paraaf van aanneem-beampte _____ Datumstempel _____	
REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Gear Simon PO Box 515 Rendburg 2194		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
RC2530876842A CUSTOMER COPY 301028R Klientalskrif		Initial of accepting officer _____ Date stamp _____ Paraaf van aanneem-beampte _____ Datumstempel _____	
REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Geeringh John PO Box 1091 Johannesburg 2157		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
RC 130 679 045 ZA CUSTOMER COPY 301028R Klientalskrif		Initial of accepting officer _____ Date stamp _____ Paraaf van aanneem-beampte _____ Datumstempel _____	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Yaphi A Private Bag 86102 Kimberley 8300		Insured value of contents Versekerde waarde van inhoud R _____	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer _____	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte _____ Datumstempel _____	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Bertus and Susan B P.O. Box 24 Koingnas 8249		Insured value of contents Versekerde waarde van inhoud R _____	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer _____	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte _____ Datumstempel _____	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Visagie Louise P.O. Box 78 Kleinsee 8282		Insured value of contents Versekerde waarde van inhoud R _____	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer _____	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte _____ Datumstempel _____	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Rumbold Izak P.O. Box 211 Malmesbury 7299		Insured value of contents Versekerde waarde van inhoud R _____	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer _____	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte _____ Datumstempel _____	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

Full tracking and tracing/Volledige volg en spoor Addressed to/Geadresseer aan Nogwini Kholekile P.O. Box 3132 Kimberley 8300		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____ Insured value of contents Versekerde waarde van inhoud R _____ Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502 Initial of accepting officer Stellenbosch Date stamp 31-10-2017 Paraaf van aaneem-beampte Folio 8 7-09	
REGISTERED LETTER GEREGETREERDE BRIEF (with an insurance option/met 'n versekeringsopsie) Full tracking and tracing/Volledige volg en spoor Addressed to/Geadresseer aan Marubini Mashudu Private Bag X120 Pretoria 0001		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____ Insured value of contents Versekerde waarde van inhoud R _____ Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502 Initial of accepting officer Stellenbosch Date stamp 31-10-2017 Paraaf van aaneem-beampte Folio 8 7-09	
REGISTERED LETTER GEREGETREERDE BRIEF (with an insurance option/met 'n versekeringsopsie) Full tracking and tracing/Volledige volg en spoor Addressed to/Geadresseer aan Mthombeni Thuli 90 Hong Street Sasko Building Kimberley 8300		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____ Insured value of contents Versekerde waarde van inhoud R _____ Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502 Initial of accepting officer Stellenbosch Date stamp 31-10-2017 Paraaf van aaneem-beampte Folio 8 7-09	
REGISTERED LETTER GEREGETREERDE BRIEF (with an insurance option/met 'n versekeringsopsie) Full tracking and tracing/Volledige volg en spoor Addressed to/Geadresseer aan Dibene Ali Private Bag X5018 Kimberley 8300		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____ Insured value of contents Versekerde waarde van inhoud R _____ Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502 Initial of accepting officer Stellenbosch Date stamp 31-10-2017 Paraaf van aaneem-beampte Folio 8 7-09	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor			
Addressed to/Geadresseer aan Molete Morokane Private Bag X59 ARCADIA 0007		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregisterde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Initial of accepting officer 31-10-2017		Date stamp 31-10-2017	
Registered Letter (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC253087812ZA CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel		701281	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor			
Addressed to/Geadresseer aan Melinda Mei Private Bag X5912 Upington 8800		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregisterde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Initial of accepting officer 31-10-2017		Date stamp 31-10-2017	
Registered Letter (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC253087826ZA CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel		701281	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor			
Addressed to/Geadresseer aan Engelbrecht Willem P.O. BOX 157 Kleinsee 8282		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregisterde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Initial of accepting officer 31-10-2017		Date stamp 31-10-2017	
Registered Letter (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC253087809ZA CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel		701281	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor			
Addressed to/Geadresseer aan Cosmas Bagan P.O. Box 90 Komaggas 8242		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregisterde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Initial of accepting officer 31-10-2017		Date stamp 31-10-2017	
Registered Letter (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC253087790ZA CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel		701281	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Addressed to/Geadresseer aan Blake Rob PO Box 116 Kleinsee 8282		Insured value of contents Versekerde waarde van inhoud R _____ C	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer [Signature]	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Addressed to/Geadresseer aan Delia Fontaine Samant Private Bag X6102 Kimberley 8300		Insured value of contents Versekerde waarde van inhoud R _____ C	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer [Signature]	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Addressed to/Geadresseer aan Denise and Meisie Engelen PO Box 134 Rooiwal Farm Kleinsee		Insured value of contents Versekerde waarde van inhoud R _____ C	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer [Signature]	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Addressed to/Geadresseer aan The Director Department of Energy Private Bag X6093 Kimberly 8300		Insured value of contents Versekerde waarde van inhoud R _____ C	
Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502		Initial of accepting officer [Signature]	Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Paraaf van aanneem-beampte Datumstempel	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Kenchedzi Mashudu Private Bag x 5912 Upington 8800		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC2530877382A CUSTOMER COPY 301028R klientafskrif		Initial of accepting officer Date stamp 31-10-2017	
		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Cloete Victor Po Box 149 Kleinsee 8282		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC2530877242A CUSTOMER COPY 301028R klientafskrif		Initial of accepting officer Date stamp 31-10-2017	
		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Adams Rodrille Po Box 90 Komaggas 8242		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC2530877157A CUSTOMER COPY 301028R klientafskrif		Initial of accepting officer Date stamp 31-10-2017	
		Paraaf van aanneem-beampte Datumstempel	

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Post Office	
Full tracking and tracing/Volledige volg en spoor		Postage paid R _____ Service fee/Diensgeld R _____ Insurance/Versekering R _____ Total/Totaal R _____	
Addressed to/Geadresseer aan Bus Pieter Po Box 40343 Arcadia 0007		Insured value of contents Versekerde waarde van inhoud R _____	
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	
Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC2530877072A CUSTOMER COPY 301028R klientafskrif		Initial of accepting officer Date stamp 31-10-2017	
		Paraaf van aanneem-beampte Datumstempel	

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Full tracking and tracing/Volledige volg en spoor		Insured value of contents Versekerde waarde van inhoud R _____ C	
Addressed to/Geadresseer aan <u>Collett Annelize</u> <u>Private Bag 120</u> <u>Pretoria</u> <u>0001</u>		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	Initial of accepting officer Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC 130 679 023 ZA	CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Full tracking and tracing/Volledige volg en spoor		Insured value of contents Versekerde waarde van inhoud R _____ C	
Addressed to/Geadresseer aan <u>Titus S</u> <u>P.O. Box 17</u> <u>Springbok</u> <u>8240</u>		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	Initial of accepting officer Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC 130 679 006 ZA	CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Full tracking and tracing/Volledige volg en spoor		Insured value of contents Versekerde waarde van inhoud R _____ C	
Addressed to/Geadresseer aan <u>Kotze Deon</u> <u>P.O. Box 601</u> <u>Springbok</u> <u>8240</u>		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	Initial of accepting officer Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC 130 679 010 ZA	CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel

REGISTERED LETTER GEREGISTREERDE BRIEF (with an insurance option/met 'n versekeringsopsie)		Postage paid R _____ C Service fee/Diensgeld R _____ C Insurance/Versekering R _____ C Total/Totaal R _____ C	
Full tracking and tracing/Volledige volg en spoor		Insured value of contents Versekerde waarde van inhoud R _____ C	
Addressed to/Geadresseer aan <u>Albertus Johannes</u> <u>P.O. Box 49</u> <u>Kammieskroon</u> <u>8241</u>		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	Initial of accepting officer Date stamp 31-10-2017
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only. Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.		Affix Track and Trace REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RC 069 236 686 ZA	CUSTOMER COPY 301028R Paraaf van aanneem-beampte Datumstempel

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

REGISTERED LETTER REGISTEREERDE BRIEF with an insurance option/met 'n versekeringsopsie		Post Office	
Full tracking and tracing/Volledige volg.en spoor		Postage paid R _____ c Service fee/Diensgeld R _____ c Insurance/Versekering R _____ c Total/Totaal R _____ c	
Addressed to/Geadresseer aan Olette Basson PO Box 01 Kleinsee 8282		Insured value of contents Versekerde waarde van inhoud R _____ c	
Postcode Postkode		Enquiries/Navrae Toll-free number Tolvry nommer 0800 111 502	Initial of accepting officer Date stamp
The value of the contents of this letter is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance up to R2 000.00 is available and applies to domestic registered letters only.		REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za R.C. 069 236 709 ZA CUSTOMER COPY Plate Volg-en-spoor klantafskrif	
Die waarde van die inhoud van hierdie brief is soos aangedui en vergoeding sal nie betaal word vir brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100.00. Geen vergoeding sonder dokumentêre bewys betaalbaar nie. Opsionele versekering tot R2 000.00 is beskikbaar en slegs op binnelandse geregistreerde briewe van toepassing.		301028R Paraaf van aaneem- beampste	Datumstempel

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D4: COMMENTS RECEIVED FROM I&APS RELEVANT TO THE TRANSMISSION LINE IN SUPPORT OF THE PROPOSED KAP VLEY WEF PRIOR TO THE RELEASE OF THE DRAFT BASIC ASSESSMENT REPORT FOR COMMENT

>>> Ralph Damonse <damo@iafrica.com> 16/11/2017 08:50 >>>
Dear Reinett

Please confirm whether the Alternate 2 for Grid Connection envisages to cross the land parcel Zonnequa 0 of 326. See attached land detail.

Thank you.

Ralph Damonse
Head: Project Development
Genesis Eco-Energy (Pty) Ltd
PO Box 363 Newlands 7725 Cape Town
Mobile: [+27 82 344 5911](tel:+27823445911)
Fax: +27 86 672 6096
Email: ralph@genesis-eco.com / Web: <http://www.genesis-eco.com>

>>> Sonia Miszczak <sonia@atlanticep.com> 28/11/2017 14:02 >>>

Dear Reinett,

I would please like to be registered as an I&AP for the proposed KAP VLEY WIND ENERGY FACILITY.

Please find attached I&AP Comment and Registration Form.

Kind regards

Sonia Miszczak
Project Manager
Atlantic Renewable Energy Partners (Pty) Ltd

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province



I&AP COMMENT & REGISTRATION FORM

PROPOSED CONSTRUCTION OF THE KAP VLEY WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR KLEINSEE, NORTHERN CAPE PROVINCE

Please provide your full contact details:	
First Name: Sonia	Surname: Mischczak
Organisation: Genesis Zonnequa Wind (Pty) Ltd	Designation: Project Manager
Postal Address: P.O. Box 363, Newlands, Cape Town	Street Address: 101, Block A, West Quay Building, 7 West Quay Road, Waterfront, Cape Town
Postal Code: 7725	Street Code: 8000
Phone: (021) 418 25 96	Fax: (086) 611 0882
Cell:	Email: sonia@atlanticep.co.za

Please indicate if you want to be registered as an Interested and Affected Party (I&AP) for the proposed projects (please tick the appropriate box). PLEASE NOTE: Registration as an I&AP is required in order to receive further correspondence regarding the EIA Process	
YES	☒ NO
Please clearly state any interest (business, financial, personal or other) you may have in the projects and/or the applications for Environmental Authorisation:	
Genesis Zonnequa Wind (Pty) Ltd (Zonnequa) is developing a wind energy facility on a property neighbouring the Kap Vley development. The property is the Remainder of the Farm Zonnekwa No. 326 and is to the west of The Remainder of the Farm Kourootjie 316. The current proposed Alternative 2 Transmission Line for the Kap Vley project runs over the Remainder of the Farm Zonnekwa No. 326 and crosses through the proposed Zonnequa facility (google earth screenshot attached). As the Kap Vley development progresses, if Alternative 2 is selected as the preferred alternative, the Zonnequa team would like to be consulted on the routing of this line over the Remainder of the Farm Zonnekwa No. 326, and on the proximity of this Transmission Line to the Eskom 400kV servitude. Additionally, we would like to understand the Kap Vley WTG placements during the EIA process (second attached screenshot from the DSR) so that we can model and assess the potential wake effect as part of our energy yield analysis.	

Please describe any issues or concerns you may have which you think should be considered during the Scoping and Environmental Impact Assessment Process:

Please provide details of any other individuals or organisations that should be registered as I&APs:

Please return all completed I&AP Comment & Registration Forms to Reinett Mogotshi at:

CSIR | PO Box 320 | Stellenbosch | 7599
Tel: (021) 888 2432 | Fax: (021) 888 26931 | Email: rmogotshi@csir.co.za
Please visit the project website at:
<https://www.csir.co.za/environmental-impact-assessment>

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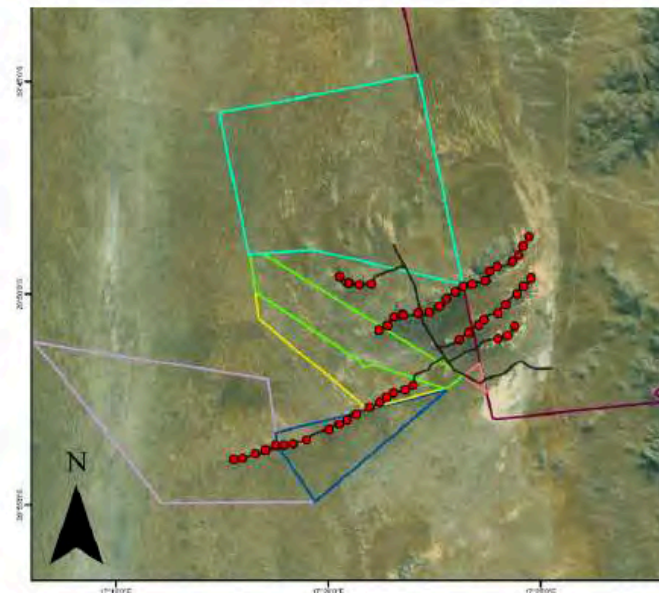
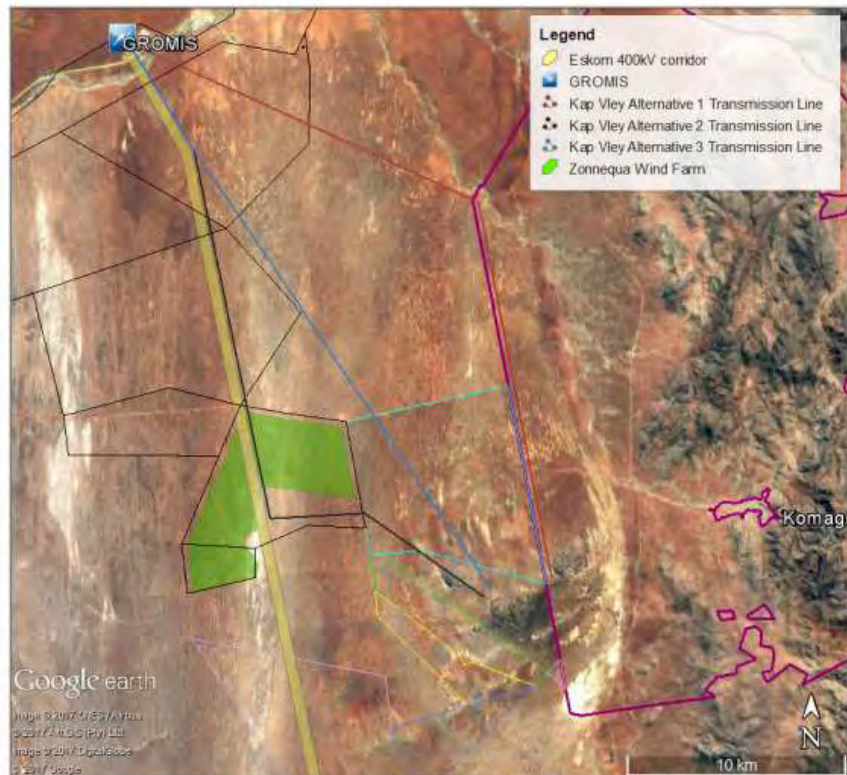


Figure 1.2: Draft Planned location of each wind turbine

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Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

	SCOT	Technology

Title: **Renewable Energy Generation Plant Setbacks to Eskom Infrastructure** Unique Identifier: **240-65559775**

Alternative Reference Number: **N/A**

Area of Applicability: **Power Line Engineering**

Documentation Type: **Guideline**

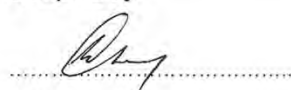
Revision: **0**

Total Pages: **8**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED DISCLOSURE**

Compiled by

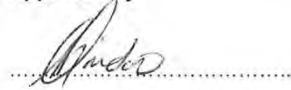


J W Chetty

Mechanical Engineer

Date: **20/02/2014**

Approved by

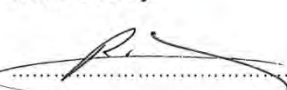


V Naidoo

Chief Engineer (Lines)

Date: **24/02/2014**

Authorised by

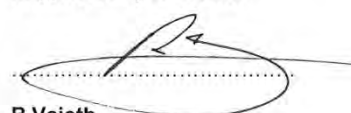


R A Vajeth

Acting Snr Manager (Lines)

Date: **27/2/2014**

Supported by SCOT/SC



R Vajeth

SCOT/SC/ Chairperson

Date: **27/2/2014**

PCM Reference: 240-65132732 **LINE ENGINEERING SERVICES**

SCOT Study Committee Number/Name : **OVERHEAD LINES**

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Wind Turbine Eskom Setbacks

Unique Identifier: 240-65559775

Revision: 0

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EXECUTIVE SUMMARY

In recent decades, the use of wind turbines, concentrated solar plants and photovoltaic plants have been on the increase as it serves as an abundant source of energy. This document specifies setbacks for wind turbines and the reasons for these setbacks from infrastructure as well as setbacks for concentrated solar plants and photovoltaic plants. Setbacks for wind turbines employed in other countries were compared and a general setback to be used by Eskom was suggested for use with wind turbines and other renewable energy generation plants.

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1. INTRODUCTION

During the last few decades, a large amount of wind turbines have been installed in wind farms to accommodate for the large demand of energy and depleting fossil fuels. Wind is one of the most abundant sources of renewable energy. Wind turbines harness the energy of this renewable resource for integration in electricity networks. The extraction of wind energy is its primary function and thus the aerodynamics of the wind turbine is important. There are many different types of wind turbines which will all exhibit different wind flow characteristics. The most common wind turbine used commercially is the Horizontal Axis Wind Turbine. Wind flow characteristics of this turbine are important to analyse as it may have an effect on surrounding infrastructure.

Wind turbines also cause large turbulence downwind that may affect existing infrastructure. Debris or parts of the turbine blade, in the case of a failure, may be tossed behind the turbine and may lead to damage of infrastructure in the wake path.

This document outlines the minimum distances that need to be introduced between a wind turbine and Eskom infrastructure to ensure that debris and / or turbulence would not negatively impact on the infrastructure.

Safety distances of wind turbines from other structures as implemented by other countries were also considered and the reasons for their selection were noted.

Concentrated solar plants and photovoltaic plants setbacks away from substations were also to be considered to prevent restricting possible power line access routes to the substation.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document provides guidance on the safe distance that a wind turbine should be located from any Eskom power line or substation. The document specifies setback distances for transmission lines (220 kV to 765 kV), distribution lines (6.6 kV to 132 kV) and all Eskom substations. Setbacks for concentrated solar plants and photovoltaic plants are also specified away from substations.

2.1.1 Purpose

Setbacks for wind turbines and power lines / substations are required for various reasons. These include possible catastrophic failure of the turbine blade that may release fragments and which may be thrown onto nearby power lines that may result in damage with associated unplanned outages. Turbulence behind the turbine may affect helicopter flight during routine Eskom live line maintenance and

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inspections that may lead to safety risk of the aircraft / personnel. Concentrated solar plants and photovoltaic plants setback away from substations were required to prevent substations from being boxed in by these renewable generation plants limiting line route access to the substations.

2.1.2 Applicability

This document is applicable to the siting of all new and existing wind turbines, concentrated solar plants and photovoltaic plants near power lines and substations.

2.2 NORMATIVE/INFORMATIVE REFERENCES

2.2.1 Normative

1. <http://www.envir.ee/orb.aw/class=file/action=preview/id=1170403/Hiiumaa+turbulence+impact+EMD.pdf>.
2. <http://www.energy.ca.gov/2005publications/CEC-500-2005-184/CEC-500-2005-184.PDF>
3. <http://www.adamscountywind.com/Revised%20Site/Windmills/Adams%20County%20Ordinance/Adams%20County%20Wind%20Ord.htm>
4. http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=PA11R&RE=I&EE=I
5. <http://www.wind-watch.org/documents/european-setbacks-minimum-distance-between-wind-turbines-and-habitations/>
6. <http://www.publications.parliament.uk/pa/ld201011/ldbills/017/11017.1-i.html>
7. http://www.caw.ca/assets/pdf/Turbine_Safety_Report.pdf
8. Rogers J, Slegers N, Costello M. (2011) A method for defining wind turbine setback standards. Wind energy 10.1002/we.468

2.2.2 Informative

None

2.3 DEFINITIONS

Definition	Description
Setback	The minimum distance between a wind turbine and boundary line/dwelling/road/infrastructure/servitude etc.
Flicker	Effect caused when rotating wind turbine blades periodically cast shadows
Tip Height	The total height of the wind turbine ie. Hub height plus half rotor diameter (see Figure1)

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2.3.1 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

Abbreviation	Description
None	

2.5 ROLES AND RESPONSIBILITIES

All personnel involved in the positioning wind turbines, concentrated solar plants and photovoltaic plants near power lines/substations must follow the setbacks outlined in this guideline.

2.6 PROCESS FOR MONITORING

Approval by Eskom in writing.

2.7 RELATED/SUPPORTING DOCUMENTS

None

3. DOCUMENT CONTENT

3.1 INTERNATIONAL SETBACK COMPARISON

Wind Turbine setbacks employed by various countries were considered. It was found that setbacks were determined for various reasons that include noise, flicker, turbine blade failure and wind effects. The distances (setbacks) varied based on these factors and were influenced by the type of infrastructure.

Wind turbine setbacks varied for roads, power lines, dwellings, buildings and property and it was noted that the largest setbacks were employed for reasons of noise and flicker related issues [1-7]. Very few countries specified setbacks for power lines.

The literature survey [1-7], yielded information about studies and experiments were conducted to determine the distance that a broken fragment from a wind turbine might be thrown. Even though of low probability of hitting a power line [5.0×10^{-5}]^[8], the distances recorded were significant [750m]^[8].

Setbacks were thus introduced to prevent any damage to Eskom infrastructure.

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Wind turbines may also cause changes in wind patterns with turbulent effects behind the hub. These factors dictate the wind turbine setbacks specified in this document.

Concentrated solar plants and photovoltaic plants also can limit access into the substation for power lines of all voltages. A setback distance must therefore be employed to prevent the substation from being boxed in by these generation plants. These setback distances are specified in this document.

3.2 ESKOM REQUIRED SETBACKS

- Eskom requires a setback distance of 3 times the tip height of the wind turbine from the edge of the closest Eskom servitude (including vacant servitudes) for transmission lines.
- Eskom requires a setback distance of 1 times the tip height of the wind turbine from the edge of the closest Eskom servitude (including vacant servitudes) for distribution Lines.
- Eskom must be informed of any proposed wind turbine, concentrated solar plants and photovoltaic activity within a 5 km radius of a substation. No wind turbine structure shall be built within a 2 km radius of the closest point of the substation. Where concentrated solar plants and photovoltaic structures fall within a 2 km radius of the closest point of a substation, Eskom should be informed in writing during the planning phase of the construction of such plant or structure.
- Applicants must show that Eskom radio telecommunication systems (mainly microwave systems) will not be affected in any way by wind turbines.

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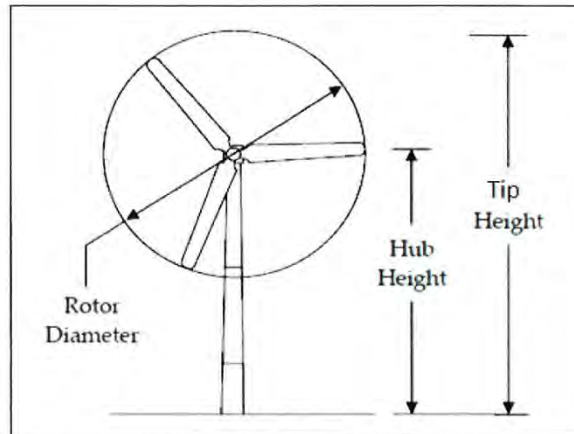


Figure 1: Horizontal Axis Wind Turbine ^[2]

4. AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation
V Naidoo	Chief Engineer
Dr P H Pretorius	Electrical Specialist
J Geeringh	Snr Consultant Environ Mngt
B Haridass	Snr Consultant Engineer
R A Vajeth	Acting Snr Manager (Lines)

5. REVISIONS

Date	Rev.	Compiler	Remarks
November 2013	0	J W Chetty	First Publication - No renewable energy generation plant setback specification in existence

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6. DEVELOPMENT TEAM

The following people were involved in the development of this document:

Jonathan W Chetty (Mechanical Engineer)

Vivendhra Naidoo (Chief Engineer)

Dr Pieter H Pretorius (Electrical Specialist)

John Geeringh (Snr Consultant Environ Mngt)

Bharat Haridass (Snr Consultant Engineer)

Riaz A Vajeth (Acting Snr Manager (Lines))

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Eskom requirements for work at or near Eskom infrastructure.

1. Eskom's rights and services must be acknowledged and respected at all times.
2. Eskom shall at all times retain unobstructed access to and egress from its servitudes.
3. Eskom's consent does not relieve the developer from obtaining the necessary statutory, land owner or municipal approvals.
4. Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer.
5. If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand.
6. The use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's previous written permission. If such permission is granted the developer must give at least fourteen working days prior notice of the commencement of blasting. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued in terms of the blasting process. It is advisable to make application separately in this regard.
7. Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom's satisfaction.
8. Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the developer, his/her agent, contractors, employees, successors in title, and assignees. The developer indemnifies Eskom against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom's services or apparatus or otherwise. Eskom will not be held responsible for damage to the developer's equipment.
9. No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the developer must give at least seven working days' notice prior to the commencement of work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued by the relevant Eskom Manager

Note: Where and electrical outage is required, at least fourteen work days are required to arrange it.

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10. Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with.
11. Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The developer shall maintain the area concerned to Eskom's satisfaction. The developer shall be liable to Eskom for the cost of any remedial action which has to be carried out by Eskom.
12. The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by *Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993)*.
13. Equipment shall be regarded electrically live and therefore dangerous at all times.
14. In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as an additional safety precaution, Eskom will not approve the erection of houses, or structures occupied or frequented by human beings, under the power lines or within the servitude restriction area.
15. Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant.
16. It is required of the developer to familiarise himself with all safety hazards related to Electrical plant.
17. Any third party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.

John Geeringh (Pr Sci Nat)

Senior Consultant Environmental Management
Eskom GC: Land Development

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D5: ISSUES AND RESPONSES TRAIL

Table 1: Comments from Authorities and Authorities after the project announcement-prior to the release of the Draft Basic Assessment Report for comment

DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/I&AP	COMMENT	RESPONSE FROM EAP/APPLICANT/SPECIALIST
15/11/2017 Email Ralph Damonse Genesis Eco-Energy (Pty) Ltd	Dear Reinett Please confirm whether the Alternate 2 for Grid Connection envisages to cross the land parcel Zonnequa 0 of 326. See attached land detail. Thank you.	CSIR: <i>Email response on 17/11/2017</i> Thank you for the email. I can confirm that the proposed Alternative 2 for the transmission line crosses the Remainder of the Farm Zonnekwa 326. Updated response Thanks for your comment on the grid connection for the proposed Kap Vley WEF. We have noted that our initial proposed Alternative 2 connection route crossed the Remainder of the Farm Zonnekwa No. 326 on which you are intending to develop a WEF. We have updated the layouts based on comments and findings from the scoping phase for the proposed Kap Vley WEF. As part of this update we have rerouted this connection corridor to avoid the mentioned property, and thus eliminate potential impact on your proposed development. Please see the updated routing in Figure A1.1 of the Draft Basic Assessment Report.
6/11/2017 Email John Geeringh Eskom	Please find attached Eskom requirements for development close to Eskom infrastructure and servitudes.	CSIR: <i>Email response on 6/11/2017</i> The requirements from Eskom will be adhered to.

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D6: I&AP DATABASE

No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
Organs of State								
1.	Mmatlala	Rabothatha	National Department of Environmental Affairs: Department of Environmental Affairs: Integrated Environmental Authorisations	✓				
2.	Muhammad	Essop	National Department of Environmental Affairs: Department of Environmental Affairs: Integrated Environmental Authorisations	✓				
3.	Thabile	Sangweni	National Department of Environmental Affairs: Department of Environmental Affairs: Integrated Environmental Authorisations	✓				
4.	Stanley	Tshitwamulomoni	National Department of Environmental Affairs: Department of Environmental Affairs: Biodiversity Conservation	✓				
5.	Pamela	Kershaw	National Department of Environmental Affairs: Department of Environmental Affairs: Protected Area Management	✓				
6.	Wilma	Lutsch	National Department of Environmental Affairs: Department of Environmental Affairs: Biodiversity	✓				

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No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
7.	A	Yaphi	Provincial Department of Environment and Nature Conservation: Northern Cape	✓				
8.	M	Mathews	Provincial Department of Environment and Nature Conservation: Northern Cape	✓				
9.	Samantha	De la Fontaine	Provincial Department of Environment and Nature Conservation: Northern Cape	✓				
10.	Elsabe	Swart	Provincial Department of Environment and Nature Conservation: Northern Cape	✓				
11.	Rob	Blake	Strandveld conservation Club: Chair man	✓				
12.	Dudley	Wessels	NM Restoration cc	✓				
13.	Rodrille	Adams	Hgks Komitee en Toerisme	✓				
14.	Cyrill	Cosmos Bagan	Innovatif Development Solutions CC	✓				
15.	Izak	Rumboll	CK Rumboll and partners (Town and regional planning)	✓				
16.	Victor	Cloete	SLP Co-ordinators De Beers	✓				
17.	Willem	Engelbrecht	Voorsitter: Boerevereeniging	✓				

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
18.	Louise	Visagie	Nature restore innovate	✓				
19.	Peter	Carrick	Nature restore innovate	✓				
20.	Aubrey	Baartman	Nama Khoi Municipality: Municipal Manager	✓				
21.	Paulus	Van reenen	Ward Councillor Kleinsee	✓				
22.	Maureen	Ouret	NamaKhoi Municipal personal Assistant of Manager	✓				
23.	Karen	Jodas	Savannah Environmental (Pty) Ltd	✓				
24.	Chistiaan	Fortuin	Namakwa District Municipality	✓				
25.	Mashudu	Randwedzi	Department of Water and Sanitation	✓				
26.	Melinda	Mei	Department of Water and Sanitation	✓				
27.	Shaun	Cloete	Department of Water and Sanitation	✓				
28.	Chantèl	Schwartz	Department of Water and Sanitation	✓				
29.	Mandla	Ndzilili	Ministry of Environment and Nature Conservation	✓				

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30.	Sibonelo	Mbanjwa	Provincial Department of Environment and Nature Conservation: Northern Cape	✓				
31.	Thulani	Mthombeni	Northern Cape Department of Environment, Nature and Conservation	✓				
32.	Onwabile	Mdzumo		✓				
33.	Kelekegile	Rapelang	Northern Cape Department of Water and Sanitation Lower Orange Water Management Area	✓				
34.	Kholekile	Nongwini	Northern Cape Department of Roads and Public Works	✓				
35.	W	Mothibi	Northern Cape Department of Agriculture and Rural Development	✓				
36.	Pete	Cloete	Northern Cape Department of Environment, Nature and Conservation	✓				
37.	Luzane	Tools-Bernado	Provincial DENC: Northern Cape	✓				
38.	Mashudu	Marubini	Department of Agriculture, Forestry and Fisheries - Delegate of the Minister (Act 70 of 1970)	✓				
39.	Thoko	Buthelezi	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office	✓				
40.	D	Nhlakad	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office	✓				

APPENDIX D – PUBLIC PARTICIPATION

SECTION F: APPENDICES

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No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
41.	Anneliza	Collett	Department of Agriculture, Forestry and Fisheries - AgriLand Liaison office	✓				
42.	Jacoline	Mans	Department of Agriculture, Forestry and Fisheries - Chief Forester: NFA Regulation	✓				
43.	Ali	Diteme	Agriculture, Land Reform & Rural Development	✓				
44.	Pieter	Buys	National Energy Regulator of South Africa (NERSA)	✓				
45.	Denver	Van Heerden	Department of Public Works, Roads and Transport	✓				
46.	Rene	de kock	South African Roads Agency Limited (SANRAL) Northern Cape (Western Region)	✓				
47.	Nicole	Abrahams	South African Roads Agency Limited (Western Region)	✓				
48.	M	Lepheane	Department of Labour	✓				
49.	A	Botes	Department of Social Development	✓				
50.	Riaan	Warie	Northern Cape Economic Development Agency	✓				
51.	Andrew	Timothy	Directorate Heritage, Department - Sports, Arts and Culture	✓				
52.	Lizell	Stroh	South African Civil Aviation Authority	✓				

APPENDIX D – PUBLIC PARTICIPATION

SECTION F: APPENDICES

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No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
53.	John	Geeringh	ESKOM	✓				
54.	Kevin	Leask	ESKOM	✓				
55.	Justine	Wyngaardt	Eskom Holdings Limited: Eskom Distribution Western Operating Unit	✓				
56.	Sharon	Steyn	Northern Cape Chamber of Commerce and Industry	✓				
57.	H	Myburgh	Agri Northern Cape	✓				
58.	Mayvyn	Bhana	Transnet	✓				
59.	Clive	Stephenson	Transnet	✓				
60.	The Director		Department of Energy Northern Cape	✓				
61.	Ragna	Redelstorff	SAHRA	✓				
62.	Natasha	Higgit	SAHRA	✓				
63.	Kgauta	Mokoena	Department of Mineral Resources	✓				
64.	Elliot	Sibeko	Department of Telecommunication & Postal Services	✓				

SECTION F: APPENDICES

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No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
65.	Chris	Coetzee	Southern African Large Telescope (SALT) Sutherland	✓				
66.	Adrian	Tiplady	SKA SA	✓				
67.	Raoul	Van den Berg	Southern African Large Telescope (SALT) Sutherland	✓				
Conservation organizations and NGOs								
68.	Simon	Gear	Birdlife South Africa	✓				
69.	Lubabalo	Ntsoho	C.A.P.E. Co-ordination Unit: Northern Cape	✓				
70.	Freyne	du Toit	Grasslands Society of Southern Africa	✓				
71.			Endangered Wildlife Trust, Wildlife and Energy Programme	✓				
72.	Dr. Howard	Hendricks	South African National Parks (SANParks) - Snr GM: Policy & Governance Conservation Services Division	✓				
73.	Dr. Joh R	Henschel	SAEON Arid Lands Node	✓				
74.	Dr Mike	Knight	SANParks	✓				
75.	Angus	Burns	WWF-SA: Land and Biodiversity Stewardship Programme	✓				

SECTION F: APPENDICES

DRAFT BASIC ASSESSMENT REPORT

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No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
76.	Praneel	Ruplal	Independent Communications Authority of South Africa (ICASA)	✓				
Land Owners and Adjacent Property Owners								
77.	Albertus Johannes	Roux	Landowner	✓				
78.	Andrew	Barton	De Beers Consolidated Mines (Pty) Ltd	✓				
	William	MacDonald	Mine Manager					
79.	Gerhard	Viljoen	Emerald Panther INV 78 (Pty) Ltd	✓				
	Tiaan	Priem	Mine Manager					
80.	John	Geeringh	Eskom Holdings SOC Ltd	✓				
81.	Samantha	Titus	Nama Khoi Municipality	✓				
82.	Deon	Magerman	Landowner	✓				
Additional Registered I&APS								
83.	Koos	Bisschoff	Private					
84.	Karen	Jodas	Savannah Environmental					

SECTION F: APPENDICES

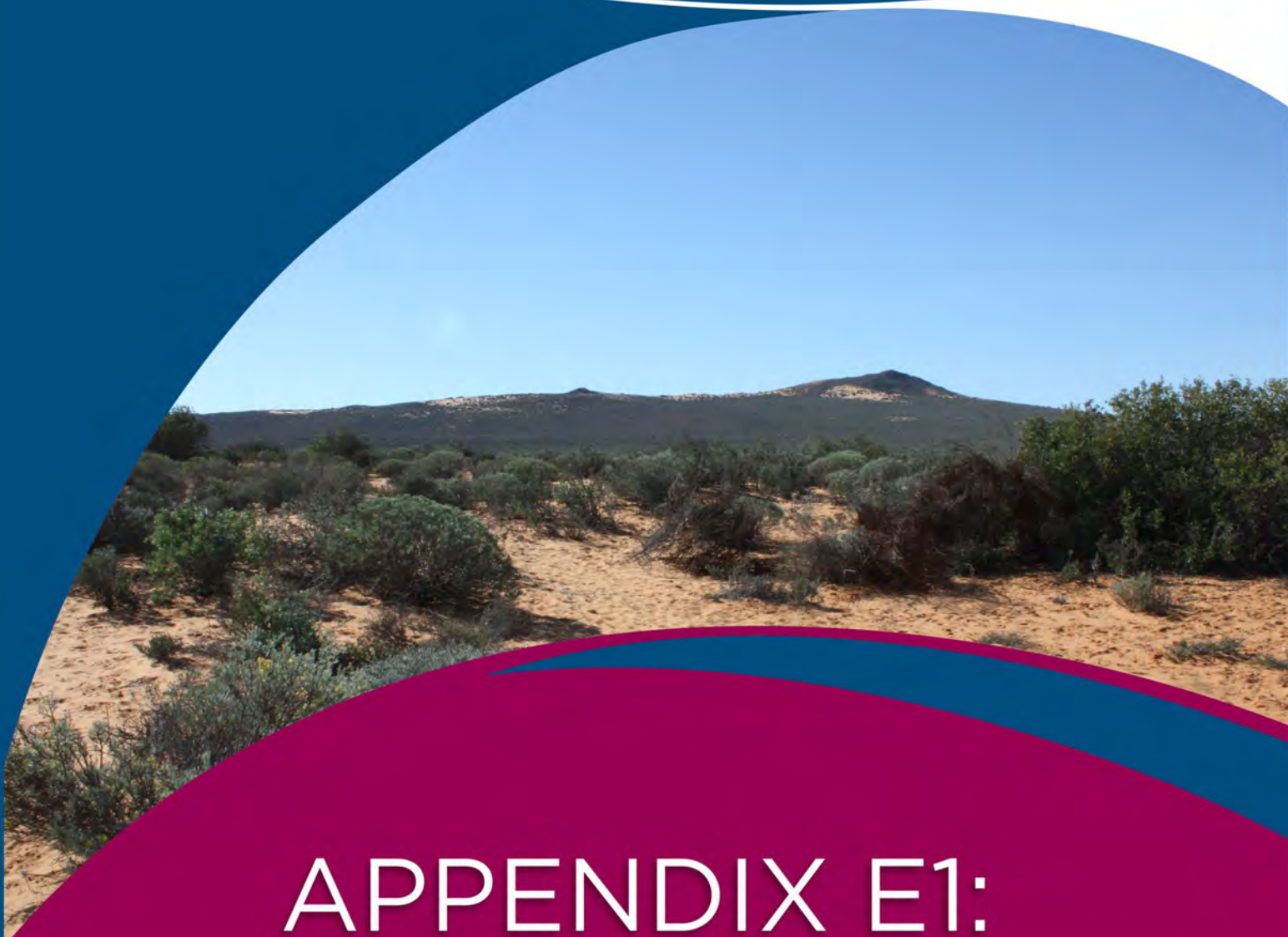
DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinzee, Northern Cape Province

No.	First Name	Surname	Company/ Organisation	Notice of Project Announcement	Notice of Release of Draft BA Report	Email: Notice of Submission of Final BA Report to DEA	Notice of EA for BA	
85.	Sonia	Miszczak	Genesis Zonnequa Wind (Pty) Ltd					
86.	Maureen	Kruger	Private					
87.	Ralph	Damonse	Genesis Eco-Energy (Pty) Ltd					
88.	Rodville	Adams	Private					
89.	Joseph	Harding	WindLab					
Distribution								
90.			Kleinzee Police station					
91.			Kleinzee Library					



DRAFT BASIC ASSESSMENT REPORT



APPENDIX E1: Terrestrial Ecology Impact Assessment Report

Fauna and Flora Specialist Ecological Study

**Basic Assessment for the Proposed Development of a
Grid Connection for the Kap Vley Wind Energy Facility
near Kleinzee, Northern Cape Province:**

BASIC ASSESSMENT REPORT



Report prepared for:

CSIR – Environmental Management Services

P O Box 320

Stellenbosch

7600

Report prepared by:

Simon Todd

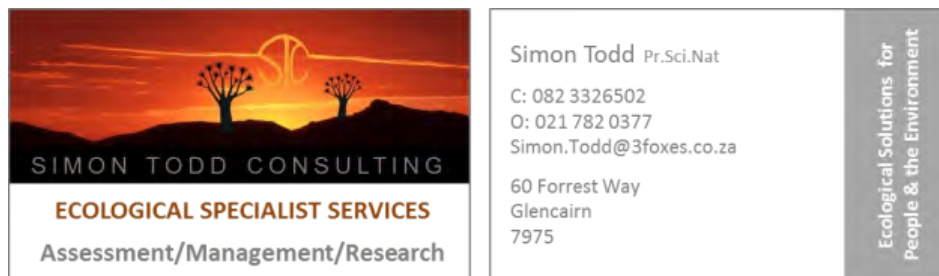
60 Forrest Way

Glencairn

7975

March 2018

SHORT CV/SUMMARY OF EXPERTISE – SIMON TODD



Simon Todd is Director and principal scientist at 3Foxes Biodiversity Solutions and has over 20 years of experience in biodiversity measurement, management and assessment. He has provided specialist ecological input on more than 200 different developments distributed widely across the country, but with a focus on the three Cape provinces. This includes input on the Wind and Solar SEA (REDZ) as well as the Eskom Grid Infrastructure (EGI) SEA and Karoo Shale Gas SEA. He is on the National Vegetation Map Committee as representative of the Nama and Succulent Karoo Biomes. Simon Todd is a recognised ecological expert and is a past chairman and current deputy chair of the Arid-Zone Ecology Forum. He is registered with the South African Council for Natural Scientific Professions (No. 400425/11).

Skills & Primary Competencies

- Research & description of ecological patterns & processes in Nama Karoo, Succulent Karoo, Thicket, Arid Grassland, Fynbos and Savannah Ecosystems.
- Ecological Impacts of land use on biodiversity
- Vegetation surveys & degradation assessment & mapping
- Long-term vegetation monitoring
- Faunal surveys & assessment.
- GIS & remote sensing

Tertiary Education:

- 1992-1994 – BSc (Botany & Zoology), University of Cape Town
- 1995 – BSc Hons, Cum Laude (Zoology) University of Natal
- 1996-1997- MSc, Cum Laude (Conservation Biology) University of Cape Town

Employment History

- 2009 – Present – Sole Proprietor of Simon Todd Consulting, providing specialist ecological services for development and research.
- 2007 Present – Senior Scientist (Associate) – Plant Conservation Unit, Department of Botany, University of Cape Town.
- 2004-2007 – Senior Scientist (Contract) – Plant Conservation Unit, Department of Botany, University of Cape Town
- 2000-2004 – Specialist Scientist (Contract) - South African National Biodiversity Institute
- 1997 – 1999 – Research Scientist (Contract) – South African National Biodiversity Institute

A selection of recent work is as follows:

Strategic Environmental Assessments

Co-Author. Chapter 7 - Biodiversity & Ecosystems - Shale Gas SEA. CSIR 2016.

Co-Author. Chapter 1 Scenarios and Activities – Shale Gas SEA. CSIR 2016.

Co-Author – Ecological Chapter – Wind and Solar SEA. CSIR 2014.

Co-Author – Ecological Chapter – Eskom Grid Infrastructure SEA. CSIR 2015.

Contributor – Ecological & Conservation components to SKA SEA. CSIR 2017.

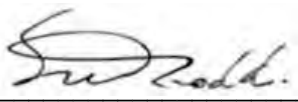
Recent Specialist Ecological Studies in the Vicinity of the Current Site

- Fauna Specialist Study for the proposed Eskom Kleinsee 300MW WEF. Savannah Environmental 2012.
- Fauna and Flora Specialist Study for the Project Blue Wind and Solar Energy Facility, Near Kleinsee. Savannah Environmental 2012.
- Fauna and Flora for the G7 Richtersveld Wind Farm. Environmental Resources Management 2011.
- Preconstruction Walk-Through of the Juno-Gromis 400kV Power Line. Nsovo Environmental 2016.
- Specialist Faunal Assessment of the West Coast Resources Mine Expansion. Myezo Environmental. 2016.
- Fauna and Flora specialist Scoping & EIA Study for the Tormin Mineral Sands Inland and Coastal Mining expansion. SRK. 2016.

SPECIALIST DECLARATION

I, ..Simon Todd....., as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

-
- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: _____

Name of Specialist: ____Simon Todd_____

Date: ____14 March 2018_____

LIST OF ABBREVIATIONS

DEA	Department of Environmental Affairs
EIA	Environmental Impact Assessment
CBA	Critical Biodiversity Area
ESA	Ecological Support Area
DAFF	Department of Water Affairs and Forestry

COMPLIANCE WITH THE APPENDIX 6 OF THE 2017 EIA REGULATIONS

Requirements of Appendix 6 – GN R326 EIA Regulations 7 April 2017	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	
a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page 1-2
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 3
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Page 9
<u>(cA) an indication of the quality and age of base data used for the specialist report;</u>	Section 1.5 and 1.6 (Pages 13-14)
<u>(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;</u>	Section 5.1, Page 33 Section 6
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 1.6, Pages 14 & 15
e) a description of the methodology adopted in preparing the report or carrying out the specialised process <u>inclusive of equipment and modelling used;</u>	Section 1.3 and 1.6, Pages 13 & 14
f) <u>details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;</u>	Section 3 Figure 12 Section 6 Figure 13
g) an identification of any areas to be avoided, including buffers;	Section 3 Section 6 Figure 13
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 6 Figure 13
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4, Page 13
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 6.1 Pages 33-35
k) any mitigation measures for inclusion in the EMPr;	Section 6 Section 7
l) any conditions for inclusion in the environmental authorisation;	Section 6 Section 7
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 6 Section 7
n) a reasoned opinion- i. whether the proposed activity, <u>activities</u> or portions thereof should be authorised; (iA) <u>regarding the acceptability of the proposed activity or activities and</u> ii. if the opinion is that the proposed activity, <u>activities</u> or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 9
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Refer to BA Report CSIR/IU/021MH/IR/2018/0001/A
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	N/A
2) <u>Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.</u>	N/A

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1 INTRODUCTION AND METHODOLOGY

1.1 Scope and Objectives

Juwi Renewable Energies has appointed CSIR to undertake the required environmental authorisation process for the proposed Kap Vley Wind Farm located west of Springbok in the Northern Cape Province. The development consists of the wind farm as well as a proposed grid connection of up to 40km long to the Eskom Gromis substation north of the site. The wind farm is being authorised through a full Scoping and EIA process, while the grid connection is being authorised through a separate Basic Assessment (BA) process. The current study contributes to the BA and details the ecological features along the proposed power line route options and assesses the likely impacts associated with the construction and operation of the power line. Three different route alternatives (Alternatives 1, 2 and 3) are considered and a corridor of 200m wide is assessed along each route alternative.

The purpose of the Terrestrial Biodiversity BA Report is to describe and detail the ecological features along the proposed routes; provide an assessment of the ecological sensitivity of the affected areas and identify and assess the likely impacts associated with the development of the power line. Field assessment as well as a desktop review of the available ecological information for the area is used to identify and characterise the ecological features of the area. This information is used to derive an ecological sensitivity map for the route alternatives that can be used to refine the final route alignment and reduce the likely impacts associated with the development. Impacts are assessed for the preconstruction, construction, operation, and decommissioning phases of the development. A variety of avoidance and mitigation measures associated with each identified impact are recommended, which should be included in the Environmental Management Programme (EMPr) for the development. The full scope of the study is detailed below and is in accordance with Appendix 6 - GN R326 of the EIA Regulations of 7 April 2017.

1.2 Terms of Reference

The study includes the following activities:

- a description of the environment that may be affected by a specific activity and the manner in which the environment may be affected by the proposed project;
- a description and evaluation of environmental issues and potential impacts (including assessment of direct, indirect and cumulative impacts) that have been identified;
- a statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts;
- an indication of the methodology used in determining the significance of potential environmental impacts;
- an assessment of the significance of direct, indirect and cumulative impacts of the development;
- a description and comparative assessment of all alternatives including cumulative impacts;

- recommendations regarding practical mitigation measures for potentially significant impacts, for inclusion in the Environmental Management Programme (EMPr);
- an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;
- a description of any assumptions uncertainties and gaps in knowledge; and
- an environmental impact statement which contains:
 - o a summary of the key findings of the environmental impact assessment;
 - o an assessment of the positive and negative implications of the proposed activity; and
 - o a comparative assessment of the positive and negative implications of identified alternatives.

General Considerations for the study included the following:

- Disclose any gaps in information (and limitations in the study) or assumptions made.
- Identify recommendations for mitigation measures to minimise impacts.
- Outline additional management guidelines.
- Provide monitoring requirements, mitigation measures and recommendations in a table format as input into the EMPr for faunal or flora related issues.
- The assessment of the potential impacts of the development and the recommended mitigation measures provided have been separated into the following project phases:
 - o Planning and Construction
 - o Operational
 - o Decommissioning

1.3 Assessment Approach

This assessment is conducted according to Appendix 6 – GN R326 EIA Regulations 7 April 2017 in terms of the National Environmental Management Act (Act 107 of 1998) as amended (NEMA), as well as best-practice guidelines and principles for biodiversity assessment as outlined by Brownlie (2005) and De Villiers *et al.* (2005).

In terms of NEMA, this assessment demonstrates how the proponent intends to comply with the principles contained in Section 2 of NEMA, which amongst other things, indicates that environmental management should:

- (In order of priority) aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity (Figure 1);
- Avoid degradation of the environment;
- Avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and

- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

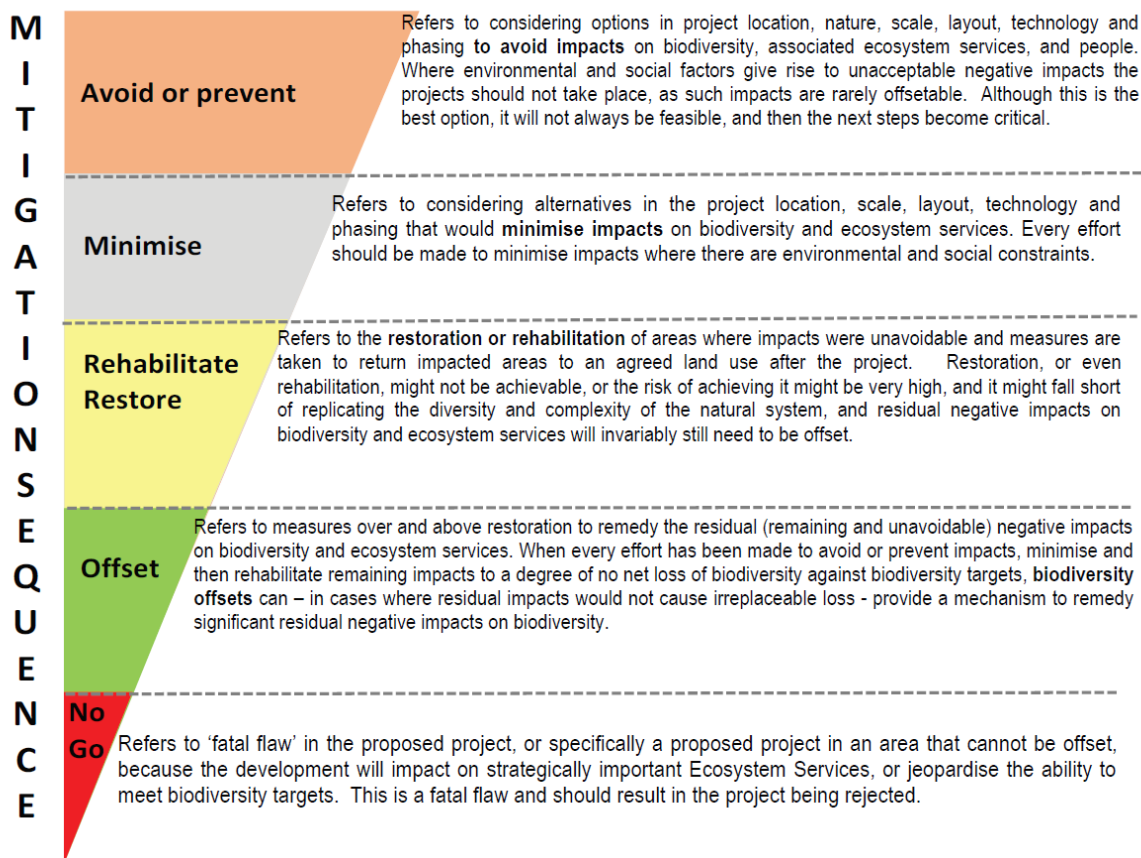


Figure 1. The mitigation hierarchy that is used to guide the study in terms of the priority of different mitigation and avoidance strategies.

Furthermore, in terms of best practice guidelines as outlined by Brownlie (2005) and De Villiers et al. (2005), a precautionary and risk-averse approach should be adopted for projects which may result in substantial detrimental impacts on biodiversity and ecosystems, especially the irreversible loss of habitat and ecological functioning in threatened ecosystems or designated sensitive areas: i.e. Critical Biodiversity Areas (CBAs) (as identified by systematic conservation plans, Biodiversity Sector Plans or Bioregional Plans) and Freshwater Ecosystem Priority Areas.

In order to adhere to the above principles and best-practice guidelines, the following approach forms the basis for the study approach and assessment philosophy:

- The study includes data searches, desktop studies, site walkovers / field survey of the property and baseline data collection, describing:
- A description of the broad ecological characteristics of the site and its surrounds in terms of any mapped spatial components of ecological processes and/or patchiness, patch size,

relative isolation of patches, connectivity, corridors, disturbance regimes, ecotones, buffering, viability, etc.

In terms of **pattern**, the following will be identified or described:

Community and ecosystem level

- The main vegetation type, its aerial extent and interaction with neighbouring types, soils or topography;
- Threatened or vulnerable ecosystems (*cf. SA vegetation map/National Spatial Biodiversity Assessment, fine-scale systematic conservation plans, etc.*).

Species level

- Species of Conservation Concern (SCC) (giving location if possible using GPS)
- The viability of an estimated population size of the RDB species that are present (including the degree of confidence in prediction based on availability of information and specialist knowledge, i.e. High=70-100% confident, Medium 40-70% confident, low 0-40% confident)
- The likelihood of other RDB species, or species of conservation concern, occurring in the vicinity (include degree of confidence).

Fauna

- Describe and assess the terrestrial fauna present in the area that will be affected by the proposed development.
- Conduct a faunal assessment that can be integrated into the ecological study.
- Describe the existing impacts of current land use as they affect the fauna.
- Clarify species of special concern (SSC) and that are known to be:
 - o endemic to the region;
 - o that are considered to be of conservational concern;
 - o that are in commercial trade (CITES listed species); or
 - o are of cultural significance.
- Provide monitoring requirements as input into the EMP for faunal related issues.

Other pattern issues

- Any significant landscape features or rare or important vegetation associations such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity.
- The extent of alien plant cover of the site, and whether the infestation is the result of prior soil disturbance such as ploughing or quarrying (alien cover resulting from disturbance is generally more difficult to restore than infestation of undisturbed sites).
- The condition of the site in terms of current or previous land uses.

In terms of **process**, the following will be identified and/or described:

- The key ecological “drivers” of ecosystems on the site and in the vicinity, such as fire.
- Any mapped spatial component of an ecological process that may occur at the site or in its vicinity (i.e. *corridors* such as watercourses, upland-lowland gradients, migration routes,

coastal linkages or inland-trending dunes, and *vegetation boundaries* such as edaphic interfaces, upland-lowland interfaces or biome boundaries).

- Any possible changes in key processes, e.g. increased fire frequency or drainage/artificial recharge of aquatic systems.
- Furthermore, any further studies that may be required during or after the EIA process will be outlined.
- All relevant legislation, permits and standards that would apply to the development will be identified.
- The opportunities and constraints for development will be described and shown graphically on an aerial photograph, satellite image or map delineated at an appropriate level of spatial accuracy.

1.4 Assumptions and Limitations

The current study is based on the results of numerous site visits as well as a desktop study, which serves to reduce the limitations and assumptions required for the study. The Kap Vley site itself was visited and sampled numerous times across the spring flowering season when the vegetation was in a good condition. The power line routes between Kap Vley and Gromis substation were also inspected in the field at numerous points along their length. Specific attention was paid to the presence of sensitive or rare features along the routes, including dunes, quartz outcrops, salt pans and other features that would be potentially sensitive to the development. It is however not possible to sample the entire length of each route in detail and so some sections were visually inspected from a distance to confirm that there were no features of concern present and that the vegetation conforms to the patterns that were observed on the satellite imagery of the route. Although faunal habitats along the routes were assessed, no direct fauna sampling was conducted along the routes. However very detailed faunal sampling has been conducted within the Kap Vley site as well as at other development sites along the route during other studies in the area, with the result that the faunal communities of the area have been very well characterised. Some fauna may be difficult to observe in the field and so their potential presence in the area was evaluated based on the literature and available databases. In order to ensure a conservative approach in this regard, the species lists derived from the literature were obtained from an area significantly larger than the study site.

1.5 Source of Information

Data sources from the literature consulted and used where necessary in the study includes the following:

Vegetation:

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (Mucina and Rutherford 2006 and 2012 update) as well as the National List of Threatened Ecosystems (2011), where relevant.
- Information on plant and animal species recorded for the area was extracted from the new Plants of South Africa (POSA) database hosted by the South African National Biodiversity Institute (SANBI). Data was extracted for a significantly larger area than the study area, but

this is necessary to ensure a conservative approach as well as counter the fact that the site itself has not been well sampled in the past.

- The IUCN conservation status of the species in the list was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2017).

Habitats & Ecosystems:

- Freshwater and wetland information was extracted from the National Freshwater Ecosystem Priority Areas assessment, NFEPA (Nel et al. 2011).
- Important protected areas expansion areas were extracted from the Northern Cape Protected Areas Expansion Strategy (NC-NPAES 2017).
- Critical Biodiversity Areas in the study area were obtained from the Northern Cape Conservation Plan (Oosthuysen & Holness 2016).

Fauna:

- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and the ADU databases <http://vmus.adu.org.za>.
- Literature consulted includes Branch (1988) and Alexander and Marais (2007) for reptiles, Du Preez and Carruthers (2009) for amphibians, EWT & SANBI (2016) and Skinner and Chimimba (2005) for mammals.
- The faunal species lists provided are based on species which are known to occur in the broad geographical area, as well as a preliminary assessment of the availability and quality of suitable habitat at the site.
- The conservation status of mammals is based on the IUCN Red List Categories (EWT/SANBI 2016), while reptiles are based on the South African Reptile Conservation Assessment (Bates et al. 2013) and amphibians on Minter et al. (2004) as well as the IUCN (2017).

1.6 Field Assessment

The area was visited numerous times between August 2017 and February 2018. Detailed mapping of sensitive habitats and populations of conservation concern has been conducted for the Kap Vley wind farm as this is generally more sensitive area than the remainder of the power line routes. Along the power line routes outside of the wind farm area, these were inspected at various points along the proposed routes and the vegetation present recorded and any sensitive features present noted and mapped where necessary. The faunal sampling at Kap Vley includes camera trapping, small mammal trapping with Sherman traps, pitfall traps and searching. Additional camera trapping and direct searching has also been conducted at various points along the routes, with the result that the faunal community of the area has been well characterised and while there are certainly additional rare or uncommon species present, the dominant species have been well addressed.

1.7 **Sensitivity Mapping and Assessment**

An ecological sensitivity map of the 200 m corridors associated with the power line route alternatives was produced by integrating the information collected on-site with the available biodiversity information available in the literature and various spatial databases. This includes delineating the habitat units identified in the field and assigning sensitivity values to the units based on their vegetation composition, faunal habitat or conservation value and the potential presence of species of conservation concern.

The sensitivity of the different units identified in the mapping procedure was rated according to the following scale:

- **Low** – Areas of natural or transformed habitat with a low sensitivity where there is likely to be a negligible impact on ecological processes and terrestrial biodiversity. Most types of development can proceed within these areas with little ecological impact.
- **Medium**- Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact such as erosion low. These areas usually comprise the bulk of habitats within an area. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.
- **High** – Areas of natural or transformed land where a high impact may occur due to the high flora or faunal habitat value, sensitivity or important ecological role of the area. These areas may contain, or be important habitat for, species of conservation concern or provide important ecological services such as water flow regulation or forage provision. Development within these areas is generally undesirable and should proceed with caution as additional specific mitigation and avoidance is usually required to reduce impacts within these areas to acceptable levels. High sensitivity areas are also usually more sensitive to cumulative impact and the total developed footprint within these areas should be kept low.
- **No-Go/Very High** – Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are considered to be no-go areas from a developmental perspective and should be avoided.
- In some situations, areas were also classified between the above categories, such as Medium High, where it was deemed that an area did not fit well into a certain category but rather fell most appropriately between two sensitivity categories. There are however no sensitivities that are identified as “Medium to High” or similar ranged categories because this adds uncertainty to the mapping as it is not clear if an area falls at the bottom or top of such a range.

2 DESCRIPTION OF PROJECT ASPECTS RELEVANT TO ECOLOGICAL IMPACTS

The planned overhead power line (132 kV) will feed into Eskom's electricity grid. Three alternatives are being considered:

- Alternative 1: From the on-site substation to Gromis Substation. The transmission line is approximately 36 km long.
- Alternative 2: From the on-site substation to Gromis Substation. The transmission line is approximately 36 km long.
- Alternative 3: Directly to the Gromis substation from the on-site substation. The transmission line is approximately 32 km long.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Vegetation Types

According to the national vegetation map (Mucina & Rutherford 2006/2012), there are several vegetation types in the broader area of the power line routes (Figure 2), but only four along the power line route alternatives. The majority of the power line alternatives are located within the Namaqualand Strandveld vegetation type with small amounts of Namaqualand Klipkoppe Shrubland within Kap Vley and a short area of Namaqualand Salt Pans along Alternative 1 and a very short area of Namaqualand Riviere along the Buffels River towards the Gromis substation. Each of these units is described in more detail below.

Namaqualand Strandveld

The majority of the length of all three route alternatives falls within the Namaqualand Strandveld vegetation type. Namaqualand Strandveld occurs in the Northern and Western Cape Provinces from the southern Richtersveld as far south as Donkins Bay. Especially in the north of this unit it penetrates up to 40 km inland and approaches the coast only near the river mouths of the Buffels, Swartlinterjies, Spoeg, Bitter and Groen Rivers. In the south of the unit it is variably narrow and approaches the coast more closely. It consists of flat to undulating coastal peneplains with vegetation being a low species richness shrubland dominated by a plethora of erect and creeping succulent shrubs as well as woody shrubs and in wet years annuals are also abundant. It is associated with deep red or yellowish-red Aeolian dunes and deep sand overlying marine sediments and granite gneisses. Mucina and Rutherford list eight endemic species for this vegetation type. About 10% of this vegetation type has been lost mainly to coastal mining for heavy metals and it is not currently listed. In general, this is not considered to be a highly sensitive vegetation type as it is fairly extensive and generally has a low abundance of species of

conservation concern. There may however be specific habitats present that are of limited extent and contain specialised associated species.

Namaqualand Klipkoppe Shrubland

Within the Kap Vley Wind Farm study area, there are several large ridges present which have been classified as Namaqualand Klipkoppe Shrubland. This vegetation unit occupies 10 936 km² of central Namaqualand from Steinkopf to Nuwerus in the south. Namaqualand Klipkoppe Shrubland is associated with the rocky hills, granite and gneiss domes of the mountains of central Namaqualand. Due to its' steep and rocky nature, Namaqualand Klipkoppe Shrubland has not been impacted by intensive agriculture. Approximately 6% is currently conserved, mainly within Goegap and the Namaqua National Park. As Namaqualand Klipkoppe Shrubland is still largely intact, it has been classified as Least Threatened. Mucina & Rutherford list 15 endemic species for this vegetation type. At a coarse level, it is sensitive largely in terms of offering a diverse habitat for fauna such as reptiles but relatively speaking does not have a high abundance of listed plant species. The extent of this vegetation unit within the Kap Vley study area is considerably over-mapped and only the actual rocky outcrops and not the surrounding areas within the site should be mapped as falling within this unit.

Namaqualand Sand Fynbos

Although there is no Sand Fynbos mapped within the corridors and based on the Vegmap, it only occurs to the east of the study area, the field assessment reveals that there are extensive areas of Sand Fynbos within Kap Vley. Namaqualand Sand Fynbos typically occurs on acid to neutral sands, often on windblown dunes and on the dune slacks. It is distributed in the Northern and Western Cape from the vicinity of the study area to Koekenaap in the south, along the coastal plain. It occurs on Aeolian deep, loose, red sands overlying marine or other sediments. It is usually a low to medium shrubland, often dominated by restios, with Proteaceae often present, usually in low numbers. Bulbs and annuals may be common, with succulents common only on dune slacks. It is not a fire driven system and often forms mosaics with various Strandveld types, and boundaries can be very diffuse. The extent of Sand Fynbos at the Kap Vley site is considerable under-mapped and the majority of the low-lying areas between the ridges of the site consist of Sand Fynbos and in many areas the ridges themselves have been covered in sand and consist of dunes or deep sands with typical Sand Fynbos vegetation present. This is considered to be a sensitive habitat because the majority of plant species of conservation concern that have been observed at Kap Vley are found within the areas of Sand Fynbos.

Namaqualand Salt Pans

The Namaqualand Salt Pans vegetation type occurs in the Northern and Western Cape on the coastal plain including the Sonnekwa, Hindevlei, Bloupan, Dryerspan, and Soutpan as well as parts of the Olifants River mouth. This unit occupies the flat surfaces of depressions, mostly without vegetation and only occasionally covered with sparse salt-tolerant succulent shrubs. Namaqualand Salt Pans are nearly permanently dry and especially in the Kleinsee area they

disappear and are buried under layers of wind-borne sand. This vegetation type is considered to be Least Threatened and has been little impacted by transformation to date.

Within the study area, the classification of these areas as this vegetation type is debateable as these areas do not appear to be salt pans in their origin and do not correspond with the general description of these areas as provided. Furthermore, their description as a pan is clearly a misnomer as these areas are dry and do not fill with water even in exceptional circumstances. These appear to rather be areas where the wind has removed the sand overburden exposing the older underlying calcrete basement, leading to their 'white' appearance and assumption that these are salt pans. As this is however not a common vegetation unit in the area and offers different habitat to the surrounding sandy areas, it is considered more sensitive than the surrounding areas, but is not considered to be a no-go area.

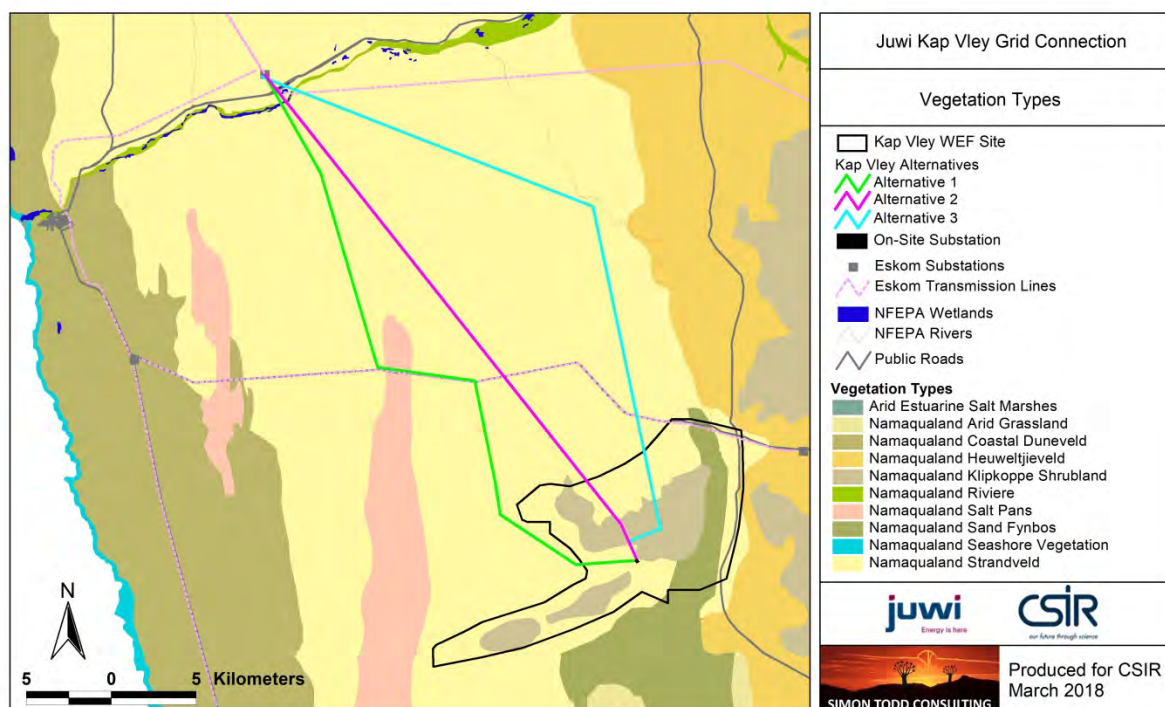


Figure 2. Vegetation map (Mucina and Rutherford 2006 and 2012 Powrie Update) of the Kap Vley Grid Connection route alternatives and surrounding area.

As mentioned above, the national vegetation map does not provide a very satisfactory reflection of the vegetation of the site. This relates largely to the extensive tracts of Namaqualand Klipkoppe Shrubland which has been mapped at the site compared to the limited extent of this unit actually present. Although there are some rocky hills and outcrops present at the site which can be considered representative of this unit, the lower slopes of the hills on-site are generally covered in aeolian sand and consist of Namaqualand Sand Fynbos, which has been significantly under-mapped at the site. Although there are some broad-scale vegetation mapping studies funded by mines in the area, which have observed and corrected these errors, these are not yet publically available and have yet to be incorporated into the national vegetation map. Of relevance to the current study, is that the site occurs at the northern extreme distribution point of

Namaqualand Sand Fynbos and there do not appear to be any areas of this unit to the north of the current site. In addition, this unit has not been well investigated in the past and there are at least 30 endemic or red-listed species of conservation concern known from this vegetation unit. The vegetation of the site as affected by the development is detailed below.

3.2 Fine-Scale Vegetation Description

The different habitats present along the power line corridors are described below, including the distribution and extent of each habitat within each corridor and the characteristic species present within each habitat (a full plant species list is provided in Appendix 1). In general, the description of units is organised starting from the on-site substation and moving towards the Gromis substation.

Sand Fynbos



Figure 3. The broad valley within Kap Vley where the on-site substation is located and from where the grid connection would start. The vegetation is largely sand fynbos dominated by *Willdenowia incurvata* and *Thamnochortus bachmannii*.

The low-lying areas within Kap Vley where the substation would be located consists of restio-dominated sand fynbos. Species present include *Thamnochortus bachmannii*, *Searsia longispina*, *Leucospermum praemorsum* (VU), *Leucadendron brunioides*, *Watsonia meriana*, *Argyrobium velutinum* (EN), *Aspalathus albens*, *Aspalathus spinescens*, *Harveya squamosa*, *Lampranthus procumbens* (VU) and *Wiborgia obcordata*. There are also occasional *Acacia erioloba* trees present in this habitat. Although there are some listed species present in this habitat is considered moderately sensitive based on the relatively low abundance of listed species, the relatively large extent of this habitat and the relative tolerance to disturbance. All three route options traverse this

habitat but there is least of this habitat within Alternative 1 which runs west from the substation into an area dominated by Strandveld.

Rocky Hills

Alternative 3 traverses the major rocky ridge within the Kap Vley site. This is considered to be a generally sensitive habitat due to high diversity of this habitat and the high value of these areas for fauna. Common and characteristic species found in the rocky hills include *Ficus ilicina*, *Crassothonna sedifolia*, *Euryops dregeanus*, *Eriocephalus microphyllus*, *Hirpicium alienatum*, *Tetragonia fruticosa*, *Ehrharta barbinodis*, *Searsia longispina*, *Stoeberia utilis*, *Pteronia undulata*, *Antimima watermeyerii*, *Amphiglossa tomentosa*, *Lycium cinereum*, *Conophytum bilobum*, *Antimima* sp. *Cassula hirtipes*, *Crassula deceptor*, *Crassula hirsuta*, *Adromischus marianiae*, *Teedia lucida*, *Berkheya fruticosa*, *Exomis microphylla*, *Tylecodon paniculatus*, *Athanasia flexuosa*, *Euphorbia hamata*, *Asparagus capensis*, *Hermannia cuneifolia*, *Euphorbia rhombifolia*, *Nenax cf microphylla*, *Monsonia ciliata*, *Ruschia goodiae*. This habitat is restricted to Alternative 3 and while Alternative 2 also traverses the main ridge at Kap Vley the area where it crosses the ridge is sandy and it does not cross and significant rocky areas.



Figure 4. Looking along the major rocky ridge of the Kap Vley site, showing the area where Alternative 3 crosses the ridge.

Cladoraphis - Acacia erioloba Plains

A unique feature present along Alternative 3 only is the Camelthorn “forest” that occurs at the foot of Sandberg to the east and north of the Kap Vley site and which extends as far north as the Buffels River. This community is associated with red sands and is characterised by the presence of numerous *Acacia erioloba* trees with an understorey dominated by the spiny grass *Cladoraphis spinescens*. Other species present in this area include *Stipagrostis ciliata*, *Zygophyllum morgsana*, *Lebeckia spinescens*, *Asparagus capensis*, *Euphorbia burmannii*, *Sarcocaulon ciliata*, *Othonna*

sedifolia and *Lycium cinereum*. This is a unique habitat that is not found elsewhere in Namaqualand and as such impact to this ecosystem is considered undesirable.



Figure 5. Looking south along Alternative 3 towards the northern ridge of the Kap Vley site, showing the *Acacia erioloba* population that would be affected by this Alternative.

Plains Strandveld

The ridge areas affected by the development generally consist of low Strandveld dominated by species such as *Ruschia goodiae*, *Monsonia ciliata*, *Amphiglossa tomentosa*, *Crassosiphon sedifolia*, *Anthospermum spathulatum*, *Euphorbia rhombifolia*, *Diospyros ramulosa*, *Roepera morganiana*, *Lycium cinereum*, *Willdenowia incurvata*, *Pelargonium praemorsum*, *Cephalophyllum pillansii*, *Jordaaniella spongiosa*, *Ehrharta barbinodis*, *Tetragonia fruticosa*, *Wiborgia monoptera*, *Asparagus capensis*, *Hermannia trifurca*, *Osteospermum oppositifolium*, *Hirpicium alienatum*, *Aspalathus pulicifolia*, *Chrysocoma longifolia* and *Searsia longispina*. The abundance of species of conservation concern in this habitat is low and it is not considered to be highly sensitive. There are also no faunal habitats of high significance in this habitat. This is the most common habitat within the power line routes and is widely distributed within all three alternatives.



Figure 6. Low Strandveld vegetation on relatively flat plains along the alignment of Alternative 2, which runs to the left of the farmhouse visible in the distance.



Figure 7. Looking south across the Buffels River from near the Gromis substation, showing the homogenous Strandveld plains south of the Buffels River.

Namaqualand Dune Strandveld

There is a distinct plant community associated with the larger, more mobile dune fields of the area. These areas are more dynamic than the areas of flatter strandveld and have areas of alternating low cover associated with areas of greater sand movement and areas of taller

vegetation occurring in the dune slacks and other more stable situations. Typical and dominant species include *Zygophyllum morganii*, *Searsia longispina*, *Tripteris oppositifolia*, *Cladoraphis cyperoides*, *Othonna sedifolia*, *Conicosia pugioniformis*, *Asparagus lignosus*, *Hermannia* sp., *Eriocephalus racemosus*, *Asparagus capensis*, *Lycium cinereum*, *Lebeckia spinescens*, *Tetragonia spicata* and *Diospyros ramulosa*. These areas are considered somewhat more sensitive than the typical surrounding Strandveld due to the loose soils and slopes of the dunes which are vulnerable to disturbance. This habitat is present along all three alternatives, but is most prevalent along Alternative 3.



Figure 8. Looking back towards Kap Vley along Alternative 1, with Dune Strandveld in the foreground and more typical Plains Strandveld in the distance.

Strandveld on Namaqualand Salt Pans

The vegetation of the areas classified as Namaqualand Salt Pans is distinct from the adjacent Strandveld. However, the naming of these areas in the Vegmap is not appropriate as these are not salt pans. These areas occur on shallow white sands overlaying calcrete. Water does not collect in these areas and they are freely drained. Typical and dominant species include *Amphibolia rupis-arcuatae*, *Euphorbia brachiata*, *Othonna sedifolia*, *Asparagus capensis*, *Zygophyllum morganii*, *Ruschia goodiae*, *Cheirodopsis denticulata*, *Aridaria nociflora*, *Othonna cylindrica* and *Ruschia* sp. As this is a habitat of limited extent and offers features that are not found elsewhere in the area, it is considered more sensitive than the surrounding Strandveld. This habitat is restricted to a relatively short section of corridor Alternative 1.



Figure 9. The areas mapped as Namaqualand Salt Pans are areas where the sandy overburden has been removed by the wind and are generally fairly well vegetated with shorter succulent and woody shrubs. These are not hydrological features and occur on marine sediments.

Buffels River

All three alternatives traverse the Buffels River just before the approach to the Gromis Substation. This is considered a sensitive habitat and disturbance to the riparian environment should be minimised. The river valley is however steep and it is highly likely that the river can be easily spanned by the power line. Species present within the river include *Acacia karoo*, *Suaeda fruticosa*, *Salsola aphylla*, *Tamarix useneoides*, *Hermannia trifurca*, *Stipagrostis namaquensis*, *Galenia africana*, *Codon royenii*, *Argemone ochroleuca*, *Scirpoides dioecus* and *Forsskaolea candida*. There are no significant differences between the different alternatives in terms of their potential impact on the Buffels River and as such, there is no specific preference for an alternative in this regard.



Figure 10. Looking north over the Buffels River, just south of the power line crossing point.

3.3 Listed and Protected Plant Species

There are a number of local endemics and SCC present in the study area which could be affected by the development. These are largely concentrated within the Sand Fynbos areas of Kap Vley with the abundance of such species outside of the site being relatively low. Notable species observed include *Metalasia adunca* (NT), *Muraltia obovata* (VU), *Agathosma elata* (EN), *Argyrobium velutinum* (EN), *Lampranthus procumbens* (VU) and *Leucospermum praemorsum* (VU). Impact on these species can be minimised through the detailed mapping that has been conducted within Kap Vley. Outside of Kap Vley there are also some SCC present. Along Alternative 3, there is the large population of *Acacia erioloba* on the plains north of Kap Vley. While *Acacia erioloba* is not threatened, it is a protected tree and any impact on this species requires a permit from DAFF. Impact on any SCC along the final power line route can be reduced through a preconstruction walk-through of the power line footprint which can be used to inform the final pylon placement and routing.

3.4 Faunal Communities

3.4.1 Mammals

A list of Mammals known from the broad area around the Kap Vley site, based on the MammalMap Database (<http://vmus.adu.org.za>) is provided in Appendix 2 of this report. This has been supplemented with extensive camera trapping and small mammal trapping within the Kap Vley Wind Farm study area. The area has a modestly rich mammalian community. The majority of the area is however still natural and used as extensive rangeland with the result that smaller mammals are relatively common and widespread across the study area. Species that have been observed directly or through camera trapping include African Wildcat, Bat-eared Fox, Cape Fox, Cape Grey Mongoose, Caracal, Common Duiker, Cape Hare, Honey Badger, Steenbok, Striped Polecat, Yellow Mongoose, Porcupine and Smith's Red Rock Rabbit. The most common species encountered are Steenbok and Cape Hare, with Duiker, Porcupine, Striped Polecat and Caracal being moderately abundant. Small mammals present include Hairy-footed Gerbil, Western Rock Elephant Shrew, Namaqua Rock Mouse and Four-striped Mouse. The Namaqua Rock Mouse and Western Rock Elephant Shrew are confined to rocky areas while the sandy substrates are dominated by Hairy-footed Gerbil, the Four-striped Mouse, Karoo Bush Rats and Brants's Whistling Rat.

Apart from the species which were observed and can be confirmed present in the area, four red-listed species of conservation concern are known to occur in the broad area. This includes the Leopard *Panthera pardus* (Vulnerable), Litledale's Whistling Rat *Parotomys littedalei* (Near Threatened), African Clawless Otter *Aonyx capensis* (Near Threatened) and Grants' Golden Mole *Eremitalpa granti granti* (Vulnerable). It is not likely that either the Leopard or Otter are present at the site on account of human disturbance or lack of suitable habitat. Golden Moles are confirmed present, but it is not clear if these are the more common Cape Golden Mole or Grants' Golden Mole. However, the power line would not generate significant levels of habitat loss for any of the mammals present.

3.4.2 Reptiles

A list of Reptiles known from the vicinity of the Kap Vley site, based on records from the ReptileMap database as well as extensive on-site observations is provided in Appendix 3 of this report (Conservation status is from Bates *et al.* 2013).

The area has a relatively diverse reptile assemblage with few species of conservation concern observed, but several local endemics confirmed present. The rocky hills have the highest diversity of reptiles present due to the greater habitat diversity and refuge availability in this habitat compared to the plains. Species observed include Armadillo Girdled Lizard, Karoo Girdled Lizard, Giant Desert Lizard, Southern Rock Agama, Common Giant Ground Gecko, Namaqua Day Gecko, Knox's Desert Lizard, Common Sand Lizard, Pink Blind Legless Skink and Many-horned Adder. This is likely to represent only a proportion of the reptile fauna of the site and as many as 40 species are known to occur in the wider area. No SCC have however been recorded from the area, although it is possible that the Speckled Padloper *Chersobius signatus* (Vulnerable) is present. The

most important habitat for reptiles is the rocky outcrops, which provide an array of microsites and suitable refuges for a variety of reptiles. Direct impact to this habitat would be relatively low as the footprint in these areas would be minimal. The sandy substrates are home to local endemics such as the Pink Blind Legless Skink and Coastal Dwarf Legless Skink, which may be vulnerable to habitat disruption due to the construction of roads which may fragment the continuity of the preferred sandy substrate. Overall, impacts of the development on reptiles are likely to be low and there are no species with a very narrow distribution ranges or of high conservation concern which may be compromised by the development.

3.4.3 Amphibians

A list of Amphibians known from the vicinity of the Kap Vley site, based on records from the FrogMap database as well as on-site observations is provided in Appendix 4 of this report (Conservation status is from Minter et al. 2004).

There is very little natural permanent or even seasonal standing water in the study area and the only area which has water on a semi-regular basis is the Buffels River which flows from time to time. As a result, the amphibian community of the area is restricted to species which are relatively independent of water. The only species confirmed present is the Namaqua Rain Frog (Figure 11) which appears to be relatively widespread in the area and likely occurs in most areas of Namaqualand Strandveld. Other species which are possibly present include the Cape Sand Frog *Tomopterna delalandii* and the Desert Rain Frog *Breviceps macrops* which is classified as Vulnerable. The Desert Rain Frog is however restricted to the coastline and is not known to occur more than 10 km inland and as a result is unlikely to occur within the power line corridors, although this cannot be discounted as the area has not been well investigated.

Given the paucity of important amphibian habitats at the site and the low diversity of amphibians, a significant impact on frogs is very unlikely.



Figure 11. The only frog observed in the area is the Namaqua Sand Frog, which is independent of water and a West-Coast endemic.

3.4.4 Critical Biodiversity Areas

The CBA map for the study area is indicated below in Figure 12. The areas within Kap Vley are largely classified as CBA1, while the majority of the rest of the routes fall within other natural areas that are not CBAs or Ecological Support Areas (ESAs). There are however several other sections of CBA along Alternative 3 and it is clear that this is the least desirable route with regards to potential impacts on CBAs. Along Alternative 1 and Alternative 2 it is clear that impact on the CBA within and near to Kap Vley is the major area of concern for these two route alternatives. However, the footprint in these areas would be relatively low and due to the detailed sensitivity mapping that has been done within Kap Vley for the proposed Kap Vley WEF EIA, the important biodiversity features present in this area can be avoided. Overall, the power line would not be likely to generate significant impact on the CBAs with the implementation of suitable avoidance and the impact would be of low significance and of a local nature only.

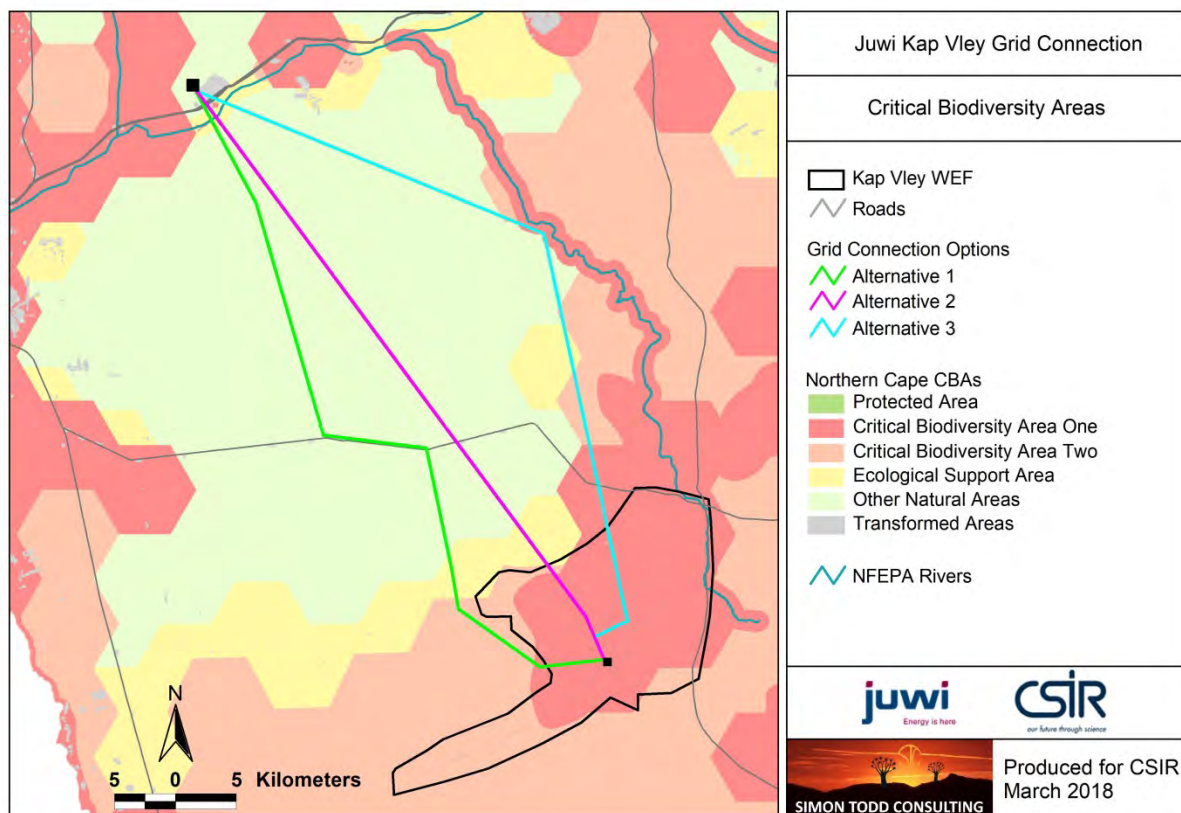


Figure 12. Critical Biodiversity Areas map for the study area, showing that once the route options leave Kap Vley, the majority of the route is within areas that have not been identified as CBAs or ESAs.

Those parts of the study area around Kap Vley which are classified as CBA 1 and CBA 2 have also been identified as a Northern Cape Protected Area Expansion Strategy (NCPAES) Focus Area (2017). While the development of the wind farm would certainly place some limitations on the future expansion of traditional formalised conservation into the affected areas, the power line itself would generate minimal long-term impact on the value of these areas for future conservation expansion as the footprint is not very large and would certainly not threaten biodiversity pattern or process to a significant degree.

3.4.5 Cumulative Impacts

Cumulative impacts associated with the development of the Kap Vley wind farm are dealt with in detail in the EIA report. However, as the grid connection is associated with the wind farm and is not an independent development, the important parts of this analysis are repeated here.

There are a number of the different proposed renewable energy facilities in the broad area around the Kap Vley site. However, not all of these are within a similar environment and would not affect the same range of habitats as present at Kap Vley. Those developments to the east of Kap Vley are above the escarpment and are considered to be in a very different environment to the current area and the Kap Vley development would not significantly affect cumulative impacts in that area. As such, the consideration of cumulative impact should be restricted to other developments on the coastal plain. This includes the 300 MW Eskom WEF west of the site as well as the 140 MW

Project Blue WEFs north west of the site. There is also the 7.2 MW Koningnaas WEF to the south of the site. These projects are generally closer to the coastline and largely restricted to the Namaqualand Strandveld vegetation type. It is estimated that the total footprint of these developments is approximately 500 ha. Within the context of the coastal plain and the affected vegetation types, this is a relatively low total extent. Existing impact in the area is largely restricted to the coastal forelands where diamond mining has had a significant impact. There are also a number of diamond mines along the Buffels River north of the site. Overall, existing impact on the coastal plain away from the actual coastline is relatively low and the contribution of the anticipated 128 ha footprint of the Kap Vley WEF is not considered highly significant.

4 LEGISLATION AND PERMIT REQUIREMENTS

A summary of the environmental legislation and permitting requirements that would be triggered by the development of the site is outlined below.

Under the **Environmental Impact Assessment Regulations Listing Notice 1 of 2014** the following activities are likely to be triggered:

Activity 1. The development of facilities or infrastructure for the generation of electricity from a renewable resource where-

- (i) the electricity output is more than 10 megawatts but less than 20 megawatts; or
- (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare; excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area.

Under the Environmental Impact Assessment Regulations Listing Notice 2 of 2014 the following activities are likely to be triggered:

Activity 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area.

Activity 15. The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-

- (i) the undertaking of a linear activity; or
- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

And, under Environmental Impact Assessment Regulations Listing Notice 3 of 2014:

Activity 4. The construction of a road wider than 4 metres with a reserve less than 13,5 metres.

ii. Outside urban areas, in:

- (a) A protected area identified in terms of NEMPAA, excluding disturbed areas;
- (b) National Protected Area Expansion Strategy Focus areas;
- (c) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
- (d) Sites or areas identified in terms of an International Convention;
- (e) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
- (f) Core areas in biosphere reserves;
- (g) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas; or
- (h) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined;

Activity 12. The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

g. Northern Cape:

- i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;
- ii. Within critical biodiversity areas identified in bioregional plans;
- iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on even in urban areas; or
- iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

Activity 18. The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.

g. Northern Cape

- i. In an estuary;
- ii. Outside urban areas:
 - (aa) A protected area identified in terms of NEMPAA, excluding conservancies;
 - (bb) National Protected Area Expansion Strategy Focus areas;
 - (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
 - (dd) Sites or areas identified in terms of an international convention;

- (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
- (ff) Core areas in biosphere reserves;
- (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;
- (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or
- (ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;

National Forests Act (No. 84 of 1998):

The National Forests Act provides for the protection of forests as well as specific tree species, quoting directly from the Act: “no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated”.

Two protected tree species have been observed at the site, *Aloe dichotoma* and *Acacia erioloba*. Although the numbers of affected individuals is low, a permit from DAFF would be required for any impacts to these species. Under the assessed layout, there are some individuals of *Acacia erioloba* present along the power line routes, but no individuals of *Aloe dichotoma* were observed within the footprint. The exact number of affected individuals would need to be applied for would be clarified at the preconstruction phase following a preconstruction walk-through of the final approved development footprint.

Conservation of Agricultural Resources Act (Act 43 of 1983):

The Conservation of Agricultural Resources Act provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. The Conservation of Agricultural Resources Act defines different categories of alien plants and those listed under Category 1 are prohibited and must be controlled while those listed under Category 2 must be grown within a demarcated area under permit. Category 3 plants includes ornamental plants that may no longer be planted but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the floodline of water courses and wetlands.

The predominant alien of concern at the site *Acacia cyclops*, which is listed as Category 1b.

5 IDENTIFICATION OF KEY ISSUES

5.1 Identification of Potential Impacts

The development of the Kap Vley WEF grid connection would result in some disturbance and habitat loss along the power line route, due to the construction of an access track as well as construction of the pylons. During the operational phase, impacts would be relatively low as there is little scope for interaction between the line and the terrestrial environment apart from some occasional disturbance due to maintenance activities. The following impacts are deemed likely or potentially likely to occur as a result of the power line and are assessed.

5.1.1 Construction Phase

- Impacts on vegetation and plant SCC
- Direct and indirect faunal impacts

5.1.2 Operational Phase

- Increased soil erosion
- Impacts on CBAs

5.1.3 Decommissioning Phase

- Increased alien plant invasion
- Increased soil erosion
- Direct and indirect impacts on fauna

5.1.4 Cumulative impacts

- Cumulative impacts on habitat loss and broad-scale ecological processes

6 ASSESSMENT OF IMPACTS AND IDENTIFICATION OF MANAGEMENT ACTIONS

6.1 Results of the Field Study

The ecological sensitivity map for the study area is illustrated below in Figure 13. All three alternatives traverse the Buffels River near to Gromis substation and the river itself is considered to be sensitive environment that should be avoided. The banks on either side of the river are however steep and it is likely that the river can be spanned without impact. Along the route between Gromis and Kap Vley, all three routes traverse an extensive area of Strandveld which is generally considered to be relatively low sensitivity with low abundance of species or features of conservation concern. There are however some areas of heuweltjieveld towards the Buffels River as well as some more widespread areas of dunes and deflation hollows that are considered moderately sensitive. This is especially so along Alternative 3 which traverses the largest extent of moderately sensitive habitat, much of which has also been identified as CBA and ESA. Towards Kap Vley,

Alternative 3 also passes through the area containing large numbers of *Acacia erioloba* and impact on this area is considered undesirable. Alternative 2 passes through a small extent of habitat within Kap Vley that is considered to be a No-Go area. Impact to this area is undesirable, but the line could be deviated slightly to avoid this feature. Alternatively, the line could be spanned over this section as it is only about 350m long and it is likely that the pylons could be located outside of the no-go area on either side. Alternative 1 takes a westerly route out from Kap Vley and has the least extent of sensitive habitat along the route. Although it traverses the area which has been mapped as Namaqualand Salt Pans, this area is not a hydrological feature and is not considered highly sensitive. The total extent of the different sensitivity categories within each power line route corridor are provided below in **(Table 1)** and this supports Alternative 1 containing the lowest extent of sensitive habitat followed by Alternative 2 and then Alternative 3. Given the distribution and nature of sensitive features along the power line routes. Alternative 1 is considered the preferred alternative from an ecological perspective, while Alternative 2 is also considered acceptable, while Alternative 3 is considered least desirable and is not considered to be a viable alternative.

Table 1. Extent of the different sensitivity classes that occur within the different power line corridor alternatives. This is not the extent of habitat that would be impacted, but rather the extent of habitat overall within the 200m wide corridor and is used to provide an objective way of comparing the sensitivity of each corridor.

Alternative	Sensitivity					
	Low	Medium-Low	Medium	Medium-High	High	No-Go Area
Alt 1	19.15	599.24	112.37	0.00	1.96	2.89
Alt 2	19.34	419.75	183.19	0.40	9.21	8.87
Alt 3	18.84	395.96	327.20	6.79	9.75	3.71

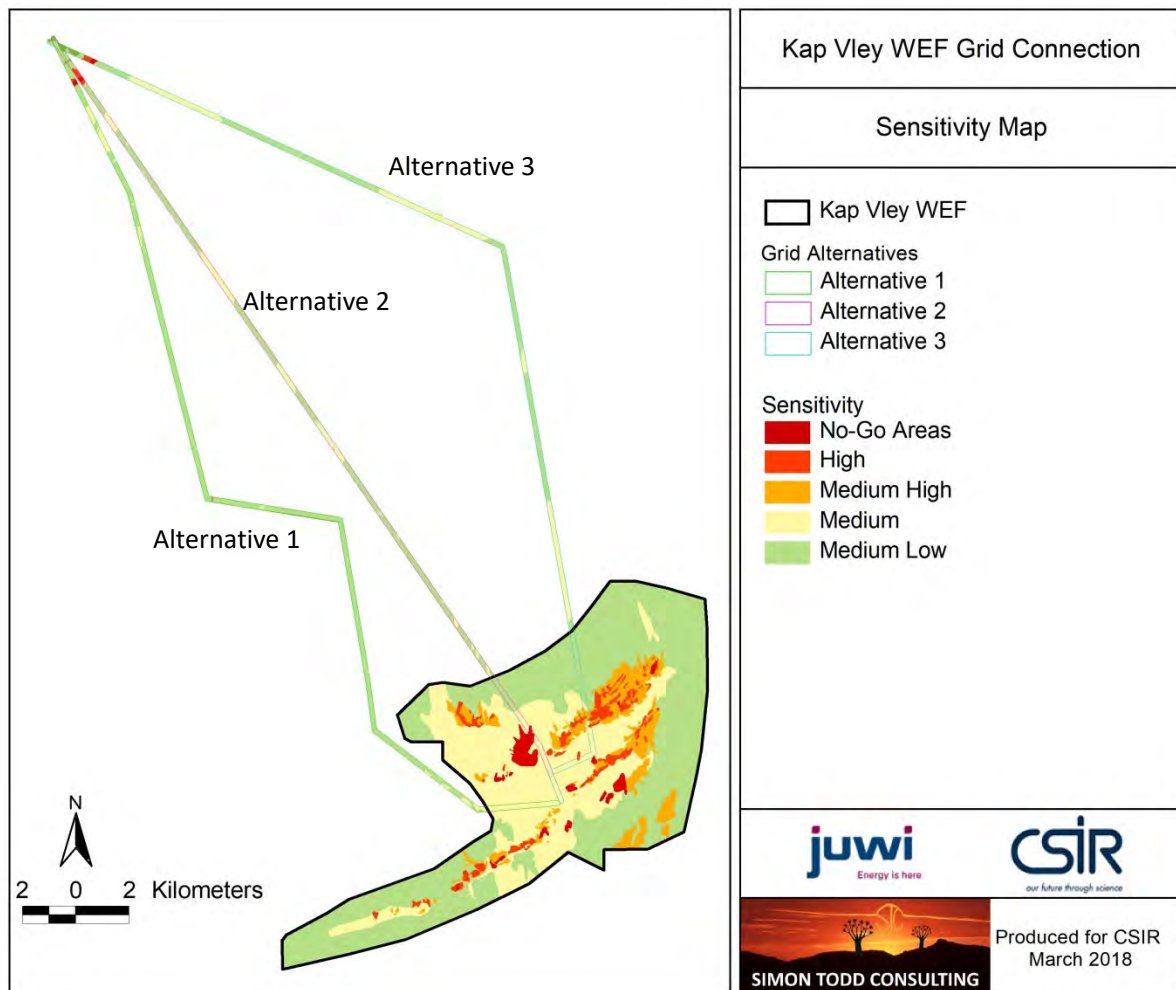


Figure 13. Ecological sensitivity map for the study area, showing the three grid alternatives as well as the sensitivity of the Kap Vley WEF study area as a whole.

6.2 Construction Phase Impact 1. Impacts on vegetation and plant SCC

The clearing of vegetation for access roads and pylon foundations would result in the loss of currently intact vegetation as well as potentially impact on plant SCC. The major area of concern with regards to plant SCC is within the Sand Fynbos areas of Kap Vley. The sensitive features within Kap Vley have been mapped in detail and as a result, avoidance should be possible. However, in terms of the three alternatives, it is clear that Alternative 1 poses the lowest risk to plant SCC. The more general loss of vegetation along the power line route would be spread along the route with the result that local impacts would be low and no significant impacts due to the general vegetation loss are likely.

Without mitigation this impact would be of **Moderate** potential significance.

Essential mitigation measures include:

- Fine-scale habitat and SCC population mapping within the Kap Vley area to inform the pylon positions to ensure that impact on these features can be minimised through avoidance.
- No development roads or pylons within the identified no-go areas.

- Preconstruction walk-through of the development footprint to further refine the layout and further reduce impacts on SCC through micro-siting of the pylons and access roads.

With the implementation of the suggested mitigation the impact on vegetation and SCC can likely be reduced to a **Low** significance.

6.3 Construction Phase Impact 2. Direct and indirect faunal impacts

The construction of the power line will result in some habitat loss, noise and disturbance along the route. This will lead to direct and indirect disturbance of resident fauna. Some slow-moving or retiring species such as many reptiles would likely not be able to escape the construction machinery and may be killed. There are also several species present in the area which are vulnerable to poaching and there is a risk that these species may be targeted. This impact would be caused by the presence and operation of construction machinery and personnel on the site. This impact would however be transient, localised and restricted to the construction phase, with significantly lower levels of disturbance during the operational phase.

Without mitigation this impact is likely to be of **Moderate** significance.

Essential mitigation measures would include:

- Avoidance of identified areas of high fauna importance and No-Go areas.
- Search and rescue for reptiles and other vulnerable species during construction, before areas are cleared.
- Any holes or trenches that are dug should be left open as fauna may fall in and be trapped.
- Ensure that construction staff and machinery remain within the demarcated construction areas during the construction phase.
- Environmental induction for all staff and contractors on-site.

With the implementation of the suggested mitigation the construction phase impact on fauna can likely be reduced to a **Low Significance**.

6.4 Operational Phase Impact 1. Increased Soil Erosion

The affected area has sandy soils that are vulnerable to erosion, especially in the face of the strong winds that the area experiences. Once mobilised, the sands can be very difficult to arrest as the moving sand smothers new vegetation as it goes. This effect is clearly visible along some of the existing roads of the area and the disturbance created along the power line route during construction poses a similar risk.

Without mitigation, this impact would potentially be of **Moderate significance**.

Essential mitigation measures would include:

- Avoid areas of high wind erosion vulnerability as much as possible.

- Use net barriers, geotextiles, active rehabilitation and other measures during and after construction to minimise sand movement at the site.

With the effective implementation of the mitigation measures, it is likely that this impact can be reduced to an acceptable, **low significance**.

6.5 Operational Phase Impact 2. Impacts on Critical Biodiversity Areas

The development is located within an area that is a recognised area of biodiversity significance and parts of the routes have been classified as a Tier 1 and Tier 2 CBAs. The development will result in some direct habitat loss within the CBA. There are also some localised specialised habitats present such as quartz patches, which have a high ecological value and which would potentially be affected by the development. The impact on the CBA would result from the transformation of currently intact habitat as well as the long-term presence and operation of the power line.

Without mitigation this impact would likely be of **Moderate Significance**.

Essential mitigation measures would include:

- Minimise the development footprint as far as possible, which includes locating temporary-use areas such as construction camps and lay-down areas in previously disturbed areas.
- Avoid impact to restricted and specialised habitats such as quartz patches or wetlands.

With the effective implementation of the mitigation measures, it is likely that this impact will be reduced to a **Low Significance**.

6.6 Cumulative Impact 1. Cumulative habitat loss and impact on broad-scale ecological processes

There are several other renewable energy developments in the wider area and along with the current development, these would potentially generate significant cumulative impacts on habitat loss and fragmentation with negative impacts on broad-scale ecological processes such as dispersal and climate change resilience. However, not all of the developments in the area would impact on the same features and environment and overall, the current levels of cumulative development impact within the affected areas of the current development are relatively low. Currently, the major impact in the broad area is from diamond mining along the coastline, while areas further inland such as around Kap Vley have not been impacted to the same degree and are still largely intact. This impact is assessed for the power line and grid connection in combination as the grid connection will not take place without the wind farm component.

Without mitigation, this impact is likely to be of **Moderate Significance**.

Essential mitigation measures would include:

- Avoid impact to restricted and specialised habitats such as quartz patches or wetlands.
- Ensure that there are no particular habitats affected within the various renewable energy development sites that are not more widely available or protected elsewhere in the area.

With the effective implementation of the mitigation measures, it is likely that this impact will be reduced to a **Moderate to Low Significance**.

7 IMPACT ASSESSMENT SUMMARY

The assessment of impacts and recommendation of mitigation measures as discussed above are collated in Table 7-1 to 7-4 below. Impacts are assessed for the construction, operational and decommissioning phases of the development as well as for overall cumulative impacts.

Table 7-1 Impact assessment summary table for the Construction Phase

Impact pathway	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
CONSTRUCTION PHASE													
Direct impacts													
Impact on vegetation and plant species of conservation concern													
Habitat Loss	-	Local	Long-term	Moderate	Likely	Low	Moderate	Moderate Risk (3)	Partly	Largely	Low	4	High
Suggested Mitigation: - Fine-scale habitat and SCC population mapping within Kap Vley section to inform the final routing and pylon placement to ensure that impact on these features can be minimised through avoidance at the design stage. - No development roads or pylons within No-Go areas. - Preconstruction walk-through of the development footprint to further refine the layout and reduce impacts on SCC through micro-siting of the pylons and access roads. - Demarcate all areas to be cleared with construction tape or other appropriate and effective means. However caution should be exercised to avoid using material that might entangle fauna.													
Faunal Impacts due to construction													
Habitat Loss	-	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate Risk (3)	Partly	Partly	Low	4	High

Suggested Mitigation:

- Avoidance of identified areas of high faunal importance at the design stage.
- Ensure that lay-down and other temporary infrastructure is within medium- or low- sensitivity areas, preferably previously transformed areas if possible.
- Search and rescue for reptiles and other vulnerable species during construction, before areas are cleared.
- During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person.
- Environmental induction for all staff and contractors on-site.
- All construction vehicles should adhere to a low speed limit (40km/h for cars and 30km/h for trucks) to avoid collisions with susceptible species such as snakes and tortoises and rabbits or hares. Speed limits should apply within the facility as well as on the public gravel access roads to the site.
- No holes or trenches should be left open for extended periods as fauna will fall in and be trapped.
- If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs) as far as practically possible, which do not attract insects and which should be directed downwards.

Table 7-2 Impact assessment summary table for the Operational Phase

Impact pathway	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
OPERATIONAL PHASE													
Direct impacts													
Increased soil erosion													
Disturbance	-	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate Risk (3)	Yes	Yes	Low	4	High
Suggested Mitigation: - Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan. - All hardened roads and other surfaces should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. - Regular monitoring for erosion along the power line route after construction to ensure that no erosion problems have developed as result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project. - All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. - All cleared areas should be revegetated with indigenous perennial species from the local area. - Avoid areas of high wind erosion vulnerability as much as possible. - Use net barriers, geotextiles, active rehabilitation and other measures during and after construction to minimise sand movement at the site.													
Impacts on Critical Biodiversity Areas													
Habitat loss and disturbance	-	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate Risk (3)	Partly	Partly	Moderate	3	High

Suggested Mitigation:

- Minimise the development footprint as far as possible, which includes locating temporary-use areas such as construction camps and lay-down areas in previously disturbed areas.
- Avoid impact to restricted and specialised habitats such as quartz patches or active dune fields.

Table 7-3 Impact assessment summary table for the Decommissioning Phase

Impact pathway	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?	Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
DECOMMISSIONING PHASE													
Direct impacts													
Increased soil erosion													
Habitat loss and disturbance	-	Local	Long-term	Moderate	Likely	Low	Moderate	Moderate Risk (3)	Yes	Yes	Low	4	High
Suggested Mitigation: - All hard infrastructure should be removed and the footprint areas rehabilitated with locally-sourced perennial species. - The use of net barriers, geotextiles, active rehabilitation and other measures after decommissioning to minimise sand movement and enhance revegetation at the site. - Monitoring of rehabilitation success at the site for at least 5 years after decommissioning. - All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.													
Increased alien plant invasion													
Habitat loss & degradation	-	Local	Long-term	Moderate	Likely	Moderate	Moderate	Moderate Risk (3)	Yes	Yes	Low	4	High

Suggested Mitigation:

- Alien management plan to be implemented during the decommissioning phase of the development, which makes provision for regular alien clearing and monitoring for at least 5 years after decommissioning.
- Active rehabilitation and revegetation of previously disturbed areas with indigenous species selected from the local environment.
- Wherever excavation is necessary for decommissioning, topsoil should be set aside and replaced after decommissioning activities are complete to encourage natural regeneration of the local indigenous species.
- Due to the disturbance at the site alien plant species are likely to be a long-term problem at the site following decommissioning and regular control will need to be implemented until a cover of indigenous species has returned.
- Regular monitoring for alien plants within the disturbed areas for at least two years after decommissioning or until alien invasives are no longer a problem.
- Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.

Table 7-4 Impact assessment summary table for Cumulative Impacts

Impact pathway	Status	Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Significance of impact/risk = consequence x probability (before mitigation)	Can impact be avoided?	Can impact be managed or mitigated?		Significance of residual risk/impact (after mitigation)	Ranking of impact/risk	Confidence level
Cumulative Impacts														
Cumulative habitat loss and impact on broad scale ecological processes														
Habitat loss and disturbance	-	Regional	Long-term	Substantial	Very Likely	Low	Moderate	Moderate Risk (3)	Partly	Partly		Moderate	3	High
Suggested Mitigation: • Avoid impact to restricted and specialised habitats such as quartz patches or dune fields. • Ensure that on-site impacts on plant species of conservation concern are maintained at acceptable levels through avoidance of significant populations of these species. • Investigate the potential for an offset to mitigate the residual impacts of the development. An offset study has been commissioned as part of the EIA study for the windfarm and any residual impacts resulting from the wind farm development will be mitigated through a conservation offset.														

8 ASSESSMENT OF ALTERNATIVES

There are three route alternatives considered in the current assessment. Alternative 1 is considered the preferred alternative as it traverses the least extent of sensitive habitat. Alternative 2 is similar and is considered to generate similar impact to Alternative 1, provided that impact on the short section of No-Go area that it traverses can be avoided. Alternative 3 is considered to be the least attractive alternative and is not considered favourable. The alternative traverses a large extent of habitat that is sensitive to disturbance and also cuts through the *Acacia erioloba* forest on the plains below the site. Alternative 1 and Alternative 2 would generate low overall impact and are considered acceptable route options. Alternative 3 is not considered a viable alternative and has high risk of significant long-term impact.

Alternative	Preference	Reasons (incl. potential issues)
Power Line ALTERNATIVES		
Alternative 1	Preferred	This power line alternative traverses the least extent of sensitive habitat. This is clearly the preferred alternative and would generate less impact than the other alternatives.
Alternative 2	Acceptable	This alternative is not the preferred options because it traverses a short extent of No-Go area and the ridge that it crosses within Kap Vley is somewhat more sensitive generally than the low-lying areas that Alternative 1 uses out of Kap Vley. As such this is considered an acceptable but not preferred option.
Alternative 3	Not Preferred	This alternative is less preferred because it traverses several areas of disturbance sensitive habitat and has higher risk than the other alternatives. It is also longer and would generate significantly higher impact than the other alternatives and is not considered to be a viable or preferred alternative.

9 CONCLUSIONS AND RECOMMENDATIONS

The three power line alternatives are located within an environment that is largely similar, with few significant differences between the routes. The majority of the affected area consists of Namaqualand Strandveld with relatively little extent of other vegetation types present. In general, there are two main sensitive areas that are of concern. The Kap Vley site itself has a variety of sensitive habitats and species present and in this area, it is clear that Alternative 1 would generate lowest impact. Towards Gromis substation, all three alternatives traverse the Buffels River and there are no significant differences between the route alternatives in this area. Although the Buffels River is considered sensitive, the power line can be spanned across the river valley and direct impact on the riparian areas can certainly be avoided. The middle section of the power line route alternatives traverse an extensive area of Strandveld with few features of significance present. However, Alternative 3 traverses several potentially sensitive areas of dune fields as well as the *Acacia erioloba* forest on the plains below the Kap Vley site.

Based on the results of the assessment, Alternative 1 is considered to be the preferred alternative from an ecological perspective, while Alternative 2 is also considered acceptable, provided that impact on the No-Go area that it traverses can be avoided. Alternative 3 is considered the least desirable and is not considered to be a viable alternative and it would generate the highest long-term impacts.

Ecological Impact Statement:

Alternative 1 and Alternative 2 are considered acceptable routes for the Kap Vley Grid Connection and would generate low post-mitigation impacts on fauna and flora. Alternative 3 would generate significantly higher impacts than the other alternatives and is not considered a viable option. Alternative 1 is considered to be the preferred alternative from an ecological perspective and would generate the lowest overall impacts on fauna and flora. The development of the Kap Vley 132kV Grid Connection is therefore considered to have acceptable terrestrial ecological impacts and is therefore supported from a terrestrial ecological point of view.

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APPENDICES

Appendix 1. List of Plants

List of plant species observed within the Kap Vley WEF and along the power line routes based on fieldwork within Kap Vley and along the routes.

Family	Genus	Species	Sub Species	IUCN Status
Acanthaceae	<i>Blepharis</i>	<i>macra</i>		LC
Acanthaceae	<i>Justicia</i>	<i>cuneata</i>	<i>latifolia</i>	LC
Acanthaceae	<i>Justicia</i>	<i>spartioides</i>		LC
Agavaceae	<i>Chlorophytum</i>	<i>undulatum</i>		LC
Aizoaceae	<i>Aizoon</i>	<i>canariense</i>		LC
Aizoaceae	<i>Antimima</i>	<i>koekenaapensis</i>		VU
Aizoaceae	<i>Antimima</i>	<i>watermeyeri</i>		LC
Aizoaceae	<i>Arenifera</i>	<i>stylosa</i>		LC
Aizoaceae	<i>Cephalophyllum</i>	<i>ebracteatum</i>		LC
Aizoaceae	<i>Cephalophyllum</i>	<i>pillansii</i>		LC
Aizoaceae	<i>Cleretum</i>	<i>roureii</i>		LC
Aizoaceae	<i>Conicosia</i>	<i>elongata</i>		LC
Aizoaceae	<i>Conophytum</i>	<i>frutescens</i>		LC
Aizoaceae	<i>Drosanthemum</i>	<i>hispidum</i>		LC
Aizoaceae	<i>Galenia</i>	<i>africana</i>		LC
Aizoaceae	<i>Galenia</i>	<i>fruticosa</i>		LC
Aizoaceae	<i>Galenia</i>	<i>sarcophylla</i>		LC
Aizoaceae	<i>Galenia</i>	<i>secunda</i>		LC
Aizoaceae	<i>Hallianthus</i>	<i>planus</i>		LC
Aizoaceae	<i>Jordaaniella</i>	<i>spongiosa</i>		LC
Aizoaceae	<i>Lampranthus</i>	<i>otzenianus</i>		LC
Aizoaceae	<i>Leipoldtia</i>	<i>schultzei</i>		LC
Aizoaceae	<i>Mesembryanthemum</i>	<i>noctiflorum</i>	<i>stramineum</i>	LC
Aizoaceae	<i>Mesembryanthemum</i>	<i>spinuliferum</i>		LC
Aizoaceae	<i>Mesembryanthemum</i>	<i>subnodosum</i>		LC
Aizoaceae	<i>Ruschia</i>	<i>goodiae</i>		LC
Aizoaceae	<i>Ruschiella</i>	<i>lunulata</i>		LC
Aizoaceae	<i>Stoeberia</i>	<i>utilis</i>		LC
Aizoaceae	<i>Tetragonia</i>	<i>echinata</i>		LC
Aizoaceae	<i>Tetragonia</i>	<i>fruticosa</i>		LC
Aizoaceae	<i>Tetragonia</i>	<i>spicata</i>		LC
Amaranthaceae	<i>Chenopodium</i>	<i>murale</i>	<i>murale</i>	Alien
Amaranthaceae	<i>Hemibstaedia</i>	<i>glauca</i>		LC
Amaranthaceae	<i>Manochlamys</i>	<i>albicans</i>		LC
Amaryllidaceae	<i>Brunsvigia</i>	<i>bosmaniae</i>		LC
Amaryllidaceae	<i>Gethyllis</i>	<i>britteniana</i>	<i>britteniana</i>	LC
Amaryllidaceae	<i>Gethyllis</i>	<i>grandiflora</i>		LC
Amaryllidaceae	<i>Haemanthus</i>	<i>coccineus</i>		LC
Anacampserotaceae	<i>Anacampseros</i>	<i>filamentosa</i>	<i>namaquensis</i>	LC
Anacampserotaceae	<i>Anacampseros</i>	<i>lanceolata</i>	<i>lanceolata</i>	LC
Anacampserotaceae	<i>Avonia</i>	<i>albissima</i>		LC
Anacardiaceae	<i>Ozoroa</i>	<i>dispar</i>		LC
Anacardiaceae	<i>Searsia</i>	<i>incisa</i>	<i>incisa</i>	LC
Anacardiaceae	<i>Searsia</i>	<i>laevigata</i>	<i>laevigata</i>	LC
Anacardiaceae	<i>Searsia</i>	<i>longispina</i>		LC
Anacardiaceae	<i>Searsia</i>	<i>populifolia</i>		LC
Anacardiaceae	<i>Searsia</i>	<i>undulata</i>		LC

Family	Genus	Species	Sub Species	IUCN Status
Apiaceae	<i>Deverra</i>	<i>denudata</i>	<i>aphylla</i>	LC
Apocynaceae	<i>Fockea</i>	<i>sinuata</i>		LC
Apocynaceae	<i>Microloma</i>	<i>sagittatum</i>		LC
Apocynaceae	<i>Quaqua</i>	<i>mammillaris</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>alopecurus</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>asparagoides</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>capensis</i>	<i>capensis</i>	LC
Asparagaceae	<i>Asparagus</i>	<i>exuvialis</i>	<i>exuvialis</i>	LC
Asparagaceae	<i>Asparagus</i>	<i>fasciculatus</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>juniperoides</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>lignosus</i>		LC
Asparagaceae	<i>Asparagus</i>	<i>multituberosus</i>		LC
Asphodelaceae	<i>Bulbine</i>	<i>frutescens</i>		LC
Asphodelaceae	<i>Bulbine</i>	<i>mesembryanthoides</i>	<i>mesembryanthoides</i>	LC
Asphodelaceae	<i>Trachyandra</i>	<i>ciliata</i>		LC
Asphodelaceae	<i>Trachyandra</i>	<i>revoluta</i>		LC
Asteraceae	<i>Amellus</i>	<i>microglossus</i>		LC
Asteraceae	<i>Amphiglossa</i>	<i>tomentosa</i>		LC
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>		LC
Asteraceae	<i>Arctotis</i>	<i>fastuosa</i>		LC
Asteraceae	<i>Arctotis</i>	<i>revoluta</i>		LC
Asteraceae	<i>Athanasia</i>	<i>flexuosa</i>		LC
Asteraceae	<i>Berkheya</i>	<i>fruticosa</i>		LC
Asteraceae	<i>Chrysocoma</i>	<i>longifolia</i>		LC
Asteraceae	<i>Cotula</i>	<i>barbata</i>		LC
Asteraceae	<i>Cotula</i>	<i>tenella</i>		LC
Asteraceae	<i>Crassosiphon</i>	<i>cylindrica</i>		LC
Asteraceae	<i>Crassosiphon</i>	<i>sedifolia</i>		LC
Asteraceae	<i>Didelta</i>	<i>carnosa</i>	<i>carnosa</i>	LC
Asteraceae	<i>Dimorphotheca</i>	<i>pluvialis</i>		LC
Asteraceae	<i>Dimorphotheca</i>	<i>sinuata</i>		LC
Asteraceae	<i>Dimorphotheca</i>	<i>tragus</i>		LC
Asteraceae	<i>Eriocephalus</i>	<i>microphyllus</i>	<i>pubescens</i>	LC
Asteraceae	<i>Eriocephalus</i>	<i>racemosus</i>	<i>racemosus</i>	LC
Asteraceae	<i>Euryops</i>	<i>dregeanus</i>		LC
Asteraceae	<i>Felicia</i>	<i>dregei</i>		LC
Asteraceae	<i>Felicia</i>	<i>hyssopifolia</i>	<i>glabra</i>	LC
Asteraceae	<i>Felicia</i>	<i>merxmulleri</i>		LC
Asteraceae	<i>Gazania</i>	<i>heterochaeta</i>		LC
Asteraceae	<i>Gorteria</i>	<i>diffusa</i>	<i>diffusa</i>	LC
Asteraceae	<i>Helichrysum</i>	<i>hebelepis</i>		LC
Asteraceae	<i>Helichrysum</i>	<i>leontonyx</i>		LC
Asteraceae	<i>Helichrysum</i>	<i>pumilio</i>	<i>pumilio</i>	LC
Asteraceae	<i>Hirpicium</i>	<i>alienatum</i>		LC
Asteraceae	<i>Kleinia</i>	<i>cephalophora</i>		LC
Asteraceae	<i>Lasiopogon</i>	<i>micropoides</i>		LC
Asteraceae	<i>Leysera</i>	<i>gnaphalodes</i>		LC
Asteraceae	<i>Leysera</i>	<i>tenella</i>		LC
Asteraceae	<i>Metalasia</i>	<i>adunca</i>		NT
Asteraceae	<i>Nestlera</i>	<i>biennis</i>		LC
Asteraceae	<i>Oncosiphon</i>	<i>suffruticosus</i>		LC
Asteraceae	<i>Osteospermum</i>	<i>hyoseroides</i>		LC
Asteraceae	<i>Osteospermum</i>	<i>monstrosum</i>		LC
Asteraceae	<i>Osteospermum</i>	<i>oppositifolium</i>		LC
Asteraceae	<i>Pentatrichia</i>	<i>petrosa</i>		LC
Asteraceae	<i>Pteronia</i>	<i>ciliata</i>		LC
Asteraceae	<i>Pteronia</i>	<i>divaricata</i>		LC
Asteraceae	<i>Pteronia</i>	<i>glauca</i>		LC
Asteraceae	<i>Pteronia</i>	<i>incana</i>		LC

Family	Genus	Species	Sub Species	IUCN Status
Asteraceae	<i>Pteronia</i>	<i>undulata</i>		LC
Asteraceae	<i>Senecio</i>	<i>cinerascens</i>		LC
Asteraceae	<i>Stoebe</i>	<i>nervigera</i>		LC
Asteraceae	<i>Ursinia</i>	<i>chrysanthemoides</i>		LC
Boraginaceae	<i>Amsinckia</i>	<i>menziesii</i>		Alien
Boraginaceae	<i>Codon</i>	<i>royenii</i>		LC
Boraginaceae	<i>Lobostemon</i>	<i>glaucohyllus</i>		LC
Brassicaceae	<i>Raphanus</i>	<i>raphanistrum</i>		Alien
Campanulaceae	<i>Wahlenbergia</i>	<i>annularis</i>		LC
Campanulaceae	<i>Wahlenbergia</i>	<i>oxyphylla</i>		LC
Campanulaceae	<i>Wahlenbergia</i>	<i>psammophila</i>		LC
Caryophyllaceae	<i>Dianthus</i>	<i>namaensis</i>	<i>dinteri</i>	LC
Caryophyllaceae	<i>Pollichia</i>	<i>campestris</i>		LC
Caryophyllaceae	<i>Spergularia</i>	<i>media</i>		Alien
Celastraceae	<i>Gymnosporia</i>	<i>buxifolia</i>		LC
Crassulaceae	<i>Adromischus</i>	<i>alstonii</i>		LC
Crassulaceae	<i>Adromischus</i>	<i>filicaulis</i>	<i>filicaulis</i>	LC
Crassulaceae	<i>Adromischus</i>	<i>marianiae</i>	<i>immaculatus</i>	LC
Crassulaceae	<i>Cotyledon</i>	<i>orbiculata</i>	<i>oblonga</i>	LC
Crassulaceae	<i>Crassula</i>	<i>barklyi</i>		LC
Crassulaceae	<i>Crassula</i>	<i>cotyledonis</i>		LC
Crassulaceae	<i>Crassula</i>	<i>deceptor</i>		LC
Crassulaceae	<i>Crassula</i>	<i>elegans</i>	<i>elegans</i>	LC
Crassulaceae	<i>Crassula</i>	<i>hirsuta</i>		LC
Crassulaceae	<i>Crassula</i>	<i>hirtipes</i>		LC
Crassulaceae	<i>Crassula</i>	<i>macowaniana</i>		LC
Crassulaceae	<i>Crassula</i>	<i>namaquensis</i>		LC
Crassulaceae	<i>Crassula</i>	<i>pseudohemisphaerica</i>		LC
Crassulaceae	<i>Crassula</i>	<i>tetragona</i>	<i>rudis</i>	LC
Crassulaceae	<i>Tylecodon</i>	<i>grandiflorus</i>		LC
Crassulaceae	<i>Tylecodon</i>	<i>reticulatus</i>	<i>reticulatus</i>	LC
Crassulaceae	<i>Tylecodon</i>	<i>similis</i>		LC
Cucurbitaceae	<i>Kedrostis</i>	<i>psammophylla</i>		LC
Ebenaceae	<i>Diospyros</i>	<i>austro-africana</i>	<i>austro-africana</i>	LC
Ebenaceae	<i>Diospyros</i>	<i>ramulosa</i>		LC
Ebenaceae	<i>Euclea</i>	<i>racemosa</i>		LC
Euphorbiaceae	<i>Euphorbia</i>	<i>hamata</i>		LC
Euphorbiaceae	<i>Euphorbia</i>	<i>rhombifolia</i>		LC
Fabaceae	<i>Argyrolobium</i>	<i>velutinum</i>		VU
Fabaceae	<i>Aspalathus</i>	<i>albans</i>		LC
Fabaceae	<i>Aspalathus</i>	<i>pulicifolia</i>		LC
Fabaceae	<i>Aspalathus</i>	<i>spinescens</i>	<i>lepida</i>	LC
Fabaceae	<i>Calobota</i>	<i>lotononoides</i>		NT
Fabaceae	<i>Calobota</i>	<i>sericea</i>		LC
Fabaceae	<i>Indigofera</i>	<i>alternans</i>	<i>alternans</i>	LC
Fabaceae	<i>Indigofera</i>	<i>nigromontana</i>		LC
Fabaceae	<i>Lessertia</i>	<i>pauciflora</i>	<i>schlechteri</i>	DD
Fabaceae	<i>Melolobium</i>	<i>candicans</i>		LC
Fabaceae	<i>Vachellia</i>	<i>erioloba</i>		LC
Fabaceae	<i>Wiborgia</i>	<i>monoptera</i>		LC
Fabaceae	<i>Wiborgia</i>	<i>obcordata</i>		LC
Fabaceae	<i>Wiborgia</i>	<i>sericea</i>		LC
Fabaceae	<i>Wiborgia</i>	<i>tetraptera</i>		LC
Fabaceae	<i>Wiborgiella</i>	<i>humilis</i>		VU
Geraniaceae	<i>Erodium</i>	<i>cicutarium</i>		Alien
Geraniaceae	<i>Monsonia</i>	<i>ciliata</i>		LC
Geraniaceae	<i>Pelargonium</i>	<i>crithmifolium</i>		LC
Geraniaceae	<i>Pelargonium</i>	<i>echinatum</i>		LC
Geraniaceae	<i>Pelargonium</i>	<i>fulgidum</i>		LC

Family	Genus	Species	Sub Species	IUCN Status
Geraniaceae	<i>Pelargonium</i>	<i>gibbosum</i>		LC
Geraniaceae	<i>Pelargonium</i>	<i>praemorsum</i>	<i>praemorsum</i>	LC
Hyacinthaceae	<i>Albuca</i>	<i>namaquensis</i>		LC
Hyacinthaceae	<i>Albuca</i>	<i>spiralis</i>		LC
Hyacinthaceae	<i>Lachenalia</i>	<i>mutabilis</i>		LC
Iridaceae	<i>Aristea</i>	<i>dichotoma</i>		LC
Iridaceae	<i>Babiana</i>	<i>hirsuta</i>		NT
Iridaceae	<i>Ferraria</i>	<i>divaricata</i>		LC
Iridaceae	<i>Ferraria</i>	<i>ferrariola</i>		LC
Iridaceae	<i>Lapeirousia</i>	<i>arenicola</i>		LC
Iridaceae	<i>Watsonia</i>	<i>meriana</i>	<i>meriana</i>	LC
Lamiaceae	<i>Ballota</i>	<i>africana</i>		LC
Lamiaceae	<i>Salvia</i>	<i>africana-lutea</i>		LC
Lamiaceae	<i>Salvia</i>	<i>dentata</i>		LC
Lamiaceae	<i>Stachys</i>	<i>rugosa</i>		LC
Limeaceae	<i>Limeum</i>	<i>africanum</i>	<i>canescens</i>	LC
Limeaceae	<i>Limeum</i>	<i>fenestratum</i>	<i>fenestratum</i>	LC
Malvaceae	<i>Hermannia</i>	<i>amoena</i>		LC
Malvaceae	<i>Hermannia</i>	<i>cuneifolia</i>	<i>cuneifolia</i>	LC
Malvaceae	<i>Hermannia</i>	<i>disermifolia</i>		LC
Malvaceae	<i>Hermannia</i>	<i>trifurca</i>		LC
Melanthaceae	<i>Melanthus</i>	<i>elongatus</i>		LC
Menispermaceae	<i>Cissampelos</i>	<i>capensis</i>		LC
Molluginaceae	<i>Adenogramma</i>	<i>glomerata</i>		LC
Molluginaceae	<i>Pharnaceum</i>	<i>croceum</i>		LC
Moraceae	<i>Ficus</i>	<i>ilicina</i>		LC
Neuradaceae	<i>Grielum</i>	<i>humifusum</i>	<i>humifusum</i>	LC
Orobanchaceae	<i>Harveya</i>	<i>squamosa</i>		LC
Orobanchaceae	<i>Hyobanche</i>	<i>sanguinea</i>		LC
Oxalidaceae	<i>Oxalis</i>	<i>flava</i>		LC
Oxalidaceae	<i>Oxalis</i>	<i>obtusa</i>		LC
Plumbaginaceae	<i>Dyerophytum</i>	<i>africanum</i>		LC
Poaceae	<i>Chaetobromus</i>	<i>involucratus</i>	<i>dregeanus</i>	LC
Poaceae	<i>Cladoraphis</i>	<i>cyperoides</i>		LC
Poaceae	<i>Cladoraphis</i>	<i>spinosa</i>		LC
Poaceae	<i>Ehrharta</i>	<i>barbinodis</i>		LC
Poaceae	<i>Ehrharta</i>	<i>calycina</i>		LC
Poaceae	<i>Fingerhuthia</i>	<i>africana</i>		LC
Poaceae	<i>Stipagrostis</i>	<i>ciliata</i>	<i>capensis</i>	LC
Poaceae	<i>Stipagrostis</i>	<i>namaquensis</i>		LC
Poaceae	<i>Stipagrostis</i>	<i>zeyheri</i>	<i>macropus</i>	LC
Polygalaceae	<i>Muraltia</i>	<i>obovata</i>		VU
Proteaceae	<i>Leucadendron</i>	<i>brunioides</i>	<i>brunioides</i>	LC
Proteaceae	<i>Leucospermum</i>	<i>praemorsum</i>		VU
Restionaceae	<i>Thamnochortus</i>	<i>bachmannii</i>		LC
Restionaceae	<i>Willdenowia</i>	<i>incurvata</i>		LC
Rubiaceae	<i>Anthospermum</i>	<i>spathulatum</i>	<i>spathulatum</i>	LC
Rubiaceae	<i>Nenax</i>	<i>arenicola</i>		LC
Rutaceae	<i>Diosma</i>	<i>acmaeophylla</i>		LC
Scrophulariaceae	<i>Dischisma</i>	<i>spicatum</i>		LC
Scrophulariaceae	<i>Hemimeris</i>	<i>racemosa</i>		LC
Scrophulariaceae	<i>Lyperia</i>	<i>tristis</i>		LC
Scrophulariaceae	<i>Teedia</i>	<i>lucida</i>		LC
Solanaceae	<i>Lycium</i>	<i>amoenum</i>		LC
Solanaceae	<i>Lycium</i>	<i>cinereum</i>		LC
Solanaceae	<i>Lycium</i>	<i>oxycarpum</i>		LC
Solanaceae	<i>Solanum</i>	<i>burchellii</i>		LC
Tecophilaeaceae	<i>Cyanella</i>	<i>hyacinthoides</i>		LC
Thymelaeaceae	<i>Passerina</i>	<i>truncata</i>	<i>truncata</i>	LC

Family	Genus	Species	Sub Species	IUCN Status
Zygophyllaceae	<i>Roepera</i>	<i>cordifolia</i>		LC
Zygophyllaceae	<i>Roepera</i>	<i>morgsana</i>		LC

Appendix 2. List of Mammals

List of Mammals known from the broad study area, based on the MammalMap Database (<http://vmus.adu.org.za>). Species in bold are confirmed present.

Family	Genus	Species	Common name	Red list category
<i>Bathyergidae</i>	<i>Bathyergus</i>	<i>janetta</i>	Namaqua Dune Mole-rat	Least Concern
<i>Bathyergidae</i>	<i>Bathyergus</i>	<i>suillus</i>	Cape Dune Mole-rat	Least Concern
<i>Bathyergidae</i>	<i>Cryptomys</i>	<i>hottentotus</i>	Southern African Mole-rat	Least Concern
<i>Bovidae</i>	<i>Antidorcas</i>	<i>marsupialis</i>	Springbok	Least Concern
<i>Bovidae</i>	<i>Oreotragus</i>	<i>oreotragus</i>	Klipspringer	Least Concern
<i>Bovidae</i>	<i>Raphicerus</i>	<i>campestris</i>	Steenbok	Least Concern
<i>Bovidae</i>	<i>Sylvicapra</i>	<i>grimmia</i>	Bush Duiker	Least Concern
<i>Canidae</i>	<i>Canis</i>	<i>mesomelas</i>	Black-backed Jackal	Least Concern
<i>Canidae</i>	<i>Otocyon</i>	<i>megalotis</i>	Bat-eared Fox	Least Concern
<i>Canidae</i>	<i>Vulpes</i>	<i>chama</i>	Cape Fox	Least Concern
<i>Cercopithecidae</i>	<i>Papio</i>	<i>ursinus</i>	Chacma Baboon	Least Concern
<i>Felidae</i>	<i>Caracal</i>	<i>caracal</i>	Caracal	Least Concern
<i>Felidae</i>	<i>Felis</i>	<i>silvestris</i>	African Wildcat	Least Concern
<i>Felidae</i>	<i>Panthera</i>	<i>pardus</i>	Leopard	Vulnerable
<i>Herpestidae</i>	<i>Cynictis</i>	<i>penicillata</i>	Yellow Mongoose	Least Concern
<i>Herpestidae</i>	<i>Herpestes</i>	<i>pulverulentus</i>	Cape Gray Mongoose	Least Concern
<i>Herpestidae</i>	<i>Suricata</i>	<i>suricata</i>	Meerkat	Least Concern
<i>Hyaenidae</i>	<i>Proteles</i>	<i>cristata</i>	Aardwolf	Least Concern
<i>Hystriidae</i>	<i>Hystrix</i>	<i>africaeausstralis</i>	Cape Porcupine	Least Concern
<i>Leporidae</i>	<i>Lepus</i>	<i>capensis</i>	Cape Hare	Least Concern
<i>Leporidae</i>	<i>Lepus</i>	<i>saxatilis</i>	Scrub Hare	Least Concern
<i>Leporidae</i>	<i>Pronolagus</i>	<i>rupestris</i>	Smith's Red Rock Hare	Least Concern
<i>Macroscelididae</i>	<i>Elephantulus</i>	<i>rupestris</i>	Western Rock Elephant Shrew	Least Concern
<i>Macroscelididae</i>	<i>Macroscelides</i>	<i>proboscideus</i>	Short-eared Elephant Shrew	Least Concern
<i>Muridae</i>	<i>Aethomys</i>	<i>namaquensis</i>	Namaqua Rock Mouse	Least Concern
<i>Muridae</i>	<i>Desmodillus</i>	<i>auricularis</i>	Cape Short-tailed Gerbil	Least Concern
<i>Muridae</i>	<i>Gerbilliscus</i>	<i>paeba</i>	Paeba Hairy-footed Gerbil	Least Concern
<i>Muridae</i>	<i>Otomys</i>	<i>auratus</i>	Southern African Vlei Rat	Least Concern
<i>Muridae</i>	<i>Otomys</i>	<i>unisulcatus</i>	Karoo Bush Rat	Least Concern
<i>Muridae</i>	<i>Parotomys</i>	<i>brantsii</i>	Brants's Whistling Rat	Least Concern
<i>Muridae</i>	<i>Parotomys</i>	<i>littledalei</i>	Littledale's Whistling Rat	Near Threatened
<i>Muridae</i>	<i>Rhabdomys</i>	<i>pumilio</i>	Xeric Four-striped Grass Rat	Least Concern
<i>Mustelidae</i>	<i>Aonyx</i>	<i>capensis</i>	African Clawless Otter	Near Threatened
<i>Mustelidae</i>	<i>Ictonyx</i>	<i>striatus</i>	Striped Polecat	Least Concern
<i>Mustelidae</i>	<i>Mellivora</i>	<i>capensis</i>	Honey Badger	Least Concern
<i>Orycteropodidae</i>	<i>Orycteropus</i>	<i>afer</i>	Aardvark	Least Concern
<i>Petromuridae</i>	<i>Petromus</i>	<i>typicus</i>	Dassie Rat	Least Concern
<i>Procaviidae</i>	<i>Procavia</i>	<i>capensis</i>	Rock Hyrax	Least Concern

Family	Genus	Species	Common name	Red list category
<i>Sciuridae</i>	<i>Xerus</i>	<i>inauris</i>	South African Ground Squirrel	Least Concern
<i>Soricidae</i>	<i>Crocidura</i>	<i>cyanea</i>	Reddish-gray Musk Shrew	Least Concern
<i>Soricidae</i>	<i>Suncus</i>	<i>varilla</i>	Lesser Dwarf Shrew	Least Concern
<i>Viverridae</i>	<i>Genetta</i>	<i>genetta</i>	Common Genet	Least Concern

Appendix 3. List of Reptiles

List of Reptiles known from the study area, based on records from the ReptileMap database. Conservation status is from Bates et al. 2013.

Family	Genus	Species	Subspecies	Common name	Red list category
Agamidae	<i>Agama</i>	<i>atra</i>		Southern Rock Agama	Least Concern
Agamidae	<i>Agama</i>	<i>hispidia</i>		Spiny Ground Agama	Least Concern
Chamaeleonidae	<i>Bradypodion</i>	<i>occidentale</i>		Western Dwarf Chameleon	Least Concern
Chamaeleonidae	<i>Chamaeleo</i>	<i>namaquensis</i>		Namaqua Chameleon	Least Concern
Colubridae	<i>Dipsosa</i>	<i>multimaculata</i>		Dwarf Beaked Snake	Least Concern
Colubridae	<i>Telescopus</i>	<i>beetzii</i>		Beetz's Tiger Snake	Least Concern
Cordylidae	<i>Karusasaurus</i>	<i>polyzonus</i>		Karoo Girdled Lizard	Least Concern
Elapidae	<i>Aspidelaps</i>	<i>lubricus</i>	<i>lubricus</i>	Coral Shield Cobra	Not listed
Elapidae	<i>Naja</i>	<i>nivea</i>		Cape Cobra	Least Concern
Gekkonidae	<i>Chondrodactylus</i>	<i>angulifer</i>	<i>angulifer</i>	Common Giant Ground Gecko	Least Concern
Gekkonidae	<i>Chondrodactylus</i>	<i>bibronii</i>		Bibron's Gecko	Least Concern
Gekkonidae	<i>Goggia</i>	<i>lineata</i>		Northern Striped Pygmy Gecko	Least Concern
Gekkonidae	<i>Pachydactylus</i>	<i>austeni</i>		Austen's Gecko	Least Concern
Gekkonidae	<i>Pachydactylus</i>	<i>barnardi</i>		Barnard's Rough Gecko	Least Concern
Gekkonidae	<i>Pachydactylus</i>	<i>labialis</i>		Western Cape Gecko	Least Concern
Gekkonidae	<i>Pachydactylus</i>	<i>weberi</i>		Weber's Gecko	Least Concern
Gekkonidae	<i>Phelsuma</i>	<i>ocellata</i>		Namaqua Day Gecko	Least Concern
Gekkonidae	<i>Ptenopus</i>	<i>garrulus</i>	<i>maculatus</i>	Spotted Barking Gecko	Least Concern
Gerrhosauridae	<i>Cordylus</i>	<i>subtessellatus</i>		Dwarf Plated Lizard	Least Concern
Gerrhosauridae	<i>Gerrhosaurus</i>	<i>typicus</i>		Karoo Plated Lizard	Least Concern
Lacertidae	<i>Merops</i>	<i>ctenodactylus</i>		Giant Desert Lizard	Least Concern
Lacertidae	<i>Merops</i>	<i>knoxii</i>		Knox's Desert Lizard	Least Concern
Lacertidae	<i>Merops</i>	<i>suborbitalis</i>		Spotted Desert Lizard	Least Concern
Lacertidae	<i>Nucras</i>	<i>tessellata</i>		Western Sandveld Lizard	Least Concern
Lamprophiidae	<i>Lamprophis</i>	<i>guttatus</i>		Spotted House Snake	Least Concern
Lamprophiidae	<i>Prosymna</i>	<i>frontalis</i>		Southwestern Shovel-snout	Least Concern
Lamprophiidae	<i>Psammophis</i>	<i>crucifer</i>		Cross-marked Grass Snake	Least Concern
Lamprophiidae	<i>Psammophis</i>	<i>namibensis</i>		Namib Sand Snake	Least Concern
Lamprophiidae	<i>Psammophis</i>	<i>notostictus</i>		Karoo Sand Snake	Least Concern
Lamprophiidae	<i>Psammophylax</i>	<i>rhombeatus</i>	<i>rhombeatus</i>	Spotted Grass Snake	Least Concern
Lamprophiidae	<i>Pseudaspis</i>	<i>cana</i>		Mole Snake	Least Concern
Scincidae	<i>Acontias</i>	<i>litoralis</i>		Coastal Dwarf Legless Skink	Least Concern
Scincidae	<i>Acontias</i>	<i>tristis</i>		Namaqua Dwarf Legless Skink	Least Concern
Scincidae	<i>Scelotes</i>	<i>caffer</i>		Cape Dwarf Burrowing Skink	Least Concern
Scincidae	<i>Scelotes</i>	<i>sexlineatus</i>		Striped Dwarf Burrowing Skink	Least Concern
Scincidae	<i>Trachylepis</i>	<i>capensis</i>		Cape Skink	Least Concern

Basic Assessment for the Proposed Development of a Transmission Line and associated electrical infrastructure to support the proposed Kap Vley Wind Energy Facility, south-east of Kleinsee, Northern Cape Province

<i>Scincidae</i>	<i>Trachylepis</i>	<i>variegata</i>		Variegated Skink	Least Concern
<i>Scincidae</i>	<i>Typhlosaurus</i>	<i>vermis</i>		Pink Blind Legless Skink	Least Concern
<i>Testudinidae</i>	<i>Chersina</i>	<i>angulata</i>		Angulate Tortoise	Least Concern
<i>Testudinidae</i>	<i>Psammobates</i>	<i>tentorius</i>	<i>trimeni</i>	Namaqua Tent Tortoise	Not listed
<i>Viperidae</i>	<i>Bitis</i>	<i>arietans</i>	<i>arietans</i>	Puff Adder	Least Concern

Appendix 4. List of Amphibians

List of Amphibians known from the study area, based on records from the FrogMap database. Conservation status is from Minter et al. 2004.

Family	Genus	Species	Subspecies	Common name	Red list category
<i>Brevicipitidae</i>	<i>Breviceps</i>	<i>macrops</i>		Desert Rain Frog	Vulnerable
<i>Brevicipitidae</i>	<i>Breviceps</i>	<i>namaquensis</i>		Namaqua Rain Frog	Least Concern
<i>Bufonidae</i>	<i>Vandijkophrynus</i>	<i>gariensis</i>	<i>gariensis</i>	Karoo Toad (subsp. gariensis)	Not listed
<i>Bufonidae</i>	<i>Vandijkophrynus</i>	<i>robinsoni</i>		Paradise Toad	Least Concern
<i>Pipidae</i>	<i>Xenopus</i>	<i>laevis</i>		Common Platanna	Least Concern
<i>Pyxicephalidae</i>	<i>Amietia</i>	<i>fuscigula</i>		Cape River Frog	Least Concern
<i>Pyxicephalidae</i>	<i>Tomopterna</i>	<i>delalandii</i>		Cape Sand Frog	Least Concern

DRAFT BASIC ASSESSMENT REPORT



APPENDIX E2: Bird Impact Assessment Report



**BIRD IMPACT ASSESSMENT FOR THE PROPOSED KAP
VLEY WIND ENERGY FACILITY AND ASSOCIATED GRID
CONNECTION, NORTHERN CAPE PROVINCE**

IMPACT ASSESSMENT REPORT

On behalf of

juwi Renewable Energies (Pty) Ltd

26 January 2018



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Figure 7 – Combined Avifaunal Sensitivity Map

LIST OF ABBREVIATIONS

ADU	Animal Demography Unit
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
BFDs	Bird Flight Diverters
BLSA	BirdLife South Africa
CAR	Co-ordinated Avifaunal Road-count
CEMP	Construction Environmental Management Plan
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CWAC	Co-ordinated Water-bird Count
DEA	Department of Environmental Affairs
DT	Driven Transect
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
ESMP	Environmental and Social Management Plan
EWT	Endangered Wildlife Trust
FSSS	Flight Section Sensitivity Score
FS	Focal Site
GCSS	Grid Cell Sensitivity Score
IBA	Important Bird Area
IKA	Index of Kilometric Abundance
NEMA	National Environmental Management Act, No 107 of 1998
NFEPA	National Freshwater Ecosystem Priority Areas
OEMP	Operational Environmental Management Plan
PSS	Priority Species Score
RASOD	Radar Assisted Shutdown on Demand
RSH	Rotor Swept Height
SABAP	Southern African Bird Atlas Project
TOPS	Threatened or Protected Species List
UCT	University of Cape Town
VP	Vantage Point
WEF	Wind Energy Facility
WT	Walked Transect

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a <i>curriculum vitae</i> ;	Appendix II
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix II
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1 Section 2
(cA) an indication of the quality and age of base data used for the specialist report;	Sections 3.1;3.2; and 3.3
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 3.4 Appendix III
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 6 Figure 1
(g) an identification of any areas to be avoided, including buffers;	Section 3.7 Figure 6 Figure 7
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 7
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.3
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 6
(k) any mitigation measures for inclusion in the EMPr;	Section 6
(l) any conditions for inclusion in the environmental authorisation;	Section 6
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 6 Section 7
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 7
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	3.8
(p) any other information requested by the competent authority	Section 2 (included in the ToR)
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

1 INTRODUCTION

juwi Renewable Energies (Pty) Ltd ('juwi') are proposing to develop the Kap Vley Wind Energy Facility (WEF) on a site approximately 35 km south east of Kleinzee, in the Northern Cape Province ('the WEF site') (Figure 1). juwi also propose to develop a grid connection power line to connect the proposed Kap Vley WEF to the national electricity grid, at the Gromis Substation or the new Eskom substation near Kleinzee.

juwi have appointed Arcus Consultancy Services South Africa (Pty) Limited ('Arcus') to provide avifaunal specialist input in the form of a specialist Impact Assessment Report for this Project. This study comprises the bird impact assessment that was conducted to assess the potential impacts to birds that might occur through the proposed development of the Kap Vley WEF and the associated power line in the 200m wide corridor to support the Kap Vley WEF.

Arcus have also been appointed to conduct the required pre-construction bird monitoring for the WEF site, the results of which have advised the Environmental Impact Assessment (EIA) process.

1.1 Purpose and Aims

The purpose and aims of this report are to provide:

- A confirmation of the terms of reference adopted for the avifaunal study;
- Description of the monitoring programme as part of the impact assessment;
- Findings of the completed 12 month bird monitoring programme;
- A description of the avifaunal status quo (i.e. the avifaunal baseline), including a description of avifaunal microhabitats available on site;
- A description of potential predicted impacts to avifauna;
- An impact assessment and significance rating for each impact and a cumulative impact assessment; and
- Recommendations and required mitigation measures.

1.2 Project Description

The proposed project consists of two components, the Kap Vley WEF and Kap Vley WEF Grid Connection (assessed separately in Section 6). The proposed Kap Vley WEF is located south east of Kleinzee in the Nama Khoi Local Municipality in the Northern Cape.. The proposed Kap Vley WEF will be constructed on the following farms: Kamaggas 200, Kap Vley 315, Gra'water 331, Platvley 314, and Kourootjie 316. While these land portions cover a large area, the total footprint of the Kap Vley WEF is estimated to be 128 ha. The Grid Connection route alternatives includes additional properties not listed here.

The proposed Kap Vley WEF will consist of between 20-45 turbines each with a hub height between 80 m and 150 m and a maximum rotor diameter between 100 m and 160 m. Each turbine will have a crane platform of approximately 1 ha and 25 x 25 m reinforced concrete foundation. The Kap Vley WEF will also include up to 37 km of internal access roads, a concrete batching plant, operations and maintenance buildings, fencing, an on-site substation, and temporary hard stand areas.

The proposed project will also include a new overhead power line to connect the WEF to the national grid ('the Grid Connection'). The grid infrastructure and its associated potential impacts are considered separately from the WEF site in a separate impact assessment section. The proposed Kap Vley WEF will connect to the Gromis Substation located on the remainder of the Farm Dikgat 195 or closer to the new Eskom substation near Kleinzee, for which the location still needs to be determined, via a 132 kV overhead transmission line.

For the connection to the Gromis substation, three alternatives are being considered (Figure 1):

- Alternative 1 (western option): From the on-site substation to Gromis Substation. The transmission line is approximately 39 km long;
- Alternative 2 (central option): Directly to the Gromis substation from the on-site substation. The transmission line is approximately 34 km long; and
- Alternative 3 (eastern option): From the on-site substation to Gromis Substation. The transmission line is approximately 40.5 km long.

The predominant land use associated with the study area on and around the Kap Vley WEF and Grid Connection sites is agriculture, particularly grazing and subsistence farming

2 TERMS OF REFERENCE

The following terms of reference were utilised for the preparation of this report:

- Provide summarised results from the full 12 month bird pre-construction monitoring programme;
- Describe the project site baseline with regard to avifauna for the study area, focussing on the characteristics which may be impacted upon by the proposed project during construction, operation and decommissioning;
- Describe the sensitivity of the baseline environment with regard to avifauna specifically with regard to the conservation status of species;
- Identify the Regional Red Data and priority species¹ present and potentially present on the project site;
- Identify the nature of potential impacts (positive and negative, including cumulative impacts if relevant) of the proposed project on avifauna during construction and operation;
- Conduct a significance rating and impact assessment of identified impacts;
- Identify mitigation or enhancement measures to minimise impacts to avifauna or deliver enhancement from the proposed project; and
- Identify information gaps and limitations.

In addition to the above, the following ToR has been provided by the CSIR:

- Adhere to the requirements of specialist studies as outlined in Appendix 6 of the 2014 NEMA EIA Regulations, as amended;
- Assess the no-go alternative very explicitly in the impact assessment section. Please note that the DEA considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads and internal cables is allowed in the 'no-go' areas. Should your definition of the 'no-go' area differ from the DEA definition; this must be clearly indicated in your assessment. You are also requested to indicate the 'no-go' area's buffer.
- Assess cumulative impacts by identifying other wind and solar energy project proposals and other applicable projects, such as construction and upgrade of electricity generation, transmission or distribution facilities in the local area (i.e. within 50 km of the proposed Kap Vley WEF project) that have been approved (i.e. positive EA has been issued) or the EIA is currently underway. In addition, the cumulative impact assessment for all identified and assessed impacts must be refined to indicate the following:

¹ All species occurring on the Birdlife SA and EWT Avian Sensitivity map list of priority species (Retief *et al.*, 2011 updated 2014)

- Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.
- The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
- A cumulative impact environmental statement on whether the proposed development must proceed.
- Provide a detailed description of your methodology, as well as indicate the locations and descriptions of turbine positions, and all other associated infrastructures that you have assessed and are recommending for authorisations.
- Provide a detailed description of all limitations to your studies. Your specialist studies must be conducted in the appropriate season and providing that as a limitation, will not be accepted by DEA.
- Provide a description of the current environmental conditions, in sufficient detail so that there is a baseline description/status quo against which impacts can be identified and measured i.e. suitability of the project area with regards to bird habitat/foraging, important vegetation features etc;
- Provide a description of species composition and conservation status in terms of protected, endangered or vulnerable bird species. This description will include species which are likely to occur within, traverse across or forage within the proposed project area, as well as species which may not necessarily occur on site, but which are likely to be impacted upon as a result of the proposed development;
- Conduct field work to identify bird species presence at the proposed site;
- Compile a detailed list of bird species present on site, including SCC;
- Identification of issues and potential impacts related to birds, which are to be considered in combination with any additional relevant issues that may be raised through the PPP;
- Identify and assess potential direct and indirect impacts on birds within the site during the construction, operation and decommissioning phases of the project. Provide an assessment of the irreversibility of impacts, and the irreplaceability of lost resources. Use the CSIR methodology to determine the significance of potential impacts;
- The bird specialist assessments must assess and make recommendations for definite measurements for the preferred hub heights and rotor diameter (as requested by DEA), e.g: hub height: 80-150 m; rotor diameter: 100-160 m;
- Assess the cumulative impacts by identifying other REFs such as wind and solar and other applicable projects, such as construction and upgrade of electricity generation, and transmission or distribution facilities in the local area (i.e. within 50 km of the proposed WEF). These include projects that have been approved (i.e. positive EA has been issued), have been constructed or projects for which an Application for Environmental Authorisation has been lodged with the Competent Authority (see Table 6.1 in Chapter 6 of this report for a list of projects);
- Assess possible alternatives identified where relevant, including the no-go alternative;
- Compilation of a bird sensitivity map or identification of buffer zones and no-go areas to inform the project layout;
- Provide input to the EMPr, including mitigation and monitoring requirements to avoid or reduce negative impacts during construction, operation and decommissioning of the project.
- Provide additional management and monitoring requirements, as relevant;
- In addition to the specialist study, undertake a 12 month pre-construction bird monitoring programme (i.e. commissioned by juwi). The results and recommendations of this monitoring programme (including data of all four seasons) should be included in the specialist study and EMPr that will be included in the EIA Report;

- Provide a description of any assumptions, uncertainties, limitations and gaps in knowledge;
- Provide a description of the relevant legal context and requirements; and
- Incorporate and address issues and concerns raised during the Scoping Phase of the EIA where they are relevant to the specialist's area of expertise.

3 METHODOLOGY

The approach to the study followed the requirements of the Best Practice Guidelines applicable at the time of the surveys (Jenkins *et al.* 2015) ('the guidelines') and those of the National Environment Management Act, 1998 (Act No 107 of 1998), as amended and the EIA Regulations (GNR 326 of 4 December 2014, as amended 7 April 2017).

The following terminology is used:

- **Priority species** = all species occurring on the Birdlife South Africa (BLSA) and Endangered Wildlife Trust (EWT) Avian Sensitivity Map priority species list (Retief *et al.* 2011 updated 2014). This list consists of 107 species with a priority score of 170 or more, and most likely to be affected negatively by WEFs. The priority score was determined by BLSA and EWT after considering various factors including bird families most impacted upon by WEFs, physical size, species behaviour, endemism, range size and conservation status;
- **Red Data species** = species whose regional conservation status is listed as Near-Threatened, Vulnerable, Endangered or Critically Endangered in the Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland (Taylor *et al.* 2015);
- **Endemic or Near-endemic** = Endemic or near endemic (i.e. ~70% or more of population in South Africa) to South Africa (not southern Africa as in field guides) or endemic to South Africa, Lesotho and Swaziland. Taken from BLSA Checklist of Birds in South Africa, 2014.

3.1 Defining the Baseline

The baseline avifauna environment for the WEF site and Grid Connection site was defined utilising a desk-based study and informed by four seasons of pre-construction bird monitoring on the WEF site (and its surrounds) and a specialist nest survey. This information was examined to determine the potential location and abundance of avifauna which may be sensitive to development, and to understand their conservation status and sensitivity.

3.2 Sources of Information

- Bird distribution data of the Southern African Bird Atlas Project (SABAP-1) (Harrison *et al.* 1997) and Southern African Bird Atlas Project 2 (SABAP-2) obtained from the Avian Demography Unit of the University of Cape Town (Brooks 2017);
- Co-ordinated Water-bird Count (CWAC) project (Taylor *et al.* 1999);
- The Important Bird Areas of southern Africa (IBA) project (Marnewick *et al.* 2015);
- Publically available satellite imagery;
- The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland (Taylor *et al.* 2015);
- Results of the four seasonal surveys (summer, autumn, winter and spring) and nest survey conducted for the pre-construction avifaunal monitoring programme for the Kap Vley WEF.
- Most recent publically available information regarding post-construction results from operational monitoring at wind farms in South Africa (Ralston Paton *et al.* 2017, BLSA 2017a);

- Proposed Kleinsee 300MW Wind Energy, South of Kleinsee Environmental Impact Assessment Process Final Environmental Impact Assessment Report (Savannah Environmental 2015);
- Proposed Koingnaas Wind Energy Facility Environmental Basic Assessment Process, Final Basic Assessment Report (Savannah Environmental 2011);
- Proposed Project Blue Wind Energy facility (Phase 1-3), North of Kleinsee Environmental Impact assessment Process Draft Impact Assessment Report (Savannah Environmental 2012);
- Springbok Wind Energy Facility Final Environmental Impact Assessment: Birds (Simmons 2010); and
- Publically available peer reviewed literature on the effects of wind energy developments on birds.

3.3 Limitations and Assumptions

- The SABAP-1 data covers the period 1986 – 1997. Bird distribution patterns fluctuate continuously according to availability of food and nesting substrate. (For a full discussion of potential inaccuracies in SABAP data, see Harrison *et al.* 1997);
- There is still limited information available on the environmental effects of wind energy facilities in South Africa. Only a summary of the results of post-construction monitoring from eight wind farms in South Africa is available (Ralston Paton *et al.* 2017), as well as information from BirdLife South Africa (BLSA) in the form of a presentation (2017a). Estimates of impacts are therefore also based on knowledge gained internationally, which should be applied with caution to local species and conditions;
- There is no guideline or standard scientifically reviewed method for extrapolating observed bird flight activity to a spatial set of sensitivity classes on a map. Flight sensitivity classes are also qualitatively assigned, and while for example a 'High Flight Sensitivity' area may represent an area where impacts are more likely, collisions are also possible any areas where there is little or no flights sensitivity. This is primarily due to the potential for inter-annual variation in bird activity, and the unpredictability of bird flight behaviour and inherent mobility of birds;
- While sampling effort was conducted as recommended in the guidelines, it represents only a small fraction of actual time, and to achieve statistically powerful results it would need to be increased beyond practical possibilities. The data was therefore interpreted using a precautionary approach.

3.4 Pre-Construction Bird Monitoring Survey Design

The monitoring programme was developed by Arcus to be in line with the latest best practice guidelines (Jenkins *et al.* 2015). Adherence to these guidelines is a requirement of the Department of Environmental Affairs (DEA) for assessment of proposed WEFs. Furthermore, BLSA recently released species specific Verreaux's Eagle Guidelines (BLSA 2017b). These were considered in the design of the monitoring programme.

An arbitrary boundary was used to define the WEF site, within which all monitoring activities occurred, and species were recorded. To obtain data for accurate 'before-after' comparison, the monitoring programme included data collection in a control area, at least 3.5 km from the nearest proposed turbines, and where there are no future known plans for renewable energy development. An arbitrary boundary was also created to define the 'control site', around the locations of the control site monitoring methods (Figure 1).

Prior to the first survey, the avifaunal specialists visited the WEF site, control site, and surrounding areas between 20 and 23 February 2017 for the 'site set up' to confirm survey locations and effort. This visit confirmed that the locations and methods (as described below) were accessible and suitable.

The first seasonal survey was conducted between 22 February and 01 March 2017 (summer). It followed the sampling effort of the Verreux's' Eagle guidelines (i.e. 18 hours were conducted at each vantage point), in order to establish if the site is an "important Verreux's' Eagle habitat", as required by these guidelines.

A dedicated cliff nest survey was then conducted by an avifaunal specialist and assistant from 18 – 21 April 2017. All potential habitat was surveyed, and nineteen cliffs, ridges or cliff-lines (e.g. group of cliff faces) were surveyed (Figure 1). The survey methodology broadly followed the methods recommended in Malan (2009), and involved an initial desk-based screening using satellite imagery, to identify the location of possible cliffs. The specialist also utilised his knowledge of the site from the monitoring set up, prior to the summer survey, to identify cliffs that required surveying. The aim was to locate Verreux's' Eagle nests (which are typically large), however the presence of any cliff nest (active or inactive) was noted if observed.

Due to low activity of Verreux's' Eagle during the summer survey, and the results of the cliff nest survey, the vantage point (VP) sampling effort was reduced to the standard best practice guidelines (Jenkins *et al.* 2015) protocol for the autumn, winter and spring surveys. The sampling effort was reviewed after each seasonal survey, in case it needed to be adjusted if deemed necessary by the specialists. Bird monitoring comprised flight activity surveys from various Vantage Points (VPs), as well as walked transects, driven transects, and focal site surveys (Figure 1). Relevant species were also recorded incidentally in the course of travelling the length of the site en route to survey locations.

The following definitions were applied:

- Target species: those particular bird species that are to be recorded by a specific survey method. Target species per survey method:
 - Vantage Point (VP) Surveys: all raptors; all large (non-passerine) priority species; all waterfowl (e.g. ducks and geese);
 - Walked Transects (WT): all birds;
 - Driven Transects (DT): all raptors; all large (non-passerine) priority species;
 - Incidental Observations: all raptors; all large (non-passerine) priority species; and
 - Focal Sites (FS): all species associated, utilising or interacting at/with the focal site.

The target species per method were recorded using the following methods, as described in more detail below.

3.4.1 Vantage Points

Five vantage points were surveyed on the WEF site, and one in the control site (CVP) (Figure 1). The location of the VPs was designed to maximise coverage of the turbine layout, taking into account accessibility.

Observer pairs monitored a viewshed of 360 degrees with a radius of 2 km from each VP. These viewsheds were the focus of observation, however if target species were noted beyond these (or if a species being recorded flew out of the viewshed but was still visible), they would also be recorded. For each flight of a target species the flight path was recorded on a large scale map along with data on the number/species of bird(s) and type of flight, flight duration and flight height. Flight heights were recorded through five height bands: 1: 0-20 m; 2: 20-40 m; 3: 40-120 m; 4: 120 - 200 m and 5: >200 m.

Vantage Points in the WEF were surveyed for 18 hours each in summer, and for 12 hours in autumn, winter and spring. The control VP was surveyed for 12 hours in all four seasons. To maximise coverage over time, all VPs were surveyed in 3 hours sessions per

day if possible, or 6 hour sessions, at different times of day if possible. The locations and sampling times are presented in Appendix III.

3.4.2 Walk Transects

To sample abundances and species richness of small terrestrial species, four walked transects of 1 km each in length were established on the project site (Figure 1). WT2 was conducted once in summer, while WT3, WT4, and WT5 were each conducted twice. All walked transects were conducted twice in autumn, winter and spring. One transect was established the control site and conducted twice each during each seasonal survey.

Two observers walked between the start and end points of the transects whilst recording all birds seen or heard up to 150 m on either side of the transect. Beyond 150 m, only priority species were noted and were recorded as incidental sightings.

The coordinates and sampling dates of the walked transects are presented in Appendix III.

3.4.3 Drive Transects

To sample abundances of large terrestrial birds and raptors, three drive transect routes were established within the WEF site (DT1, DT2 and DT3) and one at the control site (CDT) (Figure 1). Each transect was sampled twice per seasonal survey. Target species were recorded by driving slowly ($\pm$ 25 km/h) with all windows open, and stopping occasionally to listen and scan the surrounding environment. When a target species was located, a GPS co-ordinate was recorded along with the distance and direction from the vehicle to the observed bird and additional information such as weather conditions and habitat type and biological information about the recorded individual. The coordinates and sampling dates of the driven transects are presented in Appendix III.

3.4.4 Focal Sites

Focal Sites (FS) may include cliff-lines, quarry faces, power lines, and stands of large trees, nest sites, dams, water points, marshes and wetlands. During the first seasonal survey only one focal site (FS1), a livestock water point, was identified (Figure 1) and was surveyed once (for 15 minutes) during the summer seasonal survey. FS1 was again visited once in autumn, and then sample on two occasions during each of winter and spring surveys.

Following the cliff nest survey in autumn an additional two focal sites (N1 and N4) were added and surveyed in autumn, winter and spring, as both were suspected Verreaux's' Eagle nest sites found during the cliff nest survey. A third nest site (N5) was surveyed as a focal site during the winter and spring surveys. The locations and sampling dates are presented in Appendix III.

3.4.5 Incidental Observations

All other incidental sightings of priority species on the WEF site, control site and within the broader area were recorded and geo-referenced, along with additional relevant information such as weather and habitat type.

3.5 Identification of Potential Impacts

After collation of the baseline data from the source of information listed above the potential impacts of the project were identified (separately for the WEF site and Grid Connection), for the construction, operational and decommissioning phases.

The key potential impact types on avifauna from WEFs and associated grid connection infrastructure are:

- Collision with turbines;
- Electrocutation;
- Collision with power lines;
- Disturbance and displacement;
- Disruption of bird movements; and
- Habitat destruction.

3.6 Impact Assessment Methodology

Each of the potential impacts identified above, on the baseline environment presented in Section 5, is assessed in Section 6 using the methodology provided by the Environmental Assessment Practitioner (Appendix I). For each impact, the significance was determined by identifying the nature, status, spatial extent, duration, reversibility of the impact and irreplaceability of resource loss, its severity and probability of occurrence, in the absence of any mitigation ('without mitigation'). Mitigation measures were identified and the significance was re-rated, assuming the effective implementation of the mitigation ('with mitigation'). The assessment 'without mitigation' assumes the worst case scenario in which the maximum proposed number of turbines (i.e. 45) is constructed. The assessment 'with mitigation' assumes that all turbines are constructed outside of avifaunal no-go areas identified, and all additional mitigations described in the Section 6 are also adequately implemented.

The assessment included determining the value of the avifaunal receptors. This was done primarily through the compilation of a list of focal species by considering factors such as abundance, behaviour on site, breeding and flight activity (i.e. by considering the survey results) as well as priority species status (as per Retief et al. 2014), Regional Red Data status (Taylor *et al.*, 2015) and whether the species is endemic or range-restricted or not.

The specialists' confidence in the accuracy of the rating is also given. Cumulative impacts were assessed as the incremental impact of the proposed activity on the baseline presented in Section 5, when added to the impacts of other past, present or reasonably foreseeable future relevant activities in a 50 km radius.

The following proposed or approved developments within 50 km were identified (and included five wind energy projects, eight solar PV projects and one power line project) for consideration in the cumulative assessments:

- 300 MW Eskom Kleinsee Wind Energy Facility (Brazil WEF).
- 55.5 MW Springbok Wind Power Generation Facility.
- 7.2 MW Koningnaas Wind Energy Facility.
- Project Blue Wind Energy Facility, North of Kleinsee.
- Project Blue Wind Energy Facility (Phase 2 and 3), near Kleinsee.
- Nigramoep Solar PV Energy Facility.
- Proposed Phase 2 Construction of a 75 MW solar PV on farm 134/17 Klipdam.
- 19 MW Solar PV Energy Facility on portion 1 and 3 Melkboschkuil 132.
- 20 MW Solar PV Energy Facility on farm 132/26 Melkboschkuil.
- O'Kiep 15 MW Solar PV Energy Facility.
- O'Kiep 2 Solar PV Energy Facility.
- Kokerboom Solar PV Power Facility.
- 10 MW Baobab Solar PV Energy Facility.
- Deviation of the Eskom Juno-Gromis 400kV transmission line.

Any publically available specialist, EIA or BA reports were obtained and reviewed in terms of avifaunal impacts, and included in the cumulative assessment.

3.7 Determination of Avian Sensitivity and No-Go Areas

Avifaunal Flight Sensitivity Zones were designated based on observed flight activity during 12 months of avifaunal monitoring sessions on the WEF site.

Observed flight sensitivity was determined by creating a Grid Cell Sensitivity Score (GCSS), falling within either a Low, Medium, Medium-High or High classification for a 200 m x 200 m grid covering the WEF site. The GCSS was derived by analysing the following characteristics of all mapped priority species and raptors flight lines passing through each grid cell:

- Priority species score and the number of individuals associated with each flight line;
- Risk height factor, which considered if the flight was within the Rotor Swept Height;
- The duration of the flight; and
- The length of the flight.

These factors were considered in the following equation to determine a Flight Section Sensitivity Score (FSSS), for each section of flight within a grid cell. The GCSS is the sum of these flight sections within the grid cell, giving a sensitivity score specific to the cell.

$$\text{FSSS} = \text{PSS} \times \text{N} \times (\text{X/Y} \times \text{D}) \times (\text{P}+1)$$

Where:

- PSS is the Priority Species Score (Retief *et al.* 2011, updated 2014).
- N is the number of birds that are associated with the flight line.
- X is the length of the flight line section that is within a particular Grid Square.
- Y is the length of the whole flight line.
- D is the duration of the whole flight.
- P is the proportion of the flight line at Risk Height.

Grid cells within the WEF site boundary without a GCSS did not have any recorded priority species flights passing through from the monitoring survey, either because no species were recorded, or they were beyond the viewsheds covered by VP watches.

The resultant GCSS scores were categorised into Flight Sensitivity Zones as follows: Low (<10,000); Low-Medium (10,000 - 45,000); Medium (45,000 - 100,000); and High (>100,000), and are displayed in Figure 6.

A combined Avifaunal Sensitivity Map (Figure 7) shows areas of varying sensitivity as well as Avifaunal No-Go Areas which were identified following the site work and monitoring surveys as follows:

3.7.1 High Sensitivity Areas

- Nest Site buffers (Various- See Table 6)
- High Flight Sensitivity Zones

These areas constitute a No-Go for turbine and overhead power-line placement. Other infrastructure (e.g. roads, underground cables, offices, substations etc.) is permitted except within 1 km of raptor nest sites (although none were located on the project site).

3.7.2 Medium Sensitivity Areas

- National Freshwater Ecosystem Priority Areas (NFEPA) rivers and wetlands buffers: 200 m
- Medium Flight Sensitivity Zones

Infrastructure (including overhead power lines and wind turbines) is permitted, but not recommended in these areas.