DRAFT BASIC ASSESSMENT REPORT

THE BASIC ASSESSMENT FOR THE PROPOSED KOMAS WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR KLEINSEE IN THE NORTHERN CAPE PROVINCE.

APRIL 2021

Prepared by:
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genesis eco-energy DEVELOPMENTS

ENERTRAG

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Touching lives through innovation

BASIC ASSESSMENT PROCESS

for the

Proposed development of the Komas Wind Energy Facility and associated infrastructure, near Kleinsee in the Northern Cape Province

DRAFT BASIC ASSESSMENT REPORT

April 2021

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Mapping:
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REPORT DETAILS

Title:	Basic Assessment for the proposed development of the Komas Wind Energy Facility and associated infrastructure near Kleinsee in the Northern Cape Province: **DRAFT BASIC ASSESSMENT REPORT**
Purpose of this report:	The purpose of this Draft Basic Assessment (BA) Report is to: ▪ Present the details of 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 potential 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. The Draft BA Report is currently 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 period will be incorporated and addressed, as applicable and where relevant, into the Final BA Report. The Final BA Report will then be submitted to the National Department of Environment, Forestry and Fisheries (DEFF), as the competent authority, for decision-making.
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Competent Authority	Department of Environment, Forestry and Fisheries (DEFF) *Note from the CSIR:* A press release was issued on 31 March 2021 stating that the name of the DEFF will change on 1 April 2021. The DEFF will in future be known as the Department of Forestry, Fisheries and the Environment (DFFE). However, it must be noted that the Draft BA Report, including the specialist reports, were drafted prior to the

	name change of the Department. Therefore, where the Draft BA Report mentions the DEFF for example, kindly note that this refers to the DFFE.The Final BA Report will be updated to reflect the new department name i.e. DFFE.
Mapping:	Luanita Snyman-van der Walt and Abulele Adams (CSIR)
Date:	April 2021
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ABBREVIATIONS

AAA	Astronomy Advantage Area
AC	Alternating Current
AGA	Astronomy Geographic Advantage Act (Act 21 of 2007)
AGIS	Agricultural Geo-Referenced Information System
AIA	Archaeological Impact Assessment
ATNS	Air Traffic and Navigation Services SOC Limited
BA	Basic Assessment
BESS	Battery Energy Storage System
BGIS	Biodiversity Geographic Information System
BLSA	BirdLife South Africa
BSA	Blade Swept Area
BW	Bidding Window
CA	Competent Authority
CAA	Civil Aviation Act (Act 13 of 2009)
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)

CBA	Critical Biodiversity Area
CEMP	Construction Environmental Management Plan
CEPF	Critical Ecosystem Partnership Fund
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
CPS	Collision-Prone Species
CPV	Concentrated Photovoltaic
CSIR	Council for Scientific and Industrial Research
CSP	Concentrated Solar Power
DAEARDLR	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
DAFF	Department of Agriculture, Forestry and Fisheries
DALRRD	Department of Agriculture, Land Reform and Rural Development
DC	Direct Current
DEA	National Department of Environmental Affairs
DEAT	Department of Environment and Tourism
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DEFF	Department of Environment, Forestry and Fisheries
DENC	Department of Environment and Nature Conservation
DHSWS	Department of Human Settlements, Water and Sanitation
DM	District Municipality
DMR	Department of Minerals Resources
DMRE	Department of Mineral Resources and Energy
DNI	Direct Normal Irradiance
DoE	Department of Energy
DOT	National Department of Transport
DWS	National Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EC	Electrical Current
ECO	Environmental Control Officer
EGI	Electrical Grid Infrastructure
EIA	Environmental Impact Assessment
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMS	Environmental Management Services
EMPr	Environmental Management Programme
EPC	Engineering, Procurement and Construction
EPs	Equator Principles
EPFIs	Equator Principles Financial Institutions
ESA	Ecological Support Area
FDI	Foreign Direct Investment
GA	General Authorization
GDP	Gross Domestic Product
GG	Government Gazette
GHI	Global Horizontal Irradiation
GIS	Geographical Information Systems
GN	Government Notice
GNR	Government Notice Regulation
GPS	Global Positioning System

HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IFC	International Financial Corporation
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRP	Integrated Resource Plan
KCAAA	Karoo Central Astronomy Advantage Area
LED	Local Economic Development
LM	Local Municipality
MF	Monitoring Forum
MPDRA	Mineral Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MTS	Main Transmission Substation
MW	megawatt
NBF	National Biodiversity Framework
NC	Northern Cape
NCPAES	Northern Cape Protected Area Expansion Strategy
NDM	Namakwa District Municipality
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998), as amended
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act (Act 57 of 2003)
NERSA	National Energy Regulator of South Africa
NGI	National Geospatial Information
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NIA	Noise Impact Assessment
NKLM	Nama Khoi Local Municipality
NSD	Noise Sensitive Development
NWA	National Water Act, 1998 (Act No. 36 of 1998)
O&M	Operation and Maintenance
PIA	Palaeontology Impact Assessment
PPA	Power Purchasing Agreement
PPP	Public Participation Process
PPE	Personal Protective Equipment
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
QGIS	Quantum Geographic Information System
REDZ	Renewable Energy Development Zone
REEA	Renewable Energy EIA Application
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFB	Redox Flow Battery
RFI	Radio Frequency Interference
RfP	Request for Proposal
RMIPPPP	Risk Mitigation Independent Power Producer Procurement Programme
SABAP2	South African Bird Atlas Project
SACAA	South African Civil Aviation Authority (SACAA)
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SALA	Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970)
SALT	South African Large Telescope

SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SARERD	South African Renewable Energy Resource Database
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SED	Socio-Economic Development
S&EIR	Scoping and Environmental Impact Reporting
SIP	Strategic Infrastructure Plan
SKA	Square Kilometre Array
SKEP	Succulent Karoo Ecosystem Programme
SMME	Small, Medium and Micro Enterprise
SS	Substation
STDs	Sexually Transmitted Diseases
TIA	Transport Impact Assessment
ToR	Terms of Reference
VIA	Visual Impact Assessment
WASA	Wind Atlas of South Africa
WEF	Wind Energy Facility
WMA	Water Management Area
WTG	Wind Turbine Generator
WULA	Water Use Licence Application

EXECUTIVE SUMMARY

INTRODUCTION

The Project Applicant, Genesis ENERTRAG Komas (Pty) Ltd (hereafter referred to as the "Project Applicant"), is proposing to design, construct and operate the Komas Wind Energy Facility (WEF) and associated infrastructure near Kleinsee in the Northern Cape Province. The proposed project is located approximately 35 km southeast of Kleinsee and 53 km southwest of Springbok. The locality of the proposed project is depicted in Figure S.1. The proposed project is located within the Nama Khoi Local Municipality, which falls within the Namakwa District Municipality. The proposed Komas WEF will have a capacity of up to 300 MW and will comprise of up to 50 Wind Turbine Generators (WTGs).

The associated infrastructure includes a solid state lithium-ion Battery Energy Storage System (BESS) and various structures, buildings and electrical grid infrastructure (EGI) such as, but not limited to an on-site 33/132 kV Substation (SS). Two site alternatives for the BESS and on-site SS (known as the BESS and SS complex) (i.e. Option 1 and Option 2) have been identified for assessment as part of the BA process (Figure A.1). A construction laydown area was also identified and includes the Operation and Maintenance (O&M) buildings.

The proposed Komas WEF project will be developed on the following farm portions as indicated in Table S.1. The approximate coordinates of the boundary points of the proposed Komas WEF project as well as the centre points for the preferred BESS and SS complex are included in Appendix A.3 of this BA report.

Table S.1. Affected Farm Portion Details

Farm Name	21 Digit Code	Parcel Number
Portion 1 of the Farm Zonnekwa No.326	C05300000000032600001	326
Portion 2 of the Farm Zonnekwa No.328	C05300000000032800002	328
Portion 3 of the Farm Zonnekwa No.328	C05300000000032800003	328
Portion 4 of the Farm Zonnekwa No.328	C05300000000032800004	328
Portion 4 of the Farm Kap Vley No.315	C05300000000031500004	315

The Project Applicant is also proposing to develop a 132 kV power line, a 33/132 kV Eskom Switching SS and a Collector SS (if required) to feed the electricity generated by the proposed Komas WEF into the national grid at the Gromis Main Transmission Substation (MTS) (Figure S.1). These electrical infrastructure components will be assessed as part of a **separate application and BA process to be undertaken by the Project Applicant.**

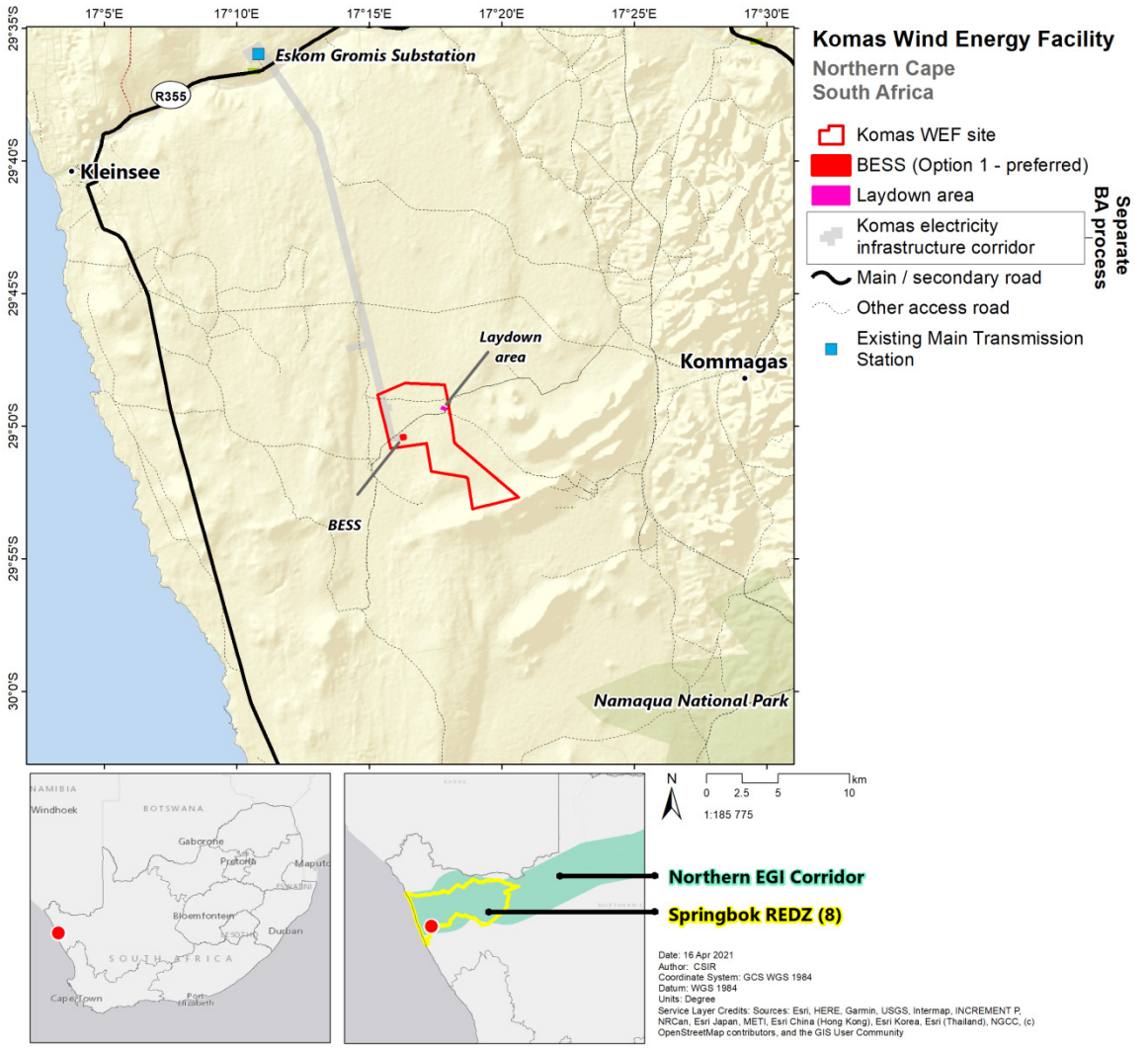


Figure S.1. Locality of the proposed Komas WEF and associated infrastructure

The proposed project is located entirely within the Springbok Renewable Energy Development Zone (REDZ 8), one of the eleven REDZs formally gazetted in South Africa for the purpose of developing solar and wind energy generation facilities (Government Gazette (GG) 41445, Government Notice (GN) 114; 16 February 2018 (Phase 1 with eight REDZs) and GG 44191, GN 144; 26 February 2021 (Phase 2 with three REDZs)). Refer to Figure A.2 for the locality of the proposed project in relation to the REDZs. In line with the gazetted process for a project located within a REDZ, the proposed project will be subject to a Basic Assessment (BA) process instead of a full Scoping and Environmental Impact Assessment (EIA) process and a reduced decision-making period of 57 days, in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended (NEMA) and the NEMA EIA Regulations, 2014, as amended, promulgated in GG 40772; in GN R326, R327, R325 and R324 on 7 April 2017. A BA process in terms of Appendix 1 of the NEMA EIA Regulations, 2014, as amended, has therefore been undertaken for the proposed project. The Competent Authority for the proposed project is the national Department of Environment, Forestry and Fisheries (DEFF), previously operating as the national Department of Environmental Affairs (DEA).

The proposed Komas WEF is located within the Springbok REDZ (i.e. REDZ 8) and is therefore aligned with national initiatives for the placement of WEFs in South Africa. The proposed project also falls within the Northern EGI Corridor, one of the five EGI Corridors gazetted in February 2018. While Listed Activity 9 of Listing Notice 2 of the NEMA EIA Regulations, 2014, as amended, is not triggered by the proposed project, the fact that the proposed project falls within the Northern EGI Corridor is still important as it indicates that the proposed project aligns with the strategic objectives of the country in terms of infrastructure placement.

This Draft BA Report is currently being released 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 will be incorporated and addressed, as applicable and where relevant, into the Final BA Report. The Final BA Report will then be submitted to the DEFF, in accordance with Regulation 19 (1) of the NEMA EIA Regulations, 2014, as amended, for decision-making in terms of Regulation 20, however with a reduced 57-day timeframe (as the proposed project falls within the REDZ 8, as explained above).

PROJECT BASIC ASSESSMENT TEAM

In accordance with Regulation 12 (1) of the NEMA EIA Regulations, 2014, as amended, the Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the required BA process in order to determine the biophysical, social and economic impacts associated with undertaking the proposed development. The project team, including the relevant specialists, is indicated in Table S.2 below.

Table S.2: Project Team for the Komas WEF BA process

Name	Organisation	Role/ Specialist Study
CSIR Project Team		
Minnelise Levendal (*Pr.Sci.Nat*.)	CSIR	Environmental Assessment Practitioner (EAP) and Project Leader
Rohaida Abed (*Pr.Sci.Nat*.)	CSIR	Project Team member
Dhiveshni Moodley (*Cand.Sci.Nat.*)	CSIR	Project Officer
Luanita Snyman-van der Walt (*Pr.Sci.Nat*.)	CSIR	Project Mapping
Abulele Adams *(Pr.Sci.Nat.)*	CSIR	Project Mapping
Specialists		
Simon Todd	3Foxes Biodiversity Solutions	Terrestrial Biodiversity Impact Assessment
Louise Zdanow and Joshua Gericke	Enviroswift (Pty) Ltd	Aquatic BiodiversityCompliance Statement
Dr. Rob Simmons	Birds and Bats Unlimited	Avifauna Impact Assessment (including 12 months pre-construction monitoring)
Stephanie Dippenaar	Stephanie Dippenaar Consulting	Bat Impact Assessment (including 12 months pre-construction

Name	Organisation	Role/ Specialist Study
		monitoring)
Kerry Schwartz	SiVEST SA (Pty) Ltd	Visual (including Flicker) Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology, Cultural Landscape)
John Pether	Private	Palaeontology Impact Assessment
Johann Lanz	Private	Agriculture Compliance Statement
Tony Barbour and Schalk van der Merwe	Tony Barbour Environmental Consulting	Socio-Economic Impact Assessment
Morné de Jager	ENVIRO-ACOUSTIC RESEARCH cc (EAR)	Noise Assessment
Adrian Johnson	JG AFRIKA (Pty) Ltd	Transport Impact Assessment
Dr. Robert Leyland	WSP Environmental (Pty) Ltd	Geotechnical Impact Assessment
Minnelise Levendal (*Pr.Sci.Nat*.), Abulele Adams (*Pr.Sci.Nat*.) and Rohaida Abed (*Pr.Sci.Nat*.)	CSIR	Civil Aviation Site Sensitivity Verification
Minnelise Levendal (*Pr.Sci.Nat*.), Abulele Adams (*Pr.Sci.Nat*.), and Rohaida Abed (*Pr.Sci.Nat*.)	CSIR	Defence Site Sensitivity Verification
Technical Input		
Simon Todd	3Foxes Biodiversity Solutions	Initial Biodiversity Offset Analysis
Mark Botha	Conservation Strategy Tactics and Insight	Additional Biodiversity Offset Report (including proposed implementation)
Kennett Sinclair	DNV GL South Africa (Pty) Ltd	Wake Effects Assessment
Dr. Robert Leyland	WSP	Geology Assessment

It is important to note at the outset that the above technical inputs are purely technical and serve to inform the layout, mitigation and management requirements of the proposed WEF (as required), and do not constitute specialist studies in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended.

PROJECT DESCRIPTION

It is important to point out at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase (subsequent to the issuing of EA should it be granted for the proposed project).

The footprint of the proposed Komas WEF with a capacity of up to 300 MW will cover an approximate area of 90 hectares (ha). This excludes access roads leading to the site. Several specialists assessed larger areas on the affected farm portions in order to avoid environmental constraints and sensitivities (highlighted by the specialists), during the siting and final design of the facilities and associated infrastructure.

The proposed Komas WEF will comprise of up to 50 WTGs. Each WTG will have a hardstand area of approximately 1 500 m^2, a turbine hub height of up to 200 m and a turbine rotor diameter of up to 200 m. Associated infrastructure includes a construction laydown area (which includes the O&M buildings), a solid state lithium-ion BESS comprising of batteries within shipping containers or a suitable housing structure on a concrete foundation and, an on-site SS. The BESS and on-site SS will be located within a complex of 4 ha in size to allow for micro-siting of the BESS components and to accommodate internal roads (as required), a temporary construction laydown area and a firebreak around the BESS footprint.

Once a Power Purchase Agreement (PPA) is awarded, the proposed Komas WEF will generate electricity for a minimum period of 20 years. The construction phase for the proposed project is expected to extend approximately 24 months.

The proposed Komas WEF and associated infrastructure include the main components and associated specifications as tabulated in Table S.3.

Table S.3: The key project and component details and associated specifications

Component	Description / Dimensions
Site coordinates (centre point)	Lat -29.843279°; Long 17.296014°
Affected farm portion/s	• Portion 1 of the Farm Zonnekwa No. 326 • Portion 2 of the Farm Zonnekwa No. 328 • Portion 3 of the Farm Zonnekwa No. 328 • Portion 4 of the Farm Zonnekwa No. 328 • Portion 4 of the Farm Kap Vley No. 315
SG code/s	• C05300000000032600001 • C05300000000032800002 • C05300000000032800003 • C05300000000032800004 • C05300000000031500004
Total project footprint	Approximately 90 ha
Proposed technology	WTGs and associated infrastructure, including a solid state lithium-ion BESS
Komas WEF site area	Approximately 2 725 ha
Total WEF capacity	Up to 300 MW
BESS capacity	Up to 300 MW/1 200 MWh
Number of turbines	Up to 50 turbines
Turbine hub height from ground	Up to 200 m
Turbine rotor diameter	Up to 200 m
Turbine blade length	Up to 100 m
On-site SS and BESS complex area	Approximately 4 ha (200 m x 200 m)
Height of BESS array	Approximately 5 – 10 m
Height of on-site SS	Approximately 7 – 10 m Up to 22 m (including lighting).
Construction laydown area	A temporary construction laydown/staging area of approximately 4.5 ha (which will also accommodate the O&M buildings)

Component	Description / Dimensions
Permanent laydown area	To be determined based on final layout
O&M building area	Part of the construction laydown area
Turbine hardstand area	Approximately 1 500 m² per turbine
Width of internal access roads	Up to 10 m, including turning circle/bypass areas of up to 20 m at some sections during the construction phase. As such, the roads and cables will be positioned within a 20m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.
Length of internal access roads	To be determined based on final layout
Site access	Unnamed public gravel road off the R355
Grid connection and proximity (This will be subject to a separate Environmental Assessment process)	Gromis MTS Approximately 30 km
Height of SS, BESS and O&M area fencing	Approximately 2 m to 3 m high
Type of fencing	Galvanised steel
Fencing around the WEF Perimeter	Type: Galvanized steel Height: 1 m to 3 m

As noted above, the proposed EGI, including an Eskom Switching SS, 132 kV power line and Collector SS (if required), will be assessed as part of a separate BA process to be undertaken by the Applicant.

NEED FOR THE BA

As noted above, in terms of the NEMA EIA Regulations, 2014, as amended, published in GN R326, R327, R325 and R324, as well as GN 114 for procedures within a REDZ, a BA process is required for the proposed project. The need for the BA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

- *"The development of facility 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 facility or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure".*

Section A of this Draft BA Report contains the detailed list of activities contained in GN R327, R325 and R324 which are triggered by the various project components and thus form part of this BA process.

The purpose of the BA is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The BA therefore needs to show the Competent Authority, the DEFF; and the Project Applicant, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

IMPACT ASSESSMENT

Table S.2 provides a list of specialist studies that were undertaken as part of the BA process. The full specialist studies are provided in Appendix C.1 – C.11 of this Draft BA Report. In addition, two site sensitivity verification assessments were undertaken for Civil Aviation and Defence (Appendix C.12 and Appendix C.13 respectively). Section B of this report provides a summary of the affected environment associated with these studies. Section D provides a summary of the impact assessments conducted by the specialists.

In addition to the specialist studies and site sensitivity verification assessments, technical inputs/studies on Geology (Appendix J.1) and Wake Effect (Appendix J.2) were also conducted.

A separate Terrestrial Biodiversity Offset Analysis was also commissioned by the Project Applicant and was undertaken by the Terrestrial Biodiversity Specialist on the project, Mr. Simon Fox of *3Foxes Biodiversity Solutions* (Appendix J.3 (2) of this BA Report). This study was undertaken to ascertain the need to determine and implement a Biodiversity offset to mitigate the potential negative impacts on terrestrial biodiversity. This is due to the fact that the project site is partly located within a Critical Biodiversity Area (CBA) Tier 2, the Northern Cape Protected Area Expansion Strategy (NC-PAES) Focus Area, the National Protected Area Expansion *Strategy* (PAES) Focus Area, the Namaqua National Park (NNP) expansion area, and the NNP buffer zone. The proposed development of the Komas WEF raises a concern regarding the possible impact of the development on CBAs, the NC and National PAES Focus Area, the NNP expansion footprint area, and the NNP buffer zone. It also raises concerns about achieving the long-term conservation targets of the affected area (see the pre-application comments from SANParks dated 15 February 2021 included in Appendix D of the BA Report).

The outcome of the Terrestrial Biodiversity Offset Analysis (Todd, 2021(b)) is that the proposed Komas WEF site is not unique and does not have any features present that would be impacted by the proposed development that are of a high conservation value. Although the southern section of the Komas site falls within a CBA 2 and NC -PAES Focus Area, the analysis suggests that impacts on these features would be acceptable and that there are no high or moderate impacts following mitigation on terrestrial biodiversity associated with the proposed Komas WEF development that would warrant an offset. The study therefore concluded that a Biodiversity Offset is not considered necessary for development of the site and recommended that on-site mitigation and avoidance measures (i.e. a 50% reduction of the grazing capacity on the proposed Komas WEF site) are considered sufficient to reduce the impacts of the development on the CBA and NC-PAES Focus Area to an acceptable level.

However, these on-site mitigation and avoidance measures were not deemed acceptable to DEFF and SANParks following the pre-application meetings we had with them. Therefore, based on these objections and following official comments received from SANParks dated 15 February 2021 (see Appendix D of the BA Report) the Project Applicant commissioned an additional Biodiversity Offset Study (including proposed implementation) which was undertaken by Mr. Mark Botha *of Conservation Strategy, Tactics and Insight* (dated February 2021). This study is included in Appendix J.3(1) of this BA Report (together with the initial Biodiversity Offset Analysis which was undertaken by Mr. Simon Todd). **It should be noted that the recommendations of the additional Biodiversity Offset Report (including proposed implementation) (Botha, 2021) replace those in the initial Biodiversity Offset Analysis (Todd, 2021(b)) which was undertaken prior to the comments raised by DEFF and SANParks during the pre-application phase.**

The Biodiversity Offset Report (including proposed implementation) (Botha, 2021) recommends that an offset of 810 ha, of Namaqualand Strandveld or an alternative mix of related vegetation types of greater conservation value, in the Expansion Footprint of the NNP and be within at least a CBA 2. The optimal location for this from a biodiversity perspective is likely the southern part of Portion 1 of the Farm Platvley 314, which is also owned by one of the owners of the proposed Komas WEF site. This site has also been assessed for the development of a WEF (known as the Gromis WEF). This area includes the most conservation-worthy and sensitive habitats on the properties assessed and is designated as largely CBA1. It could easily be secured through a Lease agreement or purchase, and declared as a Protected Area. More details on the proposed Biodiversity Offset and the calculation thereof is included in Section B of this BA Report. It is important to note that the findings and recommendations of the Biodiversity Offset Implementation study (i.e. the implementation of a biodiversity offset) are acceptable and supported by the EAP and the Project Applicant.

The Biodiversity Offset Implementation study concluded that although the proposed Komas WEF impacts marginally on the NNP Expansion Footprint, and thus the PAES focus area, as well as a CBA2 in terms of the applicable provincial plan, these impacts are not deemed sufficiently high to suggest that the development should not proceed. The impacts on intrinsic biodiversity features appear manageable. As the project is located within a REDZ and there are several offset options in the immediate vicinity, all with high likelihood of success, the specialist (Botha, 2021) notes that he has no objections to the development proceeding.

A summary of the specialist assessments included in Appendices C.1 – C.11 is outlined below.

Terrestrial Biodiversity Impact Assessment

The Terrestrial Biodiversity Impact Assessment was undertaken by Simon Todd of 3Foxes Biodiversity Solutions to inform the outcome of this BA from a terrestrial biodiversity perspective. The Terrestrial Biodiversity Impact Assessment was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The complete Terrestrial Biodiversity Impact Assessment is included in Appendix C.1 of this report. A summary of the Terrestrial Biodiversity Impact Assessment is provided below.

***Important Note:** The Terrestrial Biodiversity Impact Assessment (Appendix C.1) was undertaken and commissioned in September 2018. It was therefore commissioned a substantial period prior to the Assessment Protocol published in GN 320 on 20 March 2020 came into effect. This study was also undertaken and commissioned prior to the Species Protocol published in GN 1150 dated 30 October 2020 (as discussed in Section A.10) came into effect. Therefore, the Terrestrial Biodiversity Impact Assessment was undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended and not in accordance with the latest Protocols indicated above. Proof of the date of appointment of the biodiversity specialist, Simon Todd of 3Foxes Biodiversity Solutions, is provided in Appendix F.2.*

Summary of affected environment

The vegetation of the Komas site consists of relatively homogenous Namaqualand Strandveld. The low-lying area in the west of the site, consisting of short strandveld on calcareous soils is considered to represent the most sensitive part of the site from an ecological perspective and is not considered suitable for development. There are also some areas of mobile dunes and rocky outcrops which

should also be avoided as far as possible. The abundance of Species of Conservation Concern (SCC) across the site is however relatively low and a significant impact on features or SCC is unlikely. In terms of fauna, there are relatively few SCC that are likely to be present at the site. This is in part at least due to the low range of habitats present at the site, most notably the general lack of rocky outcrops. The major impact on fauna would be direct habitat loss of approximately 90 ha as well as some low-level operation phase disturbance resulting from maintenance activities and turbine noise. There are no local populations of fauna within the site that are likely to be compromised by the development as the total footprint is relatively low in proportion to the overall extent of the site and there are still extensive areas within and adjacent to the site that would not be affected.

The southern half of the site falls within a Critical Biodiversity Area (CBA 2) as well as a Northern Cape Protected Area Expansion Strategy (NC-PAES) Focus Area and the Namaqua National Park's Expansion Footprint, which raises some concern regarding the potential impact of the development on ecological processes and options for future conservation expansion in the area.

The field assessment suggests that the site is not likely to be of high significance for broad-scale ecological processes and as the site is already almost surrounded by other approved WEFs, it is not likely to be viewed as a current priority for formal conservation expansion. In addition, it has few features or SCC, its irreplaceability value is likely to be low. Given that the overall footprint of the wind farm represents less than 2-5% of the landscape, the development is considered to be broadly compatible with the aims of Ecological Support Areas (ESAs) provided that impacts such as erosion can be properly mitigated. The development footprint within the CBA 2 is 31 ha which represents less than 2% of the area of CBA within the Komas study area only and significantly less of the whole affected CBA. The parts of the site that fall within the NC-PAES Focus Area do not contain any species or habitats that are not widely available in adjacent areas. A separate offset study indicates that an offset is not considered necessary for development of the site and the on-site mitigation and avoidance measures that have been recommended are considered sufficient to reduce the impacts of the development on the CBA and NC-PAES Focus Area to an acceptable level.

Cumulative impacts

There are several other approved developments proposed in the area around the proposed Komas WEF site. This includes the 300 MW Kap Vley project east of the site, the 140 MW Namas WEF west of the site and the 140 MW Zonnequa WEF northwest of the site and the 300MW Eskom Kleinzee WEF towards the coast and the Project Blue WEF around Kleinsee. Those projects further afield are generally in a different environment and ecological context from the Komas site and as such are of less relevance when considering the cumulative impacts of the Komas development and the surrounding projects. The footprint of these different facilities would be approximately 700 ha and the Komas development would add an additional 11% to this, assuming that all these different developments go ahead, which is unlikely. However, this is a simplistic analysis and the real concern would be around the disruption of ecological processes and removal of important biodiversity features from possible future conservation expansion. The long-term potential impact of wind energy development should also be placed in context of other development impacts in the area, especially mining. The extent of habitat loss due to mining in the area around Kleinsee alone is more than 4 000 ha and similar extents have been lost further afield both to the north and south of Kleinsee. The total extent of habitat loss from wind energy development would thus be less than 10% of that caused my mining. The primary ecological process that would potentially be affected is likely to be landscape connectivity for fauna.

Not all species would be equally affected and species that may be particularly vulnerable to wind farm impacts include golden moles and Bat-eared Foxes, which may be sensitive to the noise turbines generate, while subterannean reptiles may experience fragmentation due to roads and noise. Bat-eared Foxes are however fairly mobile and would easily be able to move through wind farm areas if required. This would however not be the case for golden moles and subterranean reptiles, with the result that these groups can be idenitified as being most vulnerable to cumulative impact in the area. There is however currently no available information or research on this topic and long-term monitoring would be required to identify which species are impacted and the degree of impact. As such, the degree and nature of cumulative impacts on fauna in the area must be considered with a high degree of uncertainty.

Although the concentration of wind energy development in the area is a potential concern, the area is a REDZ, which has the purpose of encouraging renewable energy development within these areas, with the result that high cumulative impacts are to be expected in these areas. In the broader Namaqualand Coastal-Plain context, the concentration of wind energy projects in this restricted area can be viewed as positive as it discourages the development of wind farms in other more important areas. In addition, the total remaining extent of Namaqualand Strandveld is more than 250 000 ha and the loss of less than 0.5% of this area to wind farm development would not constitute significant cumulative loss, especially given that large tracts of this vegetation type are protected within the Namakwa National Park. The contribution of the Komas WEF to cumulative impacts is this seen as being relatively low. Overall, it does not appear that cumulative impacts on fauna and flora resulting from the Komas wind farm development would warrant an offset as these are considered relatively low after mitigation.

The additional Biodiversity Offset Report (including the proposed implementation) (Botha, 2021) notes that assessment of cumulative impacts is notoriously difficult, especially in a landscape where several development applications have been approved, but are not yet constructed, and several of which may never be constructed (for financial, regulatory, commercial or other unrelated reasons). Further, the proposed WEF is located in the REDZ which was designed (through a strategic assessment) to deliberately cluster impacts from renewable energy facilities.

It is further stated that it is very unlikely that the proposed Komas WEF, or indeed the cumulative impact of all the WEFs in this part of the REDZ, will impact on any foundational ecological processes. Either way, the offset design should endeavour to secure spatial representation to cater for persistence of these processes (Botha, 2021).

Summary of Impact Assessment

The potential impacts identified in the Terrestrial Biodiversity Impact Assessment, including direct and cumulative impacts during the construction, operational and decommissioning phases are listed below.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Impact on vegetation and plant SCC.	• No development of turbines, roads or other infrastructure 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 turbines 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.	**Moderate**	**Low**
Faunal impacts.	• 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 Environmental Control Officer (ECO) or other suitably qualified person. • Limit access to the site and 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. • All construction vehicles should adhere to a low speed limit (40 km/h for cars and 30 km/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. • If any parts of site such as construction camps must be lit at night, this should be done with low Ultra Violet (UV) type lights (such as most LEDs)	**Moderate**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	as far as practically possible, which do not attract insects and which should be directed downwards.		
Impact on CBAs	• 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.	**Moderate**	**Low**
OPERATIONAL PHASE: DIRECT IMPACTS			
Increased soil erosion.	• Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan. • All roads and other hardened 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 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.	**Moderate**	**Low**
Increased alien plant invasion.	• Alien management plan to be implemented during the operational phase of the development, which makes provision for regular alien clearing and monitoring. • Wherever excavation is necessary, topsoil should be set aside and replaced after construction to encourage natural regeneration of the local indigenous species. • Due to the disturbance at the site as well as the increased runoff generated by the hard infrastructure, alien plant species are likely to be	**Moderate**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	a long-term problem at the site and a long-term control plan will need to be implemented. Problem woody species such as *Acacia cyclops* are already present in the area and are likely to increase rapidly if not controlled. • Regular monitoring for alien plants within the development footprint as well as adjacent areas which receive runoff from the facility as there are also likely to be prone to invasion problems. • Regular alien clearing should be conducted, as needed, using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.		
Impacts on fauna.	• An Open space management plan must be developed for the development, which makes provision for favourable management of the facility and the surrounding area for fauna. • Limiting access to the site to staff and contractors only. • Appropriate design of roads and other infrastructure where appropriate to minimise faunal impacts and allow fauna to pass through or underneath these features. • No electrical fencing within 20 cm of the ground as tortoises become stuck against such fences and are electrocuted to death. • If the site must be lit at night for security purposes, this should be done with downward-directed low-UV type lights (such as most LEDs) as far as possible, which do not attract insects. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All vehicles accessing the site should adhere to a low speed limit (40 km/h max) to avoid collisions with susceptible species such as snakes and tortoises.	**Moderate**	**Low**
Impacts on CBAs.	• Minimise the development footprint as far as possible, which includes locating temporary-use areas such as construction camps and lay-down	**Moderate**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	areas in previously disturbed areas. • Avoid impact to restricted and specialised habitats such as pans or active dune fields. • Implement a management plan for the site which takes cognisance of the ecological value of the area and is favourable for the maintenance of fauna and flora in the area.		
DECOMMISSIONING PHASE: DIRECT IMPACTS			
Increased soil erosion.	• 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 3 years after decommissioning or until the rehabilitation benchmarks and criteria have been met. • All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.	**High**	**Low**
Increased alien plant invasion.	• 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 3 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 three years after	**High**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	decommissioning or until alien invasives are no longer a problem at the site. • 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			
Cumulative habitat loss and impact on broad scale ecological processes.	• Minimise the development footprint as far as possible. • The facility should be managed in a biodiversity-conscious manner in accordance with an open-space management plan for the facility. • Ensure that on-site impacts on plant SCC are maintained at acceptable levels through avoidance of significant populations of these species.	**Moderate**	**Low**
Impaired ability to meet conservation targets.	• Engage with the provincial and national conservation authorities on the implications of the current development for future conservation expansion in the area. Note: An initial Biodiversity Offset Analysis has been conducted and is included in Appendix J.3(2) of this BA Report). In addition, comment on the Terrestrial Biodiversity Impact Assessment and the Biodiversity Offset Analysis including the recommendations held there-in, has been received from SANParks and the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARDLR) (previously operating as the Northern Cape Department of Environment and Nature Conservation (DENC) • Develop an ecological offset study to evaluate the potential need for an offset to mitigate the impacts of the development on CBAs and the NC-PAES Focus Area. (Note: An initial Biodiversity Offset Analysis has been completed and is included in Appendix J.3(2) of this BA Report).	**Moderate**	**Low**

In response to SANParks comments received during the pre-application phase, below is the impact assessment provided by Mr. Mark Botha in his Additional Biodiversity Offset Report (including proposed implementation) (Appendix J.3(1) of this BA Report) which comprises an amended table of

impact significance ratings to clarify the requirement[1] for a biodiversity offset. This includes highly summarised impact ratings for Birds and Bats.

Phase/Impact	Before Mitigation	After Mitigation but prior to offset	Considerations
Construction Phase			
Impact on plant SCC	Moderate	Low	
Impact on Fauna	Moderate	Low	
Operational Phase			
Increased Soil Erosion	Moderate	Low	
Increased Alien Plant Invasion	Moderate	Low	
Terrestrial Faunal Impact	Moderate	Low	
Avifauna Impact (Simmons & Martins 2021; Dippenaar 2021)	Moderate - High	Moderate	Mitigation dependent. Acknowledged to be likely over-estimate
CBA2	Moderate	Moderate	Low if offset included
National & NC-PAES Focus Area	Moderate	Moderate	Low if offset included
SANParks' Expansion footprint, buffer zone	Moderate	Moderate	Low if offset included
Decommissioning Phase			
Increased Soil Erosion	High	Low	
Increased Alien Plant Invasion	High	Low	
Cumulative Impacts			
Broad-Scale Ecological Processes	Moderate	Low	
Ability to Meet Conservation Targets	Low	Low	Low if offset included
Reduction of Offset Receiving Area	Low	Low	Very low. Receiving area only likely next to NNP; REDZ and electricity infrastructure more important.

Comparative assessment of alternatives

Two alternatives were provided by the Project Applicant for assessment for the BESS and on-site SS complex area (Option 1 and Option 2). There is not a strong preference between these alternatives from a Terrestrial Biodiversity perspective, but Option 2 is favoured as it closer to the proposed Collector SS (which will be assessed as part of a separate BA process). However, Option 1 is also feasible and is acceptable from a Terrestrial Biodiversity impact perspective.

Concluding statement from the initial Biodiversity Offset Analysis(Todd, 2021(a))

The proposed Komas WEF site is considered to represent a broadly suitable environment for wind farm development. There are no specific long-term impacts likely to be associated with the wind farm that cannot be reduced to an acceptable level through mitigation and avoidance. Although the development will impact on areas classified as ESAs, CBAs and the NC-PAES Focus Area, the conservation value of the site is not considered exceptional and the location and context of the site,

[1] The draft Offset Guideline (DEA 2017) suggests offsets are appropriate for residual negative moderate to high impacts

suggest that these impacts are likely to be acceptable and would not significantly restrict future conservation expansion in the greater Namaqualand area. As there are no high residual impacts or fatal flaws associated with the development, it can be supported from a Terrestrial Biodiversity perspective. **It is therefore the reasoned opinion of the specialist that the proposed Komas WEF and associated infrastructure should be authorised, subject to the implementation of the recommended mitigation measures.**

Concluding statement from the additional Biodiversity Offset Report (including proposed implementation) (Botha, 2021)

Although the proposed Komas WEF impacts marginally on the NNP Expansion Footprint, and thus the PAES focus area, and thus a CBA2 in terms of the applicable provincial plan, these impacts are not deemed sufficiently high to suggest that the development should not proceed. The impacts on intrinsic biodiversity features appear manageable. As the project is located in a REDZ and there are several offset options in the immediate vicinity, all with high likelihood of success, I have no objections to the development proceeding. An offset of 810 ha, in Namaqualand Strandveld or an adjacent, related vegetation type in the PAES focus area is prudent, and the optimal location for this from a biodiversity perspective is likely a portion of the Gromis property.

Aquatic Biodiversity Compliance Statement

The Aquatic BiodiversityAssessment was undertaken by Joshua Gericke and Louise Zdanow from Enviroswift (Pty) Ltd to inform the outcome of this BA from an aquatic biodiversity perspective. An Aquatic Biodiversity Compliance Statement was undertaken in accordance with the requirements of the Aquatic Biodiversity Protocol as per Government Notice 320 published in GG No. 43110 on 20 March 2020. The web-based national Screening Tool indicates that a full Aquatic Biodiversity Specialist Assessment is required. However, the aquatic specialist identified no watercourses on site. Therefore, the proposed development will not have an impact on any aquatic features and a full Aquatic Biodiversity Specialist Assessment is therefore not required. A Compliance Statement has been prepared instead as indicated above. It is the opinion of the Aquatic Biodiversity specialist that this Compliance Statement is sufficient as the aquatic sensitivity of the site was rated as very low. The complete Aquatic Biodiversity Compliance Statement is included in Appendix C.2 of this report. A summary of the Compliance Statement is provided below.

Comparative assessment of alternatives

Two alternatives were provided by the Project Applicant for assessment for the BESS and on-site SS complex area (Option 1 and Option 2). Both alternatives are acceptable from an aquatic perspective as there are no watercourses on the proposed Komas WEF site.

Summary of affected environment

According to the National Wetland Map 5 (CSIR, 2018), a large depression wetland is located within the western portion of the study area (Figure B.23). This depression has been indicated as an area of very high sensitivity in terms of Aquatic Biodiversity by the National Environmental Screening Tool (Figure B.24). However, upon investigation of this area during the field survey undertaken in January 2020 it was found that the area indicated as wetland habitat is in fact an extensive dune field. This dune field is a flat area located between two ridge lines and is characterised by fresh, wind-blown sand and dry terrestrial vegetation (Figure B.25). There is no indication that water accumulates within

this area, and no wetland indicators as defined by the delineation guidelines (DWAF 2005, updated 2008) were encountered e.g. hydromorphic soils, wetland vegetation, signs of salt accumulation or hardened / cracked surface layers. Therefore, the site sensitivity verification disputes the rating of very high sensitivity assigned to this area in the National Web-Based Screening Tool in terms of Aquatic Biodiversity.

The low regional rainfall, semi-desert conditions and dominance of well drained, sandy soils within the study area is not conducive to the formation of wetland habitat. Furthermore, the relatively flat topography, the absence of ridges, and the lack of concentrated flow paths is not conducive to the formation of drainage lines. **No watercourses as defined by the National Water Act, 1998 (Act 36 of 1998) (NWA) were therefore encountered within the study area, and no additional watercourses have been indicated within 500 m of the study area by desktop resources.**

Concluding statement

No watercourses were encountered within the study area. It is therefore the opinion of the specialist that the study area is not considered to be important in terms of Aquatic Biodiversity and would fall within the low sensitivity category as defined by the National Web-Based Environmental Screening Tool. The proposed development will not have an impact on any aquatic features and a full Aquatic Biodiversity Specialist Assessment is therefore not required. A Compliance Statement has been prepared instead in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity (Government Gazette 43110/ Government Notice 320, dated 20 March 2020). It is the opinion of the Aquatic Biodiversity specialist that this Compliance Statement is sufficient as the aquatic sensitivity of the site was rated as very low and therefore the rating of very high significance as identified by the National Web-Based Environmental Screening Tool is disputed based on the evidence collected during the site visit and as motivated in this report.

It is the opinion of the specialist that the proposed development of the Komas WEF and associated infrastructure does not pose an unacceptable risk and can therefore be approved from an Aquatic Biodiversity perspective.

Avifauna Assessment

The Avifauna Impact Assessment was undertaken by Dr. Rob Simmons of Birds and Bats Unlimited to inform the outcome of this BA from an Avifaunal perspective. The Avifauna Impact Assessment was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The complete Avifauna Impact Assessment is included in Appendix C.3 of this report. A summary of the Avifauna Impact Assessment is provided below.

***Important Note:** The Avifauna Impact Assessment (Appendix C.3) was commissioned in February 2019. It was therefore commissioned a substantial period prior to the Assessment Protocol for Avifauna Specialist Assessment published in GN 320 on 20 March 2020 came into effect. Therefore, the Avifauna Assessment was undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended. Proof of the date of appointment of the avifauna specialist, Dr. Rob Simmons of Birds and Bats Unlimited, is provided in Appendix F.2.*

Summary of affected environment

Priority avifauna were monitored and recorded at the proposed 300 MW Komas WEF site over 12 months as required by the Best Practice Guidelines for assessing and monitoring the impacts of wind energy facilities in southern Africa, produced by BirdLife South Africa and the Endangered Wildlife Trust (Jenkins et al. 2015).

Kleinsee lies in the Succulent Karoo Biome of the Northern Cape and this report details the number of priority species (i.e. all threatened and collision-prone birds) and their Passage Rates through the 27-km^2 area proposed for the proposed Komas WEF development from March 2019 (autumn) to December 2019 (summer). We quantify and predict possible threats, and map high-risk and medium-risk areas to reduce future potential impacts to avifauna at the proposed Komas WEF site.

The impact zone of the proposed Komas WEF site lies within the coastal area of the Succulent Karoo biome. Dry and uniform grazed habitats within this undulating area allows a small suite of arid-adapted and nomadic species to exist. Up to date bird atlas data from the Southern African Bird Atlas Project 2 (SABAP2) of the broader region indicates that the area proposed for the development supports a low diversity of 48 bird species.

- The records of the avifauna specialist which focussed on the proposed Komas WEF site in a particularly dry period, found 58 species in 12 months of monitoring.
- More species (43 and 49 species) were present in spring and summer, following rains, and this brought in more priority (6 and 8 species) and more Red Data species (3 and 3 species) respectively.
- Eight priority collision-prone species occurred over the year of which three were red-listed: Verreaux's Eagle *Aquila verreauxii* (ranked 2nd in top 100 collision-prone species); Ludwig's Bustard *Neotis ludwigii* (ranked 10th); and Southern Black Korhaan *Afrotis afra* (ranked 35th).

South African turbines kill 4.1-4.6 birds per turbine annually of which raptors comprise 36% (Perold et al. 2020). As such they may impact the five species of raptor that frequent the site.

- Both the annual passage rate of all collision-prone species on the proposed Komas WEF site (0.39 birds per hour), and the three Red Data species alone (0.15 birds per hour) were medium-high, increasing the probability of impacts especially for any turbines proposed in frequently used areas by raptors.
- Risk is also increased by the proportion of time priority species spent in the blade swept area (from 100 m to 300 m, for 200 m Hub Height turbines with 100 m blades).
- Priority species flew at these heights 78% of the time (Verreaux's Eagle); 40% of the time (Black-chested Snake Eagle); 56% of the time (Booted Eagle) and 0% of the time (Ludwig's Bustards), thereby increasing risk to the raptors.
- Based on frequent flights of Red Data species or where two or more priority species overlapped, **no areas of high-risk were identified.**
- However, **five areas of medium-risk were found on the proposed Komas WEF site**. These were located through-out the proposed Komas WEF site where the Snake Eagles and Booted Eagles were particularly active (Figure B.35).

Important note: The current updated turbine layout avoids the areas identified as medium-risk in the Avifauna Impact Assessment (Appendix C.3).

The specialist recommends that if turbines are positioned within the medium-risk areas and they are found to kill any Red Data birds a single blade should be painted black (or with signal red paint) for those select turbines to reduce impacts for eagles and other raptors (Stokke et al. 2017).

Cumulative impacts

The cumulative impacts of nine other proposed WEFs within 50 km of the proposed Komas WEF were assessed, and a minimum of 2 334 bird fatalities are estimated annually from these proposed facilities. Approximately 168 of these are estimated to be priority Red Data raptors per year.

Summary of Impact Assessment

The potential direct impacts to avifauna during the construction, operational and decommissioning phases of the facility are indicated below. Cumulative impacts are also identified.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Direct disturbance and loss of foraging habitat around the proposed Komas WEF site for the priority bird groups identified on site (Verreaux's Eagle, Jackal Buzzard Ludwig Bustard, Booted Eagle and Black-chested Snake Eagle).	• If an active nest of Verreaux's Eagle is found a buffer of 3.2 km would be required during the breeding season. • Dust suppression techniques must be implemented on all access roads. • Implement construction-phase monitoring to monitor the effect of the construction itself on priority birds.	**Moderate**	**Moderate**
OPERATIONAL PHASE: DIRECT IMPACTS			
Fatalities caused by avifauna colliding with wind turbines, disturbance and loss of foraging habitat around the proposed Komas WEF site for the Red-listed and priority bird groups identified as at risk. Outside the wind farm birds may be electrocuted or hit by the internal 33 kV overhead power lines, or with double fences, may be entrapped between them.	• If turbines are positioned within the medium-risk areas and they are found to result in mortalities of any Red Data birds then either the turbines must be erected with an automatic shut-down on demand system (DT-bird or similar) or a single blade should be painted black (or with signal red paint) for those select turbines to reduce impacts for eagles and other raptors (May et al. 2020). For turbines outside the medium-risk area (as presently likely) these mitigations are not necessary unless > 1 red data bird is found to be killed per year during the post-construction surveys. • 12-24 months post construction monitoring to be undertaken to assess the mortality of birds in the Komas WEF area, through systematic and direct observation and carcass searches.	**Moderate-High**	**Moderate**
DECOMMISSIONING PHASE: DIRECT IMPACTS			
Direct disturbance and loss of foraging habitat around the proposed Komas WEF site for the Red-listed bird groups identified as at risk (as noted above).	• Reduce degree of disturbance and length of disturbance to a minimum during sensitive breeding seasons, but only if breeding red data species are found within 3-5 km radius from the proposed Komas WEF site. • Habitat can be rehabilitated to its former attractiveness (from a prey	**Moderate-High**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	point of view) for the raptors. • The developer to implement decommissioning phase monitoring to assess the effects of rehabilitating the WEF, through direct observation.		
CUMULATIVE IMPACT (Construction, Operational and Decommissioning Phases)			
Fatalities caused by collisions with the wind turbines, entrapment in the perimeter fences, collision with the internal 33 kV power lines or electrocution. Disturbance and loss of foraging habitat around the WEF site for the Red-listed bird groups due to the construction, operation and decommissioning of the WEF and associated infrastructure.	• Although not enforceable on the applicant, all wind farms that are killing red data raptors (at > 1 red data individual per year) should be required to implement shut down on demand or black (red) blade mitigation.	**Moderate-High**	**Moderate**

Comparative assessment of alternatives

The applicant provided two BESS and on-site SS complex site alternatives to be assessed (i.e. Option 1 and Option 2). Option 2 is the preferred avian option since it is (i) closer to the incoming power line and (ii) there are slightly fewer priority bird flights in this area than at Option 1. However, Option 1 is not fatally flawed and can be implemented.

Concluding statement

The anticipated impacts of the proposed Komas WEF and associated infrastructure were overall rated to be negative and of Moderate significance pre- and post-mitigation. It is therefore recommended that the proposed Komas WEF be authorised, on condition that the proposed mitigation measures as detailed in the Avifauna Impact Assessment (Appendix C.3) and in the EMPrs (Appendix G of this BA Report) are strictly adhered to.

Bat Impact Assessment

The Bat Impact Assessment was undertaken by Stephanie Dippenaar of Stephanie Dippenaar Consulting to inform the outcome of this BA from a bat perspective. The Bat Impact Assessment was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended, as there is no relevant protocol on the National Web-based Screening Tool. The complete Bat Impact Assessment is included in Appendix C.4 of this report. A summary of the Bat Impact Assessment is provided below.

Summary of affected environment

Four static bat monitoring systems were deployed at the proposed Komas WEF site, two at the Met mast and two at temporary 10 m masts. Data was collected between 10 August 2019 and 23 September 2020, representing the four seasons of the year. Seven of the 12 species that have distribution ranges overlapping with the development site and nearby surrounding area were confirmed through bat recording devices. *Tadarida aegyptiaca* (Egyptian free-tailed bat) is the most dominant species on site, with nearly all the calls at the high monitoring system, situated within the rotor swept area, being part of the *Molossidae* family. These are high risk bats as they are adapted to forage at high altitudes. A limited number of one red data species, namely *Miniopterus natalensis (*Natal long-fingered bat), was recorded.

The farm buildings, rocky outcrops, relative denser vegetation, limited trees and livestock water points could be potential sources for bat roosting and foraging at the study area. According to SANBI's Database (2012) the main vegetation type at the study area is Namaqualand Strandveld. Namaqualand Klipkoppe Shrubland is situated at the south-eastern border of the site. This vegetation type is characterised by rocky outcrops and large boulders which are ideal for bat roosts. However, the updated project layout excludes this area for the placement of turbines or any associated infrastructure.

The most important aspect of the project that would affect bats adversely is the wind turbines themselves, and in particular, direct collisions and barotrauma as a result of operational turning blades. Loss of foraging habitat, loss of existing and potential roosts and attracting bats by artificially creating new bat conducive areas amongst the turbines, further summarise the main potential negative impacts to bats due to wind farm developments.

Low bat activity was recorded during winter and summer transects, but high activity occurred during the transect conducted in spring 2020. It is speculated that the relative increased rainfall in 2020 in the Kleinsee area, could have been the cause of occasional insect emergence, which resulted in sporadic high bat activity. This should be closely monitored during the operational phase.

According to the recorded data, bats at the proposed Komas WEF site are more active during late summer and autumn, between February and May, with a peak in activity around March. High bat activity is also observed in September, during spring. The highest bat activity was recorded in the southern section of the farm. In general, bats seem to be active from about two hours after sunset, with activity starting to decline around four to five hours before sunrise, around 1:00 a.m.

During the monitoring period, the hourly mean bat activity for the proposed Komas WEF site was higher than the highest threshold figures for the Succulent Karoo biome. This indicates that bat populations might be severely negatively impacted upon by the wind energy development should the development progresses without mitigation measures. The monitoring system stationed at high altitude was used to plot bat activity and weather conditions to describe the relationship between weather conditions and bat activity, in particular activity within the rotor swept area of the turbine blades. This information was then used to develop a mitigation scheme for the wind farm.

The following mitigation is suggested for the proposed Komas WEF:

1. **Turbine positions**

   The first step in mitigating the potential negative impacts of a proposed WEF on bats is to site turbines outside of sensitive areas. The applicant has already updated the initial turbine layout to exclude turbines or turbine components from the high bat sensitivity zones (see Figure D.1 of this BA Report).
   ail

2. **Curtailment at specific turbines**

   A. **Curtailment** is the act of limiting the supply of electricity to the grid during conditions when it would normally be supplied. This is usually accomplished by feathering the turbine blades with the aim to raise the cut-in speed. Curtailment should be implemented immediately from the onset of the turbines situated within the medium to high sensitivity zone, thus the moment the turbines start to turn:

CURTAILMENT FOR TURBINES NUMBERED WTG23, WTG24, WTG37, WTG38 AND WTG50			
Months	**Time periods**	**Temperature (°C)**	**Wind speed (m/s)**
February	19:00 – 02:00	Between 14 and 19 °C	Between 2.5 and 9 m/s
March	19:00 – 02:00	Between 14 and 19 °C	Between 2.5 and 9 m/s
April	19:00 – 02:00	Between 14 and 19 °C	Between 2.5 and 9 m/s

If the developer decides to reduce the number of turbines, the first option, after the wind regime is taken into account, should be to reduce the turbines in the medium to high sensitivity zone. If a substantial number of turbines in the medium sensitivity zone is reduced, it will be at the discretion of the operational bat specialist as to whether some of the curtailment at the medium to high zone could be relieved. Operational monitoring and carcass searches will have to inform this, and mortality will have to be below the threshold.

B. Additional Curtailment to be implemented, under the advice and supervision of the operational bat specialist, when medium and high estimated true bat mortality is experienced.

MITIGATION FOR TURBINE NUMBERS WTG23, WTG24, WTG37, WTG38 and WTG50, or as advised by the bat specialist			
Months	**Time periods**	**Temperature (°C)**	**Wind speed (m/s)**
September	19:00 – 02:00	Between 14 and 22 °C	Between 2.5 and 9 m/s
December	19:00 – 02:00	Between 14 and 22 °C	Between 2.5 and 9 m/s
January	19:00 – 02:00	Between 14 and 22 °C	Between 2.5 and 9 m/s

3. Feathering and freewheeling of turbine blades

Normally operating turbine blades are at right angles to the wind. To avoid bat fatality at areas highly sensitive to bat activity, feathering as a mitigation measure is applied and the angle of the blades is pitched parallel with the wind direction andso that the blades only spin at very low rotation and minimal movement (not complete standstill) to prevent. The turbines will not come to a complete standstill, but the movement of the turbines shouldwould be minimal so thatto prevent bat fatalities are prevented during conditions when power is not generated.

The cut-in speed is the lowest wind speed at which turbines generate power. Free-wheeling occurs when turbine blades are allowed to rotate below the cut-in speed and thereby increase the risk of collision at areas already highly sensitive to bat activity. Freewheeling should be prevented as much as possible immediately after installation for the duration of the project to prevent bat mortality.

4. Bat deterrents

Bat deterrents is a developing technology that works on the principle of emitting ultrasonic noise that prevents bats from echolocating and therefore cause bats to avoid the area. Not enough research is done in South Africa to establish the success of bat deterrents yet, but this mitigation measure could be used together with curtailment, or even as an alternative, depending on research and the consequent opinion of the operational bat specialist and the South African Bat Assessment Association (SABAA). During post construction, turbines with high mortality could be specifically targeted for bat deterrents.

All turbine components should be excluded from No-Go areas as indicated on the bat sensitivity map (Figure 30 of the Bat Impact Assessment). Mitigation is recommended, as per Section 9 of the Bat Impact Assessment and summarised above, for the turbines situated within the medium to high zones. The rest of the proposed Komas WEF site is classified as of medium sensitivity. Operational monitoring should inform the extent of mitigation required, but due to the bat activity being above threshold, there is a possibility that more stringent mitigation would be required and would need to be implemented by the Project Developer. Therefore, the Project Developer needs to include this in the financial cost structure from the start of the project. If bat mortality is lower than expected, thus below the threshold, it will be up to the discretion of the operational bat specialist as to whether curtailment could be reduced.

The turbine layout of the development option of the proposed wind farm, as provided, is the preferred option to accommodate the bat sensitivity map by avoiding highly sensitive areas. Additional to mitigation by turbine positioning to avoid sensitive areas, other options may be utilised when

necessary such as feathering of blades parallel to the wind to reduce blade rotation to a bare minimum and curtailment of blade movement when turbines are not generating power.

Cumulative impacts

For the cumulative effect, the total output of approximately 1 063.7 MW for wind developments within a 50 km radius of the proposed Komas WEF site, was considered. With Komas WEF added to this, the output will be 1 363.7 MW. Although not all the bat studies undertaken as part of a BA/EIA of proposed wind farms within 50 km radius were available, the bat monitoring reports of the wind farms directly adjacent to the proposed Komas WEF, were obtained. The collective Bat Index, thus the mean number of bats per hour per year, using the Kap Vley, Namas, Kleinzee, Zonnequa and Komas WEFs, is calculated at 0,18. According to the threshold levels of the Bat Guidelines (Sowler *et al*. 2017), this is classified as high. This is excarbated if one considers that most bats are high risk species. If mitigation is diligently conducted at all wind farms, this impact could be reduced.

Summary of Impact assessment

The following potential direct, indirect and cumulative impacts for the construction, operational and decommissioning phases were identified.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Active roost destruction and potential roost destruction.	• Keep construction activities out of high sensitive areas for bats. • Avoid destruction of rock formations along southern ridge lines. • Avoid destruction of trees. • Take care before destroying dense bushes to avoid unnecessary roost destruction. • All aardvark holes, derelict holes or excavations should be carefully investigated for bat roosts before destruction.	**Moderate**	**Low**
Creating new habitat amongst the turbines which might attract bats. This include buildings with roofs that could serve as roosting space or open water sources from quarries or excavation where water could accumulate.	• Completely seal off roofs of new buildings (e.g. SS and site buildings). Note a small bat species could enter a hole the size of one- by- one centimetres. • Roofs need to be regularly inspected during the lifetime of the wind farm and any new holes need to be sealed. • Excavation areas or artificial depressions should be filled and rehabilitated to avoid creating areas of open water sources which could attract bats during rainy spells.	**Moderate**	**Very Low**
Construction noise, especially during night-time.	• Nightly construction activities should be avoided, or if necessary, minimised to the shortest period possible. • With the exception of compulsory civil aviation lighting, artificial lighting during construction should be minimised, especially bright lights or spotlights. • Lights should avoid skyward illumination. Turbine tower lights should be switched off when not in operation, where possible.	**Moderate**	**Low**
OPERATIONAL PHASE: DIRECT IMPACT			
Fatality of resident bats through direct collision or barotrauma.	• Maintain a register of action taken regarding bat mortality/injury as well as queries or complaints.	**High**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	• Mitigation as proposed in Section A above in section D 2.4.4 of this BA Report as well as in Section 9.2 (Table 7) of the Bat Impact Assessment (Appendix C.4) should be applied from the start of operation of the turbines for the site as a whole. Mitigation measures must be adapted by a bat specialist as data is collected during the operational phase. • Mitigation as proposed for Medium to High sensitivity zones indicated in Section B above and in Section 9.2 (Table 8), of the Bat Impact Assessment (Appendix C.4), must be adhered to as from the start of operation of the turbines. If the developer decides to reduce the number of turbines, the first option, after the wind regime is taken into account, should be to reduce the turbines in the medium to high sensitivity zone. If a substantial number of turbines in the medium sensitivity zone is reduced, it will be at the discretion of the operational bat specialist as to whether some of the dfsfr at the medium to high zone could be relieved. Operational monitoring and carcass searches will have to inform this decision. • A suitably qualified bat specialist must be appointed at the start of the operational phase. Careful observation should take place during post-construction and mitigation should be discussed between the bat specialist and Project Developer. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, those turbines should be mitigated, using Section B above in section D 2.4.4 of this BA Report and Section 9.2 (Table 8) of the Bat Impact Assessment (Appendix C.4), as a starting point for discussions. • With the exception of compulsory civil aviation lighting, artificial lighting should be minimised, especially bright lights. Lights should		

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. • At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et. al., 2020) or later versions valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. • It is understood that static monitoring equipment for bats on turbines has a cost implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines, but having more refined static data from sampling points at height, would aid in interpreting future fatality records of the wind farm; therefore, the installation of more than one monitoring system at height, will be recommended. • Ultrasound should be investigated for use at turbines displaying high mortality.		
Bat fatality of migratory species through direct collision or barotrauma.	• Mitigation Lighting of WEF should be kept to a minimum and directed downwards. • Post-construction bat monitoring to determine the most effective cut-in speed for turbines on site. Implement curtailment and feathering mitigation measures and select the cut-in speed that demonstrates a significant reduction in bat mortality as the default cut-in speed during periods of peak bat activity on site. • Care should be taken during post construction monitoring to verify the numbers of M. natalensis, especially within the rotor swept area of the turbine blades.	**Low**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	• Mitigation measures as described above for the impact regarding the fatality of resident bats through direct collision or barotrauma (as contained in Section 11.2.1 of the Bat Impact Assessment (Appendix C.4)).		
Loss of bats of conservation value.	• Bat fatalities should be monitored by fatality searches and a record kept of date, time, location, gender, cause of death. Carcasses should be photographed to be used for searcher efficiency and carcass removal trails. • Mitigation measures as described above for the impact regarding the fatality of resident bats through direct collision or barotrauma (as contained in Section 11.2.1 of the Bat Impact Assessment (Appendix C.4)). Proven mitigation measures, such as curtailment, should be applied if high numbers of bat passes concerned with bats of conservation value is recorded during post-construction.	**Low**	**Low**
Bat fatality due to the attraction of bats to turbine blades.	• Develop an adaptive mitigation plan based on results from post-construction monitoring to modify the cut-in speed and hours of curtailment of selected turbines. • Investigate ultrasonic deterrents and implement at turbines with high fatality.	**Low**	**Low**
Loss of habitat and foraging space during operation of the wind turbines.	• Buffer sensitive habitat and foraging areas and where possible minimise lighting on turbines that could attract insects and bats. • Mitigation measures as described above for the impact regarding the fatality of resident bats through direct collision or barotrauma (as contained in Section 11.2.1 of the Bat Impact Assessment (Appendix C.4)).	**High**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
OPERATIONAL PHASE: INDIRECT IMPACT			
Reduction in size, genetic diversity, resilience, and persistence of bat populations.	• Mitigation measures as described above for the impact regarding the fatality of resident bats through direct collision or barotrauma (as contained in Section 11.2.1 of the Bat Impact Assessment (Appendix C.4)). Care should be taken during post construction monitoring to verify the numbers of this species, especially within the RSA of the turbine blades.	**High**	**Moderate**
DECOMMISSIONING PHASE: DIRECT IMPACT			
Bat disturbance due to decommissioning activities and noise, especially during night-time.	• Nightly decommissioning activities should be avoided, or if necessary, minimised to the shortest period possible. • Except for compulsory lighting required in terms of civil aviation, artificial lighting during construction should be minimised, especially bright lights or spotlights. • Lights should avoid skyward illumination.	**Low**	**Very Low**
CUMULATIVE IMPACTS			
CONSTRUCTION PHASE			
Cumulative effect of construction activities of several WEFs within 50 km from the proposed Komas WEF site. Cumulative effect of destruction of active roosts due to several WEFs as well as features that could serve as potential roosts.	• Although not enforceable on the Project Applicant, the project specific mitigation should be adhered to, especially adhering to buffer zones and sensitivity areas and recommended mitigation, for each renewable energy project.	**Moderate**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CUMULATIVE IMPACTS			
OPERATIONAL PHASE: DIRECT IMPACTS			
Cumulative bat mortality of **resident bats** due to direct blade impact or barotrauma during foraging of migrating bats on several wind farms.	• Although not enforceable on the Project Applicant it is recommended that the project specific mitigation should be adhered to and each wind farm should apply specific mitigation measures as recommended. • Although not enforceable on the Project Applicant it is recommended that the buffer zones and sensitivity areas should be adhered to and recommended mitigation, for each renewable energy project. Post construction monitoring as per the relevant bat guidelines in South Africa. • Post construction monitoring as per the relevant bat guidelines in South Africa.	**High**	**High**
Cumulative bat mortality of **migrating bats** due to direct blade impact or barotrauma during foraging of migrating bats on several wind farms.	• Although not enforceable on the Project Applicant it is recommended that the project specific mitigation should be adhered to and each wind farm should apply specific mitigation measures as recommended. • Although not enforceable on the Project Applicant it is recommended that the buffer zones and sensitivity areas should be adhered to and recommended mitigation, for each renewable energy project. • Post construction monitoring as per the relevant guidelines in South Africa.	**Moderate**	**Low**
Habitat loss over several wind farms.	• Although not enforceable on the Project Applicant it is recommended that the project specific mitigation should be adhered to, especially adhering to buffer zones and sensitivity areas and recommended mitigation, for each WEF. • Post construction monitoring as per the relevant guidelines in South	**Moderate**	**Low**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	Africa.		
CUMULATIVE IMPACTS			
OPERATIONAL PHASE: INDIRECT IMPACTS			
Cumulative reduction in the size, genetic diversity, resilience and persistence of bat populations	• Although not enforceable on the Project Applicant it is recommended that the project specific mitigation should be adhered to and each wind farm should apply specific mitigation measures as recommended. • Although not enforceable on the Project Applicant it is recommended that the buffer zones and sensitivity areas should be adhered to and recommended mitigation, for each renewable energy project. • Post construction monitoring as per the relevant bat guidelines in South Africa.	**High**	**Low**

Comparative assessment of alternatives

No turbine layout alternatives were provided; however, the initial turbine layout was re-designed after specialist input to avoid environmental sensitive areas on site. Alternatives were provided for the BESS and on-site SS complex area (Option 1 and Option 2). Apart from habitat destruction, the negative impact of an onsite SS on insectivorous bats should be low. There is no preferred option from a bat perspective and both options are acceptable.

Concluding statement

The turbine layout was updated following bat specialist input to avoid environmentally sensitive areas. If the Project Applicant adheres to the proposed mitigation measures, the potential impact on bats from the proposed Komas WEF is predicted to be Negative and of Moderate significance. **It is therefore the opinion of the bat specialist, based on the one-year pre-construction monitoring undertaken at the proposed Komas WEF site, that Environmental Authorisation (EA) may be granted to the proposed project.**

Visual (including Flicker) Impact Assessment

The Visual (including Flicker) Impact Assessment (VIA) was undertaken by Kerry Schwartz of SiVEST SA (Pty) Ltd to inform the outcome of this BA from a visual perspective. The VIA was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended as there is no relevant protocol on the Screening Tool. The complete VIA is included in Appendix C.5 of the BA Report. A summary of the VIA is provided below.

Summary of affected environment

Although the study area has a largely natural, untransformed visual character with some elements of rural / pastoral infrastructure, it is not typically valued or utilised for its tourism significance. The study area has however seen very limited transformation or disturbance and is considered largely natural. As such the proposed Komas WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present.

A broad-scale assessment of landscape sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a low to moderate visual sensitivity. However, an important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

No formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified and there are no recognised tourism or scenic routes in the study area. In addition, there is limited human habitation resulting in relatively few potentially sensitive receptors in the area.

The VIA identified thirteen potentially sensitive receptors in the study area, all of which are farmsteads. These farmsteads are regarded as potentially sensitive visual receptors as they are located within a mostly natural setting and the proposed Komas WEF development will likely alter natural vistas experienced from these dwellings. The VIA determined that the proposed development

will have a high level of impact on three (3) of these receptors. Most of these four receptors are farmsteads located in relatively close proximity to the proposed Komas WEF development area and this factor, in conjunction with the relatively flat terrain in the area and the lack of screening vegetation, gives rise to a high impact rating. None of these receptors are tourism-related facilities however, and as such they are not considered to be Sensitive Receptors. In addition, it should be noted that three of these receptors, namely R12, R14 and R15, are located on the application site for the proposed Kap Vley WEF and as such it is possible that residents at these locations may not perceive the proposed Komas WEF in a negative light.

Seven (7) of the remaining receptor locations would be subjected to moderate levels of visual impact as a result of the proposed development and the remaining three (3) receptors would only experience negligible levels of visual impact.

The significance of the overall impact rating revealed that the proposed Komas WEF is expected to have a **negative low visual impact rating during construction and a negative moderate visual impact rating during operation**, with relatively few mitigation measures available.

Cumulative impacts

Several renewable energy developments are being proposed within a 50 km radius of the proposed Komas WEF application site. These renewable energy developments have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other, could significantly alter the sense of place and visual character in the broader region. It was however determined, that only five of these would have any significant impact on the landscape within the study area, these being; the proposed Gromis WEF which is subject to another BA process which is currently being undertaken, the proposed Kleinzee WEF and the proposed Kap Vley, Namas and Zonnequa WEFs which have received EAs on 25 October 2018, 18 February 2019 and 25 February 2019 respectively. All of these projects are in close proximity to one another and to the proposed Komas WEF development area and it is anticipated that this concentration of facilities will alter the inherent sense of place and introduce an increasingly industrial character into a largely rural area. This will result in significant cumulative impacts, rated as having negative impacts of moderate significance during both construction and operation phases of the project. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the visual specialists.

It should be noted that the study area is located within the REDZ 8 known as Springbok, and thus the relevant authorities support the concentration of renewable energy developments in this area. In addition, it is possible that the three WEFs in close proximity to each other could be seen as one large WEF rather than three separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

Summary of Impact assessment

The potential visual impacts resulting from the proposed Komas WEF on landscape features and receptors are listed below for each of the project phases, including cumulative impacts. The impacts identified are direct and cumulative impacts. No indirect impacts have been identified.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			

Visual intrusion, visual effect of construction laydown areas and material stockpiles, visual pollution resulting from littering on the construction site, landscape scarring and dust emissions.	• Carefully plan to minimise the construction period and avoid construction delays.
	• Position laydown areas and related storage / stockpile areas in unobtrusive positions in the landscape, where possible.
	• Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.
	• Vegetation clearing should take place in a phased manner.
	• Make use of existing gravel access roads where possible.
	• Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.
	• Ensure that dust suppression techniques are implemented:
	  ○ on all access roads;
	  ○ in all areas where vegetation clearing has taken place; and
	  ○ on all soil stockpiles.
	• Maintain a neat construction site.
		Moderate	**Low**

OPERATIONAL PHASE: DIRECT IMPACTS			
Alteration of visual character of the area, visual intrusion resulting from wind turbines dominating the skyline in a largely natural / rural area, Kap Vley, Namas and Zonnequa WEFs visual clutter caused by the SS and other associated infrastructure on-site, dust emissions, visual effect on surrounding farmsteads, and light pollution and glare (i.e. alteration of the night-time visual environment as a result of operational	<u>Design Phase:</u> • In areas of 'Very High' and 'High Sensitivity', the number of turbines should be limited, where possible. • No turbines should be placed within 500 m of the dwellings or farmsteads which are situated within the proposed Komas WEF development area (i.e. 500 m exclusion buffers – see Figures D.9 and D.12 of this BA Report). • Where possible, fewer but larger turbines with a greater output should be utilised rather than a larger number of smaller turbines with a lower capacity. • Turbine colours should adhere to the South African Civil Aviation Authority (SACAA) requirements.	**Moderate**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
and security lighting as well as navigational lighting on top of the wind turbines).	<u>Operational Phase:</u> • If possible, turbines should be painted plain white, as this is a less industrial colour. Bright colours and logos on the turbines should be kept to a minimum. • Inoperative turbines should be repaired promptly, as they are considered more visually appealing when the blades are rotating (or at work) (Vissering, 2011). • If turbines need to be replaced for any reason, they should be replaced with the same model, or one of equal height and scale. Repeating elements of the same height, scale and form can give the impression of unity which will lessen the visual impact that would typically be experienced in a chaotic landscapes made up of diverse colours, textures and patterns (Vissering, 2011). • Light fittings for security at night should reflect the light toward the ground and prevent light spill. • Where practically possible, the O&M buildings should not be illuminated at night. • Cables should be buried underground where feasible. • The O&M buildings should be painted with natural tones that fit with the surrounding environment. Non-reflective surfaces should be utilised where possible. • Unless there are water shortages, dust suppression techniques must be implemented on all access roads.		

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
DECOMMISSIONING PHASE: DIRECT IMPACTS			
Visual intrusion and dust emissions.	• Carefully plan to reduce the decommissioning period. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Maintain a neat decommissioning site by removing rubble and waste materials regularly. • Make use of existing gravel access roads where possible. • Dust suppression techniques must be implemented on all gravel access roads.	**Moderate**	**Low**
CUMULATIVE IMPACTS			
CONSTRUCTION ACTIVITIES			

Visual intrusion and dust emissions.
Combined visual impacts from several renewable energy facilities in the broader area during the construction phase could potentially alter the sense of place and visual character of the area.
Combined visual impacts from several renewable energy facilities in the broader area during construction phase could potentially exacerbate visual impacts on visual receptors.
	• Carefully plan to minimise the construction period and avoid construction delays.
	• Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible.
	• Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.
	• Vegetation clearing should take place in a phased manner.
	• Access roads must be kept as narrow as possible and existing gravel access roads must be used where possible.
	• Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.
	• Ensure that dust suppression techniques are implemented:
	  ○ on all access roads;
	  ○ in all areas where vegetation clearing has taken place; and
	  ○ on all soil stockpiles.
	• Maintain a neat construction site by removing litter, rubble and waste materials regularly.
	• Formulation and adherence to an EMPr, monitored by an ECO.
		Moderate	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	• In areas of 'Very High' and 'High Sensitivity', the number of turbines should be limited, where possible. • Steep slopes (>1:5 gradient) should be avoided.		
CUMULATIVE IMPACTS - OPERATIONAL ACTIVITIES			
Visual intrusion, dust emission and light pollution and glare. Combined visual impacts from several renewable energy facilities in the broader area during operation phase could potentially alter the sense of place and visual character of the area. Combined visual impacts from several renewable energy facilities in the broader area during the operations phase could potentially exacerbate visual impacts on visual receptors.	• Development on steep slopes (>1:5 gradient) should be avoided. • No turbines should be placed within 500 m of the dwellings or farmsteads which are situated within the proposed application (i.e. 500 m exclusion buffers – see Section 1.6.2 of the VIA and Figures D.9 and D.12) • Where possible, fewer but larger turbines with a greater output should be utilised rather than a larger number of smaller turbines with a lower capacity. • Turbine colours should adhere to SACAA requirements. • Where possible, fewer but larger turbines with a greater output should be utilised rather than a larger number of smaller turbines with a lower capacity. • If possible, turbines should be painted plain white, as this is a less industrial colour. Bright colours and logos on the turbines should be kept to a minimum. • Inoperative turbines should be repaired promptly, as they are considered more visually appealing when the blades are rotating (or at work) (Vissering, 2011). • If turbines need to be replaced for any reason, they should be replaced with the same model, or one of equal height and scale. Repeating elements of the same height, scale and form can give the impression of unity which will lessen the visual impact that would typically be experienced in a chaotic landscapes made up of diverse colours, textures and patterns (Vissering, 2011). • Light fittings for security at night should reflect the light toward the ground and prevent light spill. • Where practically possible, the O&M buildings should not be illuminated at night.	**Moderate**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
	• Cables should be buried underground where feasible. • The O&M buildings should be painted with natural tones that fit with the surrounding environment. Non-reflective surfaces should be utilised where possible. • Unless there are water shortages, dust suppression techniques must be implemented on all access roads.		

Comparative assessment of alternatives

A comparative assessment of alternatives (Option 1 and Option 2) for the proposed BESS and on-site SS complex area was undertaken in order to determine which of the alternatives would be preferred from a visual perspective. No fatal flaws were identified for either of the alternatives. Option 2 was found to be favourable. Option 1 was identified as the preferred alternative as Option 2 is closer to the nearest receptor.

Concluding statement

From a visual perspective therefore, the project is deemed acceptable and an EA should be granted. SiVEST is of the opinion that the potential impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

Heritage Impact Assessment (Archaeology and Cultural Landscape)

The Heritage Impact Assessment (HIA) was undertaken by Dr. Jayson Orton of ASHA Consulting to inform the outcome of this BA from an archaeology and cultural landscape perspective. The HIA was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended as there is no relevant Protocol on the Screening Tool. An integrated HIA, containing Archaeology, Cultural Landscape and Palaeontology, has been undertaken for the project. However, for ease of reference, this section only deals with the Archaeology and Cultural Landscape. The complete HIA is included in Appendix C.6 of the BA Report. A summary of the HIA is provided below.

Summary of affected environment

The study area is an undulating, sandy coastal plain with a light vegetation covering. Dune ridges occur with deflation hollows generally located along the crests of these ridges. Infrastructure is absent aside from a few gravel roads through the area, occasional power lines and some farmsteads.

Summary of affected environment

The vast majority of impacts would occur during construction. Palaeontological resources are likely to consist of isolated bones and their locations cannot be predicted. Any fossils present could be of high significance and, if found and reported, impacts are expected to be of **low positive** significance after mitigation. This is because of the difficulty of finding fossils outside of the development context – their recovery would be a benefit to science. The region is well-known for its very high density of archaeological sites but their number and significance often decreases away from the coast. The survey revealed many small Later Stone Age archaeological sites with occasional historical artefacts also present. None of these was of high cultural significance and the WEF has avoided all known sites. Although it is possible that some sites were missed during the survey, these are likely to be less important ones and would be easily recorded during a pre-construction survey. Because of the ease with which mitigation can be effected, the impacts are expected to be of **very low negative** significance after mitigation. Although culturally important, graves are very unlikely to be impacted and their locations generally cannot be predicted. The impact significance is therefore expected to be **very**

low negative. Impacts to the cultural landscape cannot be mitigated because of the size of the turbines but the expected impacts would be of **moderate negative** significance.

Cumulative impacts

Cumulative impacts are similar to the ones listed above, except that cumulative impacts to archaeology are considered to be of **moderate negative** significance after mitigation, because there is the possibility that a large number of sites could be lost with extensive development of the area.

Summary of Impact assessment

The potential impacts identified in the HIA include direct and cumulative impacts during the construction, operational and decommissioning phases. No indirect impacts are anticipated. The impacts identified are listed below.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Loss of palaeontological resources.	• Monitoring, inspection, sampling, curation as required.	**Low**	**Low (+)**
Loss of archaeological resources on site.	• Conduct a pre-construction survey, sampling and curation as required.	**Low**	**Very Low**
Loss of graves.	• Protect and report graves found during construction so they can be rescued.	**Very Low**	**Very Low**
Impacts to the cultural landscape.	• Minimise the amount of land that gets disturbed and scarred.	**Moderate**	**Moderate**
OPERATIONAL PHASE: DIRECT IMPACT			
Impacts to the cultural landscape.	• None.	**Low**	**Low**
DECOMMISSIONING PHASE: DIRECT IMPACT			
Impacts to cultural landscape.	• Minimise the amount of land that gets disturbed and scarred.	**Moderate**	**Moderate**
CUMULATIVE IMPACTS			
Loss of palaeontological resources.	• Monitoring, inspection, sampling, curation as required.	**Low**	**Low (+)**
Loss of archaeological resources.	• Conduct a pre-construction survey, sampling and curation as required.	**Moderate**	**Very Low**
Loss of graves.	• Protect and report graves found during construction so they can be rescued.	**Very Low**	**Very Low**
Impacts to the cultural landscape.	• Minimise the amount of land that gets disturbed and scarred.	**Moderate**	**Moderate**

Comparative assessment of alternatives

No heritage impacts are anticipated at either BESS and on-site SS complex area Option 1 or Option 2 alternative and the assessment undertaken thus apply equally to either alternative. There is no preference between Option 1 and Option 2, and therefore both alternatives are acceptable from a heritage perspective.

Concluding statement

There are no fatal flaws associated with the proposed development of the Komas WEF.

It is recommended that the proposed Komas WEF should be authorised, but subject to the following conditions which should be incorporated into the EA:

- A chance fossil finds procedure needs to be incorporated into the EMPr;
- A pre-construction survey should be commissioned to check for any remaining archaeological sites that might have been missed during the original survey. Mitigation would then be suggested if required;
- Landscape scarring must be kept to an absolute minimum; 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 authority, i.e. the South African Heritage Resources Agency (SAHRA), 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.

Heritage Impact Assessment (Palaeontology)

The Palaeontology Impact Assessment (PIA) was undertaken by John Pether, a Geological and Palaeontological Consultant, to inform the outcome of this BA from a palaeontological perspective. The PIA was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended as there is no relevant Protocol on the Screening Tool. The full Palaeontology Impact Assessment is included as Appendix 4 to the HIA, which is included in Appendix C.6 of the BA Report. A summary of the HIA is provided below.

Summary of affected environment

The primary palaeontological concern is the fossil bones that are sparsely distributed in these aeolian deposits. In the Hardevlei and Koekenaap formations the fossil bone and marine shell material that may occur is likely to be in an archaeological context. Both artefacts and fossil bones are most often found on the compact palaeosurface of the Dorbank Formation. beneath the surficial sands. The fossil bone material would be of late Quaternary age and comprised mainly of extant species (modern fauna), but could include species that did not historically occur in the region.

The fossil bone finds in the Dorbank Formation are generally the scattered, disarticulated and sometimes fragmented larger limb bones of antelopes and zebra. Pans and vleis/seep deposits, with greater fossil potential, may occur along buried drainage lines within the Dorbank Formation. Most finds have been at lower elevations in diamond-mine pits and little is known of this formation and its fossils at higher elevations and in this region of the coastal plain. Fossil finds could prove to be a scientifically significant addition to the poorly-known later mid-Quaternary fossil fauna of Namaqualand.

The calcrete-floored Zonnekwa Valley has very likely hosted pans during wetter climate spells in the past. It is possible that some pan deposits may remain, or fossils that have been eroded from them by wind deflation. The calcrete is assumed to have formed within the upper part of an older aeolianite

formation. As the capping calcrete has formed along a persistent palaeosurface, fossil bones are more prevalent within it and are expected to be of earlier Quaternary age.

Due to the overall sparse distribution of fossil bones in the affected formations the palaeontological sensitivity and intensity of impact is considered to be LOW before and after mitigation for all excavations involved in the construction of the proposed Komas WEF and associated infrastructure. However, when fossils are found in such poorly fossiliferous formations, they provide very significant advances in the geological understanding of the stratigraphy of a region.

There will be a considerable number of excavations for turbine foundations (i.e. 50) distributed over and "sampling" a wide area during the construction phase. Therefore, in spite of the overall low fossil potential, there is a distinct possibility that buried palaeosurfaces bearing fossil bones and archaeological material may be exposed in some of the excavations. The excavations for cabling and other infrastructure such as the SS are relatively shallow and mainly affect the coversands, but the cabling trenches will traverse considerable lengths across the proposed WEFs development areas and intersect the locally-fossiliferous top of the Dorbank Unit in places.

Cumulative impacts

Several other WEFs have been proposed in the area. Although this may mean that more impacts to palaeontology are anticipated, there is also the likelihood that there will be a gain in terms of the state of knowledge of these disciplines if mitigation measures are successfully applied. The significance of impacts is expected to be the same as that for the construction phase with a low negative and low positive impact to palaeontology.

Summary of Impact Assessment

The impacts identified only apply to the construction phase of the proposed development since further significant impacts on fossil heritage during the planning, operational and decommissioning phases of the facility is not anticipated. Cumulative impacts are also identified, as indicated below.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Direct destruction of fossil resources.	• Monitoring of all construction-phase excavations by project staff and ECO. • Significant fossil chance finds should be safeguarded and reported at the earliest opportunity to SAHRA for recording and sampling by a professional palaeontologist. A protocol for Chance Fossil Finds is appended as Appendix 4 of the Palaeontology Impact Assessment (in Appendix C.6 of this report). These recommendations must be included within the EMPr for the Komas WEF development. • Inspection, sampling and recording of selected exposures in the event of fossil finds. • Fossil finds and the compiled contextual report deposited in a curatorial scientific institution.	**Low**	**Low (+)**
CUMULATIVE IMPACTS			
Disturbance, damage or destruction of significant fraction of fossil heritage within the lower Abrahamskraal Formation (Karoo Supergroup).	• Monitoring of all construction-phase excavations by project staff and ECO. • Significant fossil chance finds should be safeguarded and reported at the earliest opportunity to SAHRA for recording and sampling by a professional palaeontologist. A protocol for Chance Fossil Finds is appended as Appendix 4 of the PIA (in Appendix C.6 of this report). These recommendations must be included within the EMPr for the Komas WEF development. • Inspection, sampling and recording of selected exposures in the event of fossil finds. • Fossil finds and the compiled contextual report deposited in a curatorial scientific institution.	**Low**	**Low (+)**

Comparative assessment of alternatives

Due to the low palaeontological sensitivity of the site, there is no material difference between the palaeontological impact of the BESS and on-site SS complex area alternatives (Option 1 or Option 2) and therefore both these alternatives are considered acceptable.

Concluding statement

The significance of potential impacts to palaeontological resources was assessed to be **low negative before and low positive after mitigation** during the construction phase of the proposed Komas WEF and associated infrastructure. It is therefore the opinion of the specialist that development of the proposed Komas WEF and associated infrastructure is considered acceptable from a palaeontological perspective and can be authorised, subject to the implementation of the recommended mitigation measures.

Potential adjustments to the layout of the turbines and infrastructure do not affect this assessment. Both BESS and on-site SS complex area alternatives (Option 1 and Option 2) are acceptable from a palaeontological perspective and either alternative may be developed.

If the recommended mitigation measures are applied to the proposed Komas WEF, it is possible that the WEF development will to some extent alleviate the negative cumulative impact on paleontological resources in the region.

The history of these vast tracts of sands, gravels and pedocretes of the Northern Cape Province is very poorly known, with very few fossils to rely on. Therefore, although of low probability; any find will be of considerable importance and could add to the scientific knowledge of the area in a positive manner.

Agriculture

An Agriculture Compliance Statement was undertaken by Johann Lanz to inform the outcome of this BA from an agricultural and soils perspective. The Compliance Statement was undertaken in accordance with the requirements of the Agricultural Protocol for Onshore Wind Energy Generation Facilities where the Electricity Output is 20 MW or more (GG 43110 / GNR 320, 20 March 2020). A Compliance Statement was undertaken, instead of an Assessment as the site was assessed to be of low agricultural sensitivity.

Summary of affected environment

The key findings of this study are:

- Soils of these land type are predominantly deep to moderately deep, very sandy soils on underlying hardpan carbonate and sometimes clay.
- The major limitations to agriculture are the severely limited climatic moisture availability and the sandy soils with low water holding capacity.
- As a result of these limitations, **the agricultural use of the study area is limited to low intensity grazing only.**
- The project site is classified with a predominant **land capability evaluation value of 5 (low)**, although it varies from 4 to 6 across the site (Land Capability Classification for South Africa, 2017).

- The significance of all potential agricultural impacts associated with the development of the proposed Komas WEF is rated as **low** because the proposed site is on land of extremely limited agricultural potential and the footprint of disturbance of the wind farm is limited to a very small proportion of the surface area.
- There are no agriculturally sensitive areas on the site and no parts of the site need to be avoided by the development of the proposed Komas WEF and associated infrastructure.
- Three potential negative impacts of the proposed development on agricultural resources and productivity were identified as:
    - Loss of agricultural land use - Agricultural grazing land directly occupied by the development infrastructure, which includes all associated infrastructure, will become unavailable for agricultural use. This impact is relevant only in the construction phase. No further loss of agricultural land use occurs in subsequent phases.
    - Soil degradation - Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. Erosion can occur as a result of the alteration of the land surface run-off characteristics, which can be caused by construction related land surface disturbance, vegetation removal, and the establishment of hard surface areas including roads. Loss of topsoil can result from poor topsoil management during construction related excavations. Hydrocarbon spillages from construction activities can contaminate soil. Soil degradation will reduce the ability of the soil to support vegetation growth. This impact is relevant only during the construction and decommissioning phases.
    - Cumulative, regional loss of agricultural land use.
- One potential positive impact of the development on agricultural resources and productivity was identified as:
    - Increased financial security for farming operations from land rental to energy facility.
- All potential impacts (positive and negative) associated with the proposed development were assessed as having **low or very low significance after mitigation.**
- The overall significance of the potential impact on agricultural resources for the construction, operation and decommissioning phases is assessed **as low to very low** (with mitigation actions applied effectively).
- The outcome of the site sensitivity verification and assessment therefore confirm the current use of the land as Agriculture and environmental sensitivity **as low** as identified by the National Web-Based Environmental Screening Tool. Therefore, a Compliance Statement was undertaken in accordance with the requirements of the Agricultural Protocol for Onshore Wind and/or Solar PV Energy Generation Facilities where the Electricity Output is 20 MW or more (GG 43110 / GNR 320, 20 March 2020).
- Recommended mitigation measures include implementation of an effective system of storm water run-off control; the maintenance of vegetation cover to mitigate erosion; and topsoil stripping, stockpiling and re-spreading to mitigate loss of topsoil on disturbed areas.

Cumulative impacts

In quantifying the cumulative impact, the area of land taken out of grazing as a result of all thirteen developments plus the 300 MW of this development (total generation capacity of 1,993 MW) will amount to a total of approximately 964 hectares. This is calculated using the industry standards of 2.5 and 0.3 hectares per megawatt for solar and wind energy generation respectively, as per the DEA Phase 1 Wind and Solar Strategic Environmental Assessment (SEA) (2015). As a proportion of the total area within a 50 km radius (approximately 785,300 ha), this amounts to 0.12% of the surface area. That is well within an acceptable limit in terms of loss of low potential agricultural land, of which there is no scarcity in the country.

Due to all of the considerations discussed above, the potential cumulative impact of loss of agricultural land use is assessed as having **low significance before and after mitigation. In terms of cumulative impact, therefore, it is recommended that the development be approved.**

Impact assessment

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Loss of agricultural land use.	• None	**Low**	**Low**
Soil degradation.	• Storm water run-off control; • Maintain vegetation cover; and • Strip, stockpile and re-spread topsoil.	**Low**	**Low**
OPERATIONAL PHASE: DIRECT IMPACTS			
Increased financial security for farming operations.	• None	**Low (+)**	**Low (+)**
DECOMMISSIONING PHASE: DIRECT IMPACTS			
Soil degradation.	• Storm water run-off control; • Maintain vegetation cover; and • Strip, stockpile and re-spread topsoil.	**Low**	**Low**
CUMULATIVE IMPACT			
Regional loss of agricultural land use.	• None	**Very low**	**Very low**

Comparative assessment of alternatives

Because of the agricultural uniformity and low potential, there is no material difference between the agricultural impact of the BESS and on-site SS complex area alternatives, i.e. Option 1 or Option 2, and therefore both these alternatives are considered acceptable.

Concluding statement

- The conclusion of this assessment is that the proposed development of the Komas WEF and associated infrastructure **will not have an unacceptable negative impact on the agricultural production capability of the site**. This is substantiated by the facts that the amount of agricultural land loss is within the allowable development limits, and that the proposed development poses a low risk in terms of causing soil degradation.
- **The proposed development is therefore acceptable and it is recommended that from an agricultural impact point of view, it can be approved.**

Socio-Economic Assessment

The Socio-Economic Impact Assessment was undertaken by Tony Barbour and Schalk van der Merwe of Tony Barbour Environmental Consulting to inform the outcome of this BA from a socio-economic perspective. The Socio-Economic Impact Assessment was undertaken in accordance with

Appendix 6 of the NEMA EIA Regulations, 2014, as amended, as there is no relevant Protocol or Theme on the Screening Tool. The complete Socio-Economic Assessment is included in Appendix C.8 of this report. A summary of the assessment is provided below.

Summary of benefits of the proposed Komas WEF project

The findings of the Socio-Economic Impact Assessment indicate that the development of the proposed Komas WEF will create employment and business opportunities for locals during both the construction and operational phase of the project. The establishment of a Community Trust will also benefit the local community. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated with a coal based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The findings of the Socio-Economic Impact Assessment also indicate that the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and a local, community level. These benefits are linked to Foreign Direct Investment (FDI), local employment and procurement and investment in local community initiatives. The establishment of Community Trusts associated with renewable energy projects also have the potential to create significant benefits for local rural communities. These benefits should be viewed within the context of the limited economic opportunities in the area and the impact of the decline in the mining sector on the local economy. The proposed Komas WEF site is also located within the Springbok REDZ (REDZ 8). The area has therefore been identified as suitable for the establishment of Renewable Energy Facilities (REFs).

Summary of benefits of the proposed Komas WEF project

- **Impacts associated with the presence of construction workers on local communities**

Experience has shown that the presence of construction workers can pose a potential risk to family structures and social networks. These risks however tend to be more pronounced in isolated rural areas. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. The risks are linked to:

- An increase in alcohol and drug use;
- An increase in crime levels;
- The loss of girlfriends and/or wives to construction workers;
- An increase in teenage and unwanted pregnancies;
- An increase in prostitution; and
- An increase in sexually transmitted diseases (STDs), including HIV.

However, while the risk does exist, the majority of the low skilled (136) and semi-skilled (76) work opportunities associated with the construction phase are likely to benefit members from the local community. If these opportunities are taken up by local residents the potential impact on the local family and social network will be low as these workers come from local community. As indicated in the Overview of the IPPPP (March 2019), in terms of benefits for local communities, significantly more people from local communities were employed during construction than was initially planned. The expectation for local community participation was 13 058 job years. To date 18 253 job years have been realised (i.e. 140% more than initially planned), with 26 projects still in construction. The

likelihood of local community members being employed during the construction phase is therefore high. Employing local residents to will also reduce the need to provide accommodation for construction workers in Kleinsee and or Springbok.

Employing members from the local community to fill the low-skilled job categories will reduce the risk and mitigate the potential impact on the local communities. The use of local residents to fill the low skilled job categories will also reduce the need to provide accommodation for construction workers in local towns in the area, such as Komaggas, Buffelsrivier, Kleinsee and Springbok. The non-local skilled workers (38) are likely to be accommodated in local guest facilities in the area, such as Die Houthoop Guest Farm. The presence of an additional 38 or so worker's over a period of 24 months is unlikely to have a significant impact on local family networks and structures in the area.

In terms of potential threat to the families of local farm workers in the vicinity of the site, the risk is likely to be low. This is due to the low number of permanent and temporary farm workers on local farms in the area. The potential risk is therefore likely to be limited. The risks can also be effectively mitigated by ensuring that the movement of construction workers on and off the site is carefully controlled and managed. However, given the nature of construction projects it is not possible to totally avoid these potential impacts at an individual or family level.

While the risks associated with construction workers at a community level will be low, at an individual and family level they may be significant, especially in the case of contracting a sexually transmitted disease or an unplanned pregnancy. However, it will not be possible to avoid this. This potential risk should also be viewed within the context of the socio-economic benefits associated with the creation of employment opportunities for locals.

- **Impacts related to the potential influx of job-seekers**

Large construction projects tend to attract people to the area in the hope that they will secure a job, even if it is a temporary job. These job seekers can in turn become "economically stranded" in the area or decide to stay on irrespective of finding a job or not. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the manner in which they conduct themselves can impact on the local community.

Experience from other projects has also shown that the families of job seekers may accompany individual job seekers or follow them at a later date. In many cases the families of the job seekers that become "economically stranded" and the construction workers that decided to stay in the area, subsequently moved to the area. The influx of job seekers to the area and their families can also place pressure on the existing services in the area, specifically low-income housing. In addition to the pressure on local services the influx of construction workers and job seekers can also result in competition for scarce employment opportunities. Further secondary impacts included increase in crime levels, especially property crime, as a result of the increased number of unemployed people. These impacts can result in increased tensions and conflicts between local residents and job seekers from outside the area.

These issues are similar to the concerns associated with the presence of construction workers and are discussed above. However, in some instances the potential impact on the community may be greater given that they are unlikely to have accommodation and may decide to stay on in the area. In addition, they will not have a reliable source of income. The risk of crime associated with the influx of job seekers may therefore be greater.

However, the potential for economically motivated in-migration and subsequent labour stranding in the area linked to the proposed project is likely to be low. This is due to the location of the site, the relatively small size of the project (300 MW), the limited employment opportunities (~250) and short duration of the construction phase (approximately 24 months). There are limited economic opportunities in area, specifically Komaggas, Buffelsrivier, Kleinsee and Springbok. The risks associated with job seekers being attracted to and staying on in the area will therefore be low.

More potential negative socio-economic impacts to occur during the construction phase are listed in Section D (D.2.9.3) of this BA report.

Cumulative impacts

Cumulative impact on sense of place

Based on the findings of the Socio-Economic Assessment the potential visual impact on the areas sense of place and rural character was not raised as a concern by local landowners and tourism representatives interviewed. The site is also located within the Springbok REDZ 8. The area has therefore been identified as suitable for the establishment of REFs, including WEFs. The significance of the potential cumulative impact on the areas character and sense of place is therefore regarded as **Low Negative**.

The findings of the VIA rate the significance of the cumulative impact on the areas sense of place as **Moderate Negative**. The VIA notes however that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the visual specialists.

However, the potential impact of WEFs on the landscape is an issue that does need to be considered, specifically given South African's strong attachment to the land and the growing number of WEF applications. The Environmental Authorities should therefore be aware of the potential cumulative impacts when evaluating applications and the potential implications for other land uses, specifically game farming and associated tourist activities.

Cumulative impact on services

The establishment of the proposed Komas WEF and the other REFs in the NKLM and NDM may place pressure on local services, specifically medical, education and accommodation. This pressure will be associated with the potential influx of workers to the area associated with the construction and operational phases of renewable energy projects proposed in the area, including the proposed Komas WEF. The potential impact on local services can be mitigated by employing local community members. With effective mitigation the significance of the impact is rated as **Low Negative.**

In addition, as indicated below, this impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of renewable energy as an economic driver in the area.

Cumulative impact on local economies

In addition to the potential negative impacts, the establishment of the proposed Komas WEF and other REFs in the area also has the potential to create a number of socio-economic opportunities for the NKLM and NDM, which, in turn, will result in a positive social benefit. The positive cumulative impacts include creation of employment, skills development and training opportunities, creation of downstream business opportunities. The Community Trusts associated with each project will also

create significant socio-economic benefits. These benefits should also be viewed within the context of the limited economic opportunities in the area and the impact of the decline in the mining sector in recent years. This significance of this benefit is rated as **High Positive** with enhancement.

Summary of Impact Assessment

A summary of the potential direct and cumulative impacts for the construction, operational and decommissioning phases are identified below. The full assessment is included in the Socio-Economic Impact Assessment (Appendix D.8 of this BA Report).

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Creation of employment and business opportunities, and opportunity for skills development and on-site training.	**Employment** • Where reasonable and practical the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories; Due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. • Where feasible, efforts should be made to employ local contactors that are compliant with B-BBEE criteria. • Before the construction phase commences the proponent should meet with representatives from the NKLM and NDM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase. • The local authorities, relevant community representatives and local farmers should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project. • Where feasible a training and skills development programmes for local workers should be initiated prior to the initiation of the construction phase. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.	**Moderate (+)**	**Moderate (+)**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	Business • The proponent should liaise with the NKLM and NDM with regards the establishment of a database of local companies, specifically B-BBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work; • Where possible, the proponent should assist local B-BBEE companies to complete and submit the required tender forms and associated information; and • The NKLM and NDM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project. Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.		
Impacts associated with the presence of construction workers on local communities (including an increase in alcohol and drug use; an increase in crime levels; and increase in teenage and unwanted pregnancies and an increase in prostitution and STDs, including	• Where possible the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories. • The proponent should consider the need for establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
HIV).	include key stakeholders, including representatives from the NKLM, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community and farm workers associated with construction workers. • The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation. • The proponent and contractor (s) should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. • The contractor should provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site. • Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks. • It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Impacts related to the potential influx of job-seekers on local	It is not possible to prevent job seekers from coming to the area in search of a job. However, due to the location of the site the potential influx of job seekers	**Low**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
communities. Potential impact on family structures, social networks and community services.	to the area as a result of the proposed Komas WEF will be low. In addition: • The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities.		
Increased risks to safety, livestock and farming infrastructure and operations associated with the construction related activities and presence of construction workers on the site.	• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences. • Contractors appointed by the proponent should provide daily transport for workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties. • The proponent should consider the option of establishing a MF that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site. • The proponent should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below). • The EMPrs should outline procedures for managing and storing waste on	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	site, specifically plastic waste that poses a threat to livestock if ingested. • Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. • Contractors appointed by the proponent must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation. • The housing of construction workers on the site should be limited to security personnel.		
Increased risk of grass fires associated with construction related activities.	• The proponent should enter into an agreement with the local farmers in the area whereby losses associated with fires that can be proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences. • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. • No smoking should be permitted on site, except in designated areas. • Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	of fires is greater. In this regard special care should be taken during the higher-risk dry, windy summer months. • Contractor to provide adequate fire-fighting equipment on-site. • Contractor to provide fire-fighting training to selected construction staff. • No construction staff, with the exception of security staff, to be accommodated on site overnight. • As per the conditions of the Code of Conduct, in the event of a fire proven to be caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.		
Noise, dust, waste and safety impacts of construction related activities and vehicles.	• As far as possible, the transport of components to the site along the N7 should be planned to avoid weekends and holiday periods. • The contractor should inform local farmers and representatives from the NLM and NDM Tourism of dates and times when abnormal loads will be undertaken. • The contractor must ensure that damage caused by construction related traffic to the gravel public roads and local, internal farm roads is repaired on a regular basis throughout the construction phase. The costs associated with the repair must be borne by the contractor. • Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis, adhering to speed limits and ensuring that vehicles used to transport sand and building materials are	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	fitted with tarpaulins or covers. • All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. • The Contractor should ensure that workers are informed that no waste can be thrown out of the windows while being transported to and from the site. Workers who throw waste out windows should be fined. • The Contractor should be required to collect waste along access roads on a weekly basis. • Waste generated during the construction phase should be transported to the local permitted landfill site. • EMPr measures (and penalties) should be implemented to ensure farm gates are closed at all times. • EMPr measures (and penalties) should be implemented to ensure speed limits are adhered to at all times.		
Impacts on productive farmland due to construction activities.	• The location of wind turbines, access roads, laydown areas etc. should be informed by the findings of the Agriculture and Terrestrial Biodiversity (flora) specialist studies. In this regard areas of sensitive vegetation and soils of high agriculture potential should be avoided. • The footprint areas for the establishment of individual wind turbines should be clearly demarcated prior to commencement of construction activities. All construction related activities should be confined to the demarcated area and minimised where possible. • An ECO should be appointed to monitor the establishment phase of the	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	construction phase. • All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase. The rehabilitation plan should be informed by input from the soil scientist and discussed with the local farmer. • The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. • The implementation of the Rehabilitation Programme should be monitored by the ECO. • All workers should receive training/ briefing on the reasons for and importance of not driving in undesignated areas. • EMPr measures (and penalties) should be implemented to strictly limit all vehicle traffic to designated roads and construction areas. Under no circumstances should vehicles be allowed to drive into the veld. • Disturbance footprints should be reduced to the minimum. • Compensation should be paid by the Project Developer to farmers that suffer a permanent loss of land due to the establishment of the WEF. Compensation should be based on accepted land values for the area.		
OPERATIONAL PHASE: DIRECT IMPACTS			
Establishment of clean renewable energy infrastructure.	Should the project be approved the proponent should: • Implement a skills development and training program aimed at maximizing	**High (+)**	**High (+)**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	the number of employment opportunities for local community members. • Maximise opportunities for local content, procurement and community shareholding. • Consider establishing a visitor centre.		
Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training.	The enhancement measures listed above, i.e. to enhance local employment and business opportunities during the construction phase, also apply to the operational phase. In addition: • The proponent should implement a training and skills development programme for locals during the first five years of the operational phase. The aim of the programme should be to maximise the number of South Africans and locals employed during the operational phase of the project. • The proponent, in consultation with the NKLM and NDM, should investigate the options for the establishment of a Community Development Trust (see below).	**Low (+)**	**Moderate (+)**
Benefits associated with the establishment of a Community Trust.	• The NKLM and NDM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the NKLM and NDM that should be consulted including the Municipal Managers Office, IDP Manager and LED Manager. • Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community. • Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from	**Moderate (+)**	**High (+)**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	the WEF.		
Benefits for affected landowners through the generation of income.	• Implement agreements with affected landowners.	**Moderate (+)**	**Low (+)**
The visual impacts and associated impact on sense of place and rural character of the landscape.	• The recommendations contained in the VIA should be implemented. • It is recommended that the Project Applicant meets with the affected landowners to discuss the possibility of relocating wind turbines that have the highest potential visual impact.	**Moderate**	**Low**
Impact on property values and operations.	• The recommendations contained in the VIA should be implemented. • It is recommended that the Project Applicant meets with the affected landowners to discuss the possibility relocating wind turbines that have the highest potential visual impact.	**Low**	**Low**
Impact on tourism.	• The recommendations contained in the VIA should be implemented.	**Low (-) & (+)**	**Low (-) & (+)**
DECOMMISSIONING PHASE: DIRECT IMPACTS			
Social impacts associated with retrenchment including loss of jobs, and source of income.	• The proponent should ensure that retrenchment packages are provided for all staff retrenched when the WEF is decommissioned. • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning. • The proponent should investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20-year operational life of the	**Moderate**	**Low**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
	facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences with the mining sector in South Africa and failure of many mining companies to allocate sufficient funds during the operational phase to cover the costs of rehabilitation and closure. Alternatively, the funds from the sale of the WEF components as scrap metal should be allocated to the rehabilitation of the site.		
CUMULATIVE IMPACTS			
Visual impacts associated with the establishment of more than one WEF and the potential impact on the area's rural sense of place and character of the landscape.	• The recommendations contained in the VIA should be implemented.	**Moderate**	**Low**
Impact on local services and accommodation. The establishment of a number of renewable energy facilities in the NKLM will place pressure on local services, specifically medical, education and accommodation.	• The Northern Cape Provincial Government, in consultation with the NKLM and NDM and the proponents involved in the development renewable energy projects in the area should consider establishing a Development Forum to co-ordinate and manage the development and operation of REFs in the area, with the specific aim of mitigating potential negative impacts and enhancing opportunities. This would include identifying key needs, including capacity of existing services, accommodation and housing and the implementation of an accredited training and skills development programmes aimed at maximising the opportunities for local workers to be employed during the construction and operational phases of the various proposed projects. These issues should be addressed in the Integrated Development Planning process undertaken by the NKLM and NDM.	**Moderate**	**Low**
Impact on local economy. The establishment of a number of wind energy facilities in the NKLM will	• The proposed establishment of suitably sited REFs within the NKLM and NDM should be supported.	**Moderate (+)**	**High (+)**

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
create employment, skills development and training opportunities, creation of downstream business opportunities.			

Comparative assessment of alternatives

The BESS and SS complex area Option 1 and Option 2 alternatives have been assessed and both are found to be acceptable from a socio-economic perspective and may proceed as none are fatally flawed.

Concluding statement

The establishment of the proposed Komas WEF and associated infrastructure is strongly supported by the findings of the Socio-Economic Impact Assessment.

Noise Assessment

The Noise Assessment was undertaken by Morné De Jager of Enviro-Acoustic Research cc (EAR) inform the outcome of this BA from a noise perspective. The Noise Specialist Assessment was undertaken in terms of the requirements of the Noise Protocol as per GN 320 published on 20 March 2020 in GG No. 43110. The complete Noise Assessment is included in Appendix C.9 of this report. A summary of the Noise Assessment is provided below.

Summary of affected environment

The study area is very remote area with little infrastructure. The study area, and indeed entire farm portion, lacks any sign of development, although some recent/historical materials did betray a historical presence on the land.

The online screening tool identified a number of areas with a very high noise sensitivity as indicated below (Figure D.1 of the Noise Assessment):

- Noise Sensitive Development (NSD) K1 is located approximately 1,475 m to the west from the closest WTG, with two WTGs positioned within 2,000 m from this NSD. This dwelling is permanently used for residential purposes as confirmed during the Noise Assessments for the proposed Namas and Zonnequa WEFs;
- NSD K2 is located around 1,900 m to the east of one WTG (the only WTG within 2,000 m). The farmhouse is occasionally used by the land owner though the smaller dwelling is permanently occupied by the farm employee; and
- NSD K3 is located approximately 2,075 m to the west from the closest WTG, with no WTG positioned within 2,000 m from this NSD. This dwelling is permanently used for residential purposes as confirmed during the Noise Assessment for the Namas and Zonnequa WEFs.

The author agrees with the site sensitivity as highlighted by the online Screening Tool, i.e. areas of very high noise sensitivity were identified on the proposed Komas WEF site. While there are no WTGs located within this potential very high noise sensitive areas, a Noise Specialist Assessment was completed as there are WTGs within 2,000 m from NSDs (as per the requirements of SANS 10328:2008).

The potential noise impact associated with the construction, operation and decommissioning of the proposed Komas WEF was evaluated using a sound propagation model. Conceptual scenarios were developed for the construction and operational phases.

Cumulative impacts

Considering the contribution from the Komas WEF on total cumulative noises, if the Namas, Zonnequa, Kleinzee, Gromis, Project Blue and Kap Vley WEFs are to be developed, it is well less than 3 dBA. The potential significance of the cumulative noise impact from these WEFs operating simultaneously at night is assessed to be very low.

Summary of Impact assessment

The following potential direct, indirect and cumulative impacts for the construction, operational and decommissioning phases were identified.

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Increase in ambient sound levels due to construction activities during the day.	• None. Significance of noise impact is very low for the scenario as conceptualised.	**Very Low**	**Very Low**
Increase in ambient sound levels due to construction activities at night.	• The Project Developer should investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction activities are taking place; and • The Project Developer should minimise night-time construction traffic if the access road is closer than 150 m from any NSD, alternatively, the access road must be relocated further than 150 m from NSDs (night-time traffic passing occupied houses).	**Low**	**Low**
Increase in ambient sound levels due to construction of roads.	• The Project Developer should investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction activities are taking place; and • The Project Developer should minimise night-time construction traffic if the access road is closer than 150 m from any NSD, alternatively, the access road must be relocated further than 150 m from NSDs (night-time traffic passing occupied houses).	**Very Low**	**Very Low**
Increase in ambient sound levels due to day-time construction traffic.	• It is recommended that new roads not be constructed within 150 m from occupied dwellings used for residential purposes at night.	**Very Low**	**Very Low**
OPERATIONAL PHASE: DIRECT IMPACTS			

Impact	Mitigation measures	Significance before mitigation	Significance after mitigation
Increase in ambient sound levels due to air-borne noise from the wind turbines operating simultaneously during the day.	• No mitigation required or recommended for daytime operational activities.	**Very Low**	**Very Low**
Increase in ambient sound levels due to air-borne noise from the wind turbines operating simultaneously at night.	• The Project Developer should investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where operational activities are taking place.	**Low**	**Low**
DECOMMISSIONING PHASE: DIRECT IMPACT			
Increase in ambient sound levels due to air-borne noise from various decommissioning activities taking place simultaneously during the day.	• No mitigation required or recommended for decommissioning activities.	**Very Low**	**Very Low**
CUMULATIVE IMPACT			
OPERATIONAL PHASE: INDIRECT IMPACT			
Increase in ambient sound levels due to air-borne noise from the wind turbines from various WEFs operating at night.	• The Project Developer should investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where operational activities are taking place.	**Very Low**	**Very Low**

Comparative assessment of alternatives

There is no difference in the potential noise impact associated with the BESS and on-site SS complex area alternatives (Option 1 and Option 2). Therefore, both alternatives are acceptable from a noise perspective.

Concluding statement

Considering the low to very low significance of the potential noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed Komas WEF and associated infrastructure, it is recommended that the proposed Komas WEF and associated infrastructure be authorised from a noise perspective.

Transport Impact Assessment

The Transport Impact Assessment (TIA) was undertaken by Adrian Johnson of JG AFRIKA (Pty) Ltd to inform the outcome of this BA from a transport perspective. The TIA was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The complete TIA is included in Appendix C.10 of this report. A summary of the TIA is provided below.

Summary of potential impacts

- The traffic generated during the construction phase, although significant, will be temporary and impacts are considered to be negative and of high significance before and of **moderate significance** after mitigation.
- During operational phase of the proposed Komas WEF, it is anticipated that staff and security personnel will visit the facility periodically. It is assumed that approximately less than ten (10) full-time employees will be stationed on site. The traffic generated during this phase will be minimal and will not have an impact on the surrounding road network.
- The traffic generated during the decommissioning phase will be less than the traffic generated during the construction phase and the impact on the surrounding road network will also be negative and of high significance before and of **moderate significance** after mitigation.

Cumulative impacts

To assess the cumulative impact, it was assumed that all WEFs within 50 km currently proposed and authorised, would be constructed at the same time. This is the precautionary approach as in reality; these projects would be subject to a highly competitive bidding process and not all the projects may be selected to enter into a PPA with Eskom. There are currently nine approved WEFs and one approved solar Photovoltaic (PV) facility. A separate BA is currently being undertaken for the proposed Gromis WEF. The Klipdam and Nigramoep solar PV applications are in progress. Even if all the facilities are constructed and decommissioned at the same time, the roads authority will consider all applications for abnormal loads and work with all project companies to ensure that loads on the public roads are staggered and staged to ensure that the impact will be acceptable.

The construction and decommissioning phases of a WEF are the only significant traffic generators. The duration of these phases is short term i.e. the potential impact of the traffic generated during the construction and decommissioning phases of the proposed Komas WEF traffic on the surrounding road network is temporary and WEFs, when operational, do not add any significant traffic to the road

network. The cumulative impacts were assessed to be of high significance before mitigation and moderate significance after mitigation.

Summary of Impact assessment

The following potential direct and cumulative impacts for the construction and decommissioning phases were identified. The potential traffic impacts during the operational phase are minimal. The full assessment is included in the Transport Impact Assessment (Appendix C.9 of the BA Report).

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Traffic congestion and delays. Noise and dust pollution.	• Stagger turbine component delivery to site. • Reduce the construction period. • Stagger the construction of the turbines. • The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network. • Staff and general trips should occur outside of peak traffic periods. • Maintenance of haulage routes. • Design and maintenance of internal roads. • Dust suppression.	**High**	**Moderate**
OPERATIONAL PHASE			
The traffic generated during this phase will be minimal and will have a nominal impact on the surrounding road network.			
DECOMMISSIOING PHASE: DIRECT IMPACTS			
Traffic congestion and delays. Noise and dust pollution	• Stagger turbine component transportation. • Reduce the construction period. • Stagger the decomissioningof the turbines. • Staff and general trips should occur outside of peak traffic periods. • Maintenance of haulage routes and internal roads. • Dust suppression.	**High**	**Moderate**

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CUMULATIVE IMPACTS			
Traffic congestion and delays. Noise and dust pollution.	• Stagger turbine component transportation. • Reduce the construction period. • Stagger the construction of the turbines. • Staff and general trips should occur outside of peak traffic periods. • Dust suppression.	**High**	**Moderate**

Comparative assessment of alternatives

It should be noted that there is no difference between the BESS and on-site SS complex area Option 1 and Option 2 alternatives from a transport perspective. Both alternatives are deemed acceptable and may proceed as none are fatally flawed.

Specialist	Option 1	Option 2
Transport	No Preference	No Preference
	There is no difference between the alternatives from a Transport perspective. Both alternatives are acceptable.	

Concluding statement

Based on the findings of this assessment, the potential increase in traffic and the associated noise and dust pollution impacts have been rated as high before mitigation during the construction and decommissioning phases of the proposed Komas WEF. However, the phases will be short-term and the traffic volumes are expected to be low. Therefore, the significance of the impacts can be reduced to moderate after mitigation. It is envisaged that most materials, water, plant, services and people will be procured within a 60 km radius from the proposed Komas WEF.

The potential impacts associated with proposed Komas WEF and associated infrastructure are acceptable from a transport perspective and it is therefore recommended that the proposed facility be authorised, provided that the proposed recommendations and mitigation measures are adhered to.

Geotechnical Assessment

The Geotechnical Impact Assessment was undertaken by Robert Leyland of WSP Environmental (Pty) Ltd to inform the outcome of this BA from a Geotechnical perspective. The Geotechnical Impact Assessment was undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The complete Geotechnical Impact Assessment is included in Appendix C.11 of this report. A summary of the assessment is provided below.

Summary of affected environment

The most significant geotechnical condition that will affect the development is the expected hard excavation conditions. It is therefore recommended that shallow foundations that are anchored to the bedrock are considered. This will require a detailed study of the rock mass and pedocrete properties at the wind turbine locations. The excavation conditions will also affect the trench excavation costs negatively.

Minimal slope stability issues are expected as slope areas are minimal. No other problem soils or problem geotechnical conditions are expected on site. Access roads can be developed as gravel road with suitable wearing-course to protect the subgrade likely being obtained from local calcrete deposits.

The impacts of the development have been assessed and all geotechnical impacts are considered to have a very low significance before and after mitigation.

The following potential direct impacts for the construction and decommissioning phases were identified. The potential noise impacts during the operational phase are minimal.

Cumulative impacts

The cumulative impacts were assessed to be of very low significance before and after mitigation.

Summary of Impact Assessment

The following potential direct impacts for the construction and decommissioning phases were identified. The potential geotechnical impacts during the operational phase are minimal.

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
CONSTRUCTION PHASE: DIRECT IMPACTS			
Topsoil degradation.	Maintain vegetation cover as far as possible; strip, stockpile and re-spread topsoil. Proper construction management.	**Very Low**	**Very Low**
Disturbance of fauna and flora.	Foundation design to avoid blasting and deep excavation into sound rock.	**Very Low**	**Very Low**
Erosion and slope instability around structures.	Avoid steep slope areas, design any cuts slopes according to detailed geotechnical analysis.	**Very Low**	**Very Low**
Damage/destruction of the proposed development: Seismic activity.	Design according to expected peak ground acceleration.	**Very Low**	**Very Low**
OPERATIONAL PHASE			
No impacts have been identified during the operational phase.			
DECOMMISSIOING PHASE: DIRECT IMPACTS			
Topsoil degradation.	Maintain vegetation cover as far as possible; strip, stockpile and re-spread topsoil, Proper decommissioning management.	**Very Low**	**Very Low**
Disturbance of fauna and flora.	Foundation design to avoid blasting and deep excavation into sound rock.	**Very Low**	**Very Low**
Erosion and slope instability in areas where turbines are removed.	Fill any excavations or flatten any slopes that may form due to/during removing infrastructure.	**Very Low**	**Very Low**
CUMULATIVE IMPACTS			

Impact	Mitigation measure	Significance before mitigation	Significance after mitigation
Topsoil degradation	Maintain vegetation cover as far as possible; strip, stockpile and re-spread topsoil. Proper construction and decommissioning management.	**Very Low**	**Very Low**
Disturbance of fauna and flora	Foundation design to avoid blasting and deep excavation into sound rock in the construction and decommissioning phases.	**Very Low**	**Very Low**
Erosion and slope instability around existing and removed structures	Avoid steep slope areas, design any cuts slopes according to detailed geotechnical analysis during the construction phase.	**Very Low**	**Very Low**
Damage/destruction of the proposed development: Seismic activity.	Design according to expected peak ground acceleration during the construction phase.	**Very Low**	**Very Low**

Comparative assessment of alternatives

There is no preferred option between the BESS and SS complex area Option 1 or Option 2 alternatives with respect to the Geotechnical Impact Assessment. Both alternatives are favourable.

Concluding statement

The completed desktop assessment of the geotechnical conditions at the proposed development site of the Komas WEF has shown the site to be generally suitable for the proposed development. The **proposed development should, from a geotechnical impact perspective, be authorised.**

EAP'S RECOMMENDATION

No negative impacts have been identified within this BA that, in the opinion of the EAP who has conducted this BA process, should be considered "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project. This echoes the findings of the specialists as summarised above.

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 EMPrs included in Appendix G of this BA Report).

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.

Summary of Key Impact Assessment Findings

Based on the findings of the specialist studies, the proposed project is considered to have an overall low negative environmental impact and an overall low to moderate positive socio-economic impact (with the implementation of respective mitigation and enhancement measures). Table S.4 below provides a summary of the impact assessment for each phase of the proposed project **post mitigation for direct impacts**. Table S.5 provides the same information for the **cumulative impacts**.

As indicated in Table S.4, it is clear that the majority of the **direct negative impacts** were rated with a **low to very low post mitigation impact significance** for the **construction phase**, with only the Avifauna, Cultural Landscape and Transport impacts being rated with a **moderate significance**. In terms of the operational phase, the majority of the **direct negative impacts** were rated with a **low post mitigation impact significance**, with only the Avifauna, Bats and Visual impacts being rated with a **moderate significance**. The majority of the **direct negative impacts** for the decommissioning phase were rated with a **low post mitigation impact significance**, with only the Avifauna, Heritage (Archaeology and Cultural Landscape) and Transport impacts being rated with a **moderate significance.** In terms of **positive impacts**, the Socio-Economic impacts are rated as of **moderate significance** for the construction phase; and **moderate to high** for the operational phase.

Based on Table S.5, the majority of the **cumulative negative impacts** were rated with a **low post mitigation impact significance** for the **construction phase**, with only the Heritage (Cultural Landscape) and Transport impacts being rated with a **moderate significance**. The majority of the impacts for the **operational phase** are rated as **insignificant to low significance**, with visual and Heritage (Archaeology and Cultural Landscape) impacts being rated with a **moderate significance, and Avifauna and Bats** rated as **high significance**. During the decommissioning phase, cumulative impacts were not identified and/or were considered insignificant, however for those that were rated, it resulted in an overall **neutral and very low post mitigation impact significance**. In terms of **positive impacts**, the Socio-Economic impacts are rated with a **moderate significance** and Palaeontology impacts are rated with a low significance for the construction phase. For the operational phase, the Socio-Economic impacts are rated with a **moderate to high significance** and the Agriculture impacts are rated with a **low significance**.

Table S.4. Overall Impact Significance with the Implementation of Mitigation Measures for Direct Negative and Positive Impacts for the Komas WEF Project

Specialist Assessment	Construction Phase	Operational Phase	Decommissioning Phase
DIRECT NEGATIVE IMPACTS			
Terrestrial Biodiversity	**Low**	**Low**	**Low**
Aquatic Biodiversity	**Low**	**Low**	**Low**
Avifauna	**Moderate**	**Moderate**	**Moderate**
Bats	**Low**	**Moderate**	**Very Low**

Specialist Assessment	Construction Phase	Operational Phase	Decommissioning Phase
Visual	**Low**	**Moderate**	**Low**
Heritage (Archaeology and Cultural Landscape)	**Archaeology and graves: Very Low** **Cultural Landscape: Moderate**	**Low**	**Moderate**
Palaeontology	**Low**	**Insignificant and/or not identified and/or not applicable (N/A)**	**Insignificant and/or not identified and/or N/A**
Agriculture	**Low**	**N/A**	**Low**
Socio-Economic	**Low**	**Low**	**Low**
Noise	**Very Low**	**Very Low** **Low**	**Very Low**
Transport	**Moderate**	**Insignificant**	**Moderate**
Geotechnical	**Very Low**	**No impacts identified**	**Very Low**
DIRECT POSITIVE IMPACTS			
Agriculture	**Not applicable**	**Low (+)**	**Not applicable**
Palaeontology	**Low (+)**	**Insignificant and/or not identified and/or N/A**	**Insignificant and/or not identified and/or N/A**
Socio-Economic	**Moderate (+)**	**Moderate (+)** **High (+)**	**N/A**

Table S.5. Overall Impact Significance with the Implementation of Mitigation Measures for Cumulative Negative and Positive Impacts for the Komas WEF Project

Specialist Assessment	Construction Phase	Operational Phase	Decommissioning Phase
CUMULATIVE NEGATIVE IMPACTS			
Terrestrial Biodiversity	**Low**	**Low**	**Neutral**
Aquatic Biodiversity	**N/A**	**N/A**	**N/A**
Avifauna	**Insignificant and/or not identified and/or N/A**	**High**	**Insignificant and/or not identified and/or N/A**
Bats	**Low**	**Low** **High**	**Insignificant and/or not identified and/or N/A**
Visual	**Low**	**Moderate**	**Insignificant and/or not identified and/or N/A**
Heritage (Archaeology and	**Archaeology and**	**Moderate**	**Insignificant and/or**

Specialist Assessment	Construction Phase	Operational Phase	Decommissioning Phase
CUMULATIVE NEGATIVE IMPACTS			
Cultural Landscape)	**graves: Very Low** **Cultural Landscape: Moderate**		**not identified and/or N/A**
Palaeontology	**Low**	**Insignificant and/or not identified and/or N/A**	**Insignificant and/or not identified and/or N/A**
Agriculture	**Very Low**	**Insignificant and/or not identified and/or N/A**	**Insignificant and/or not identified and/or N/A**
Socio-Economic	**Low**	**Low**	**Insignificant and/or not identified and/or N/A**
Noise	**Insignificant and/or not identified and/or N/A**	**Very Low**	**Insignificant and/or not identified and/or N/A**
Transport	**Moderate**	**Insignificant**	**Insignificant**
Geotechnical	**Very Low**	**Very Low**	**Very Low**
CUMULATIVE POSITIVE IMPACTS			
Palaeontology	**Low (+)**	**Insignificant and/or not identified and/or N/A**	**Insignificant and/or not identified and/or N/A**
Agriculture	**N/A**	**Low (+)**	**N/A**
Socio-Economic	**Moderate (+)**	**Moderate (+)** **High (+)**	**Insignificant and/or not identified and/or N/A**

All of the specialists have recommended that the proposed project receives EA, if the recommended mitigation measures are implemented.

Overall Environmental Impact Statement

Taking into consideration the findings of the BA process, as well as the fact that the proposed **Komas WEF project** will be located within Springbok REDZ (REDZ 8), 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 and Komaggas regions. Provided that the specified mitigation measures are applied effectively, it is recommended that the proposed project receives EA in terms of the NEMA EIA Regulations, 2014, as amended.

Cumulative Environmental Impact Statement

The cumulative impacts have been assessed by all the specialists on the project team. The cumulative assessment included approved renewable energy projects (i.e. wind and solar

Photovoltaic (PV)) within a 50 km radius of the proposed Komas WEF project site. No cumulative impacts have been identified that were considered to be fatal flaws. The specialists recommended that the project receives EA in terms of the NEMA EIA Regulations, 2014, as amended, including consideration of cumulative impacts. It is also important to note that the proposed project site is located within the Springbok REDZ (REDZ 8), which supports the development of large-scale wind and solar energy developments. The proposed project is therefore in line with the national planning vision for wind and solar development in South Africa.

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

APPENDIX 1	YES / NO	SECTION IN BA REPORT
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 site and locations within site 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 site 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**	**Section A of the report includes the Introduction, legislative review, alternatives assessment and needs and desirability.** **Section D includes a summary of the specialist studies and associated impact assessments undertaken.**
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: (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	**Yes**	**Section A.2 and Appendix E**

APPENDIX 1	YES / NO	SECTION IN BA REPORT
(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**	**Section A.1 and Appendix A**
(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.1 and Appendix A**
(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.5 and Section A.10**
(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.3 and A.9**
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.13**
(g) a motivation for the preferred site, activity and technology alternative;	**Yes**	**Section A.12**
(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**	**Section A.12**
(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**	**Section C**
(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**	**Section C**
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	**Yes**	**Section A.12 and Section B**
(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	**Yes**	**Section A.12 and Section D**

APPENDIX 1	YES / NO	SECTION IN BA REPORT
irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;		
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	**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.12**
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; 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;	**Yes**	**Executive Summary; Section D and Appendix C**
(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 C**
(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	**Yes**	**Executive Summary, Section D, Section E and Appendix A.5**

APPENDIX 1	YES / NO	SECTION IN BA REPORT
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;		
(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 Appendix C**
(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 E**
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	**Yes**	**Please refer to each specialist study included in Appendix C**
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	**Yes**	**Section E**
(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;	**X**	**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 E**
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	**X**	**N/A**
(t) any specific information that may be required by the competent authority; and	**Yes**	**Appendix J**
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	**X**	**N/A**
2) Where a government notice *gazetted* by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such a notice will apply.	**Yes**	**Refer to Section A.9 for a breakdown of the relevant gazettes.**

SECTION A: INTRODUCTION, PROJECT DESCRIPTION; ALTERNATIVES; LEGISLATION AND SCREENING TOOL

A.1 Introduction

The Project Applicant, Genesis ENERTRAG Komas (Pty) Ltd (hereafter referred to as the "Project Applicant"), is proposing to design, construct and operate the Komas Wind Energy Facility (WEF) and associated infrastructure near Kleinsee in the Northern Cape Province. The proposed project is located approximately 35 km southeast of Kleinsee and 53 km southwest of Springbok. The locality of the proposed project is depicted in Figure F.1. The proposed project is located within the Nama Khoi Local Municipality, which falls within the Namakwa District Municipality. The proposed Komas WEF will have a capacity of up to 300 MW and will comprise of up to 50 Wind Turbine Generators (WTGs).

The associated infrastructure includes a solid state lithium-ion Battery Energy Storage System (BESS) and various structures, buildings and electrical grid infrastructure (EGI) such as, but not limited to an on-site 33/132 kV Substation (SS). Two site alternatives for the BESS and on-site SS (known as the BESS and SS complex) (i.e. Option 1 and Option 2) have been identified for assessment as part of the BA process (Figure A.1). A construction laydown area was also identified and includes the Operation and Maintenance (O&M) buildings.

The proposed Komas WEF project will be developed on the following farm portions as indicated in Table A.1. The approximate coordinates of the boundary points of the proposed Komas WEF project as well as the centre points for the preferred BESS and SS complex are included in Appendix A.3 of this BA report.

The proposed Komas WEF project will be developed on the following farm portions as indicated in Table A.1:

Table A.1. Affected Farm Portion Details

Farm Name	21 Digit Code	Parcel Number
Portion 1 of the Farm Zonnekwa No.326	C05300000000032600001	326
Portion 2 of the Farm Zonnekwa No.328	C05300000000032800002	328
Portion 3 of the Farm Zonnekwa No.328	C05300000000032800003	328
Portion 4 of the Farm Zonnekwa No.328	C05300000000032800004	328
Portion 4 of the Farm Kap Vley No.315	C05300000000031500004	315

The Project Applicant is also proposing to develop a 132 kV power line, a 33/132 kV Eskom Switching SS and a Collector SS (if required) to feed the electricity generated by the proposed Komas WEF into the national grid at the Gromis Main Transmission Substation (MTS) (Figure A.1). These electrical infrastructure components will be assessed as part of a **separate application and BA process to be undertaken by the Project Applicant.**

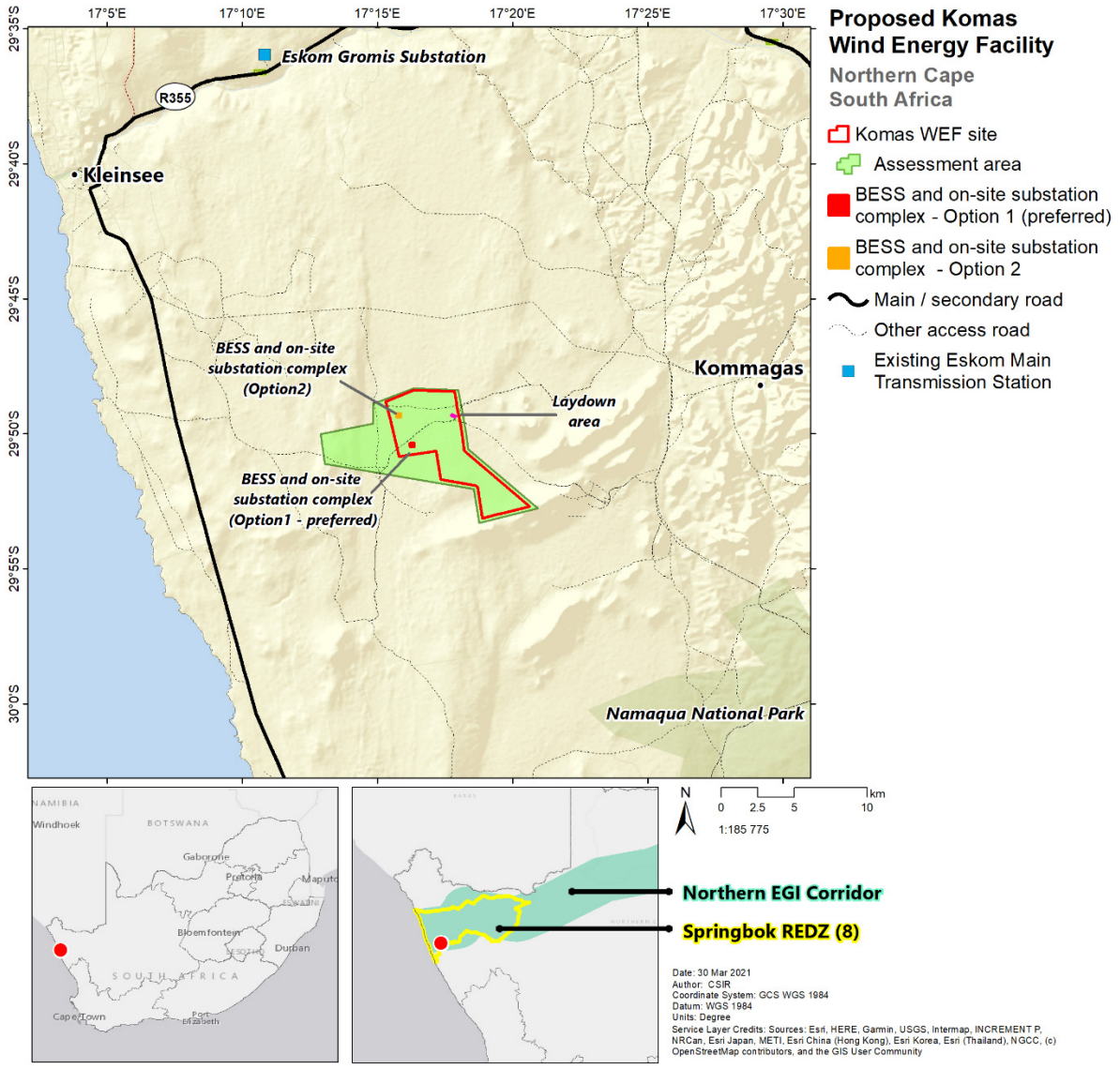


Figure A.1. Locality of the proposed Komas WEF and associated infrastructure

The proposed project is located entirely within the Springbok Renewable Energy Development Zone (REDZ 8), one of the eleven REDZs formally gazetted in South Africa for the purpose of developing solar and wind energy generation facilities (Government Gazette (GG) 41445, Government Notice (GN) 114; 16 February 2018 (Phase 1 with eight REDZs) and GG 44191, GN 144; 26 February 2021 (Phase 2 with three REDZs)). Refer to Figure A.2 for the locality of the proposed project in relation to the REDZs. In line with the gazetted process for project located within a REDZ, the proposed project will be subject to a Basic Assessment (BA) process instead of a full Scoping and Environmental Impact Assessment (EIA) process and a reduced decision making period of 57 days, in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended (NEMA) and the NEMA EIA Regulations, 2014, as amended, promulgated in GG 40772; in GN R326, R327, R325 and R324 on 7 April 2017. A BA process in terms of Appendix 1 of the NEMA EIA Regulations, 2014, as amended, has therefore been undertaken for the proposed project. The Competent Authority for the proposed project is the National Department of Environment, Forestry and Fisheries (DEFF) (previously operating as the Department of Environmental Affairs (DEA)).

Note from the CSIR: A press release was issued on 31 March 2021 stating that the name of the DEFF will change on 1 April 2021. The DEFF will in future be known as the Department of Forestry, Fisheries and the Environment (DFFE). However, it must be noted that the Draft BA Report, including the specialist reports, were drafted prior to the name change of the Department. Therefore, where the Draft BA Report mentions the DEFF for example, kindly note that this refers to the DFFE.

The Final BA Report will be updated to reflect the new department name i.e. DFFE.

In addition, five EGI Power Corridors were gazetted for implementation on 16 February 2018 in GG 41445, GN 113. The proposed project also falls within the Northern EGI Corridor, one of the five EGI Corridors gazetted in February 2018. While Listed Activity 9 of Listing Notice 2 of the NEMA EIA Regulations, 2014, as amended, is not triggered by the proposed project, the fact that the proposed project falls within the Northern EGI Corridor is still important as it indicates that the proposed project aligns with the strategic objectives of the country in terms of infrastructure placement.

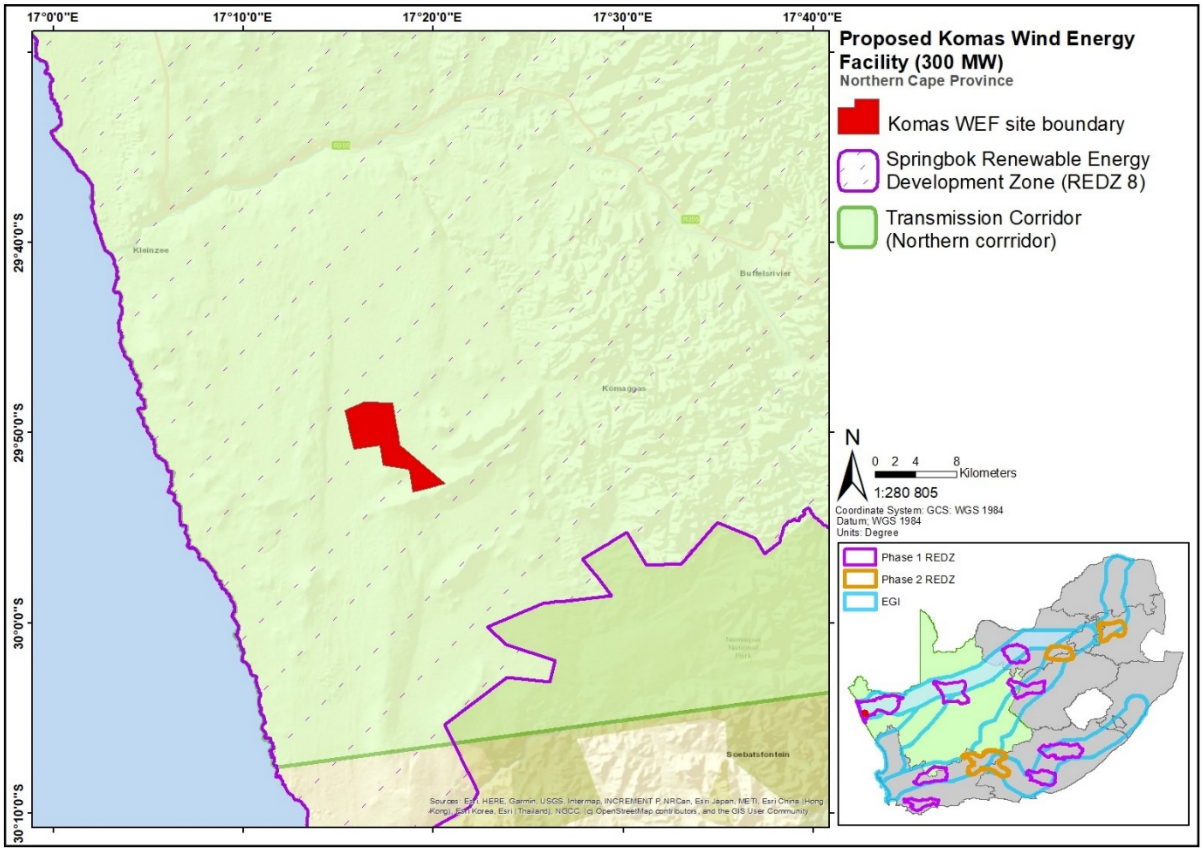


Figure A.2. Locality of the Proposed Komas WEF in the Springbok REDZ (REDZ 8) (Phase 1 REDZs) and within the Northern EGI Corridor.

(Note: The map shows the REDZs gazetted in Phase 1 in Government Notice (GN) 114; 16 February 2018) as well as three additional REDZs which have been subsequently gazetted in Phase 2 in Gazette 44191, GN 144 on 26 February 2021).

This Draft BA Report is currently being released to all I&APs, Organs of State and stakeholders for a 30-day review period. All comments submitted during the 30-day review will be incorporated and addressed, as applicable and where relevant, into the Final BA Report. The Final BA Report will then

be submitted to the DEFF, in accordance with Regulation 19 (1) of the NEMA EIA Regulations, 2014, as amended, for decision-making in terms of Regulation 20, however with a reduced 57-day timeframe (as the proposed project falls within the Springbok REDZ, as explained above).

A.2 Project Team

In accordance with Regulation 12 (1) of the NEMA EIA Regulations, 2014, as amended, the Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the BA process in order to determine the biophysical, social and economic impacts associated with undertaking the proposed development.

The BA is being led by the Environmental Assessment Practitioner (EAP) and Project Leader, Minnelise Levendal. Professional Natural Scientist (Pr. Sci. Nat. Number 117078):

Minnelise is a Senior EAP in the Environmental Management Services (EMS) Group of the CSIR and holds a Masters degree in Botany from the Stellenbosch University. She obtained her BSc (Education) and BSc (Honours) degrees at the University of the Western Cape. She has 15 years of experience in Environmental Management (which includes nine years working as an EAP). Before joining 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 and BAs for wind and solar renewable energy projects in South Africa. Minnelise was the CSIR project manager for the 100 MW Ubuntu WEF near Jeffrey's Bay (EA granted in June 2012), as well as the 50 MW Banna Ba Pifhu WEF proposed by WKN Wind current near Humansdorp in the Eastern Cape (EA 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 (DoE). EAs for all the ten masts were obtained from DEA in 2010. Minnelise was the Project Leader for seven solar PV facilities near Kenhardt for Mulilo in the Northern Cape in 2016. Four of these projects received EA in 2018, two were not deemed feasible due to environmental constraints and one was not pursued further by the applicant. Minnelise was also the Project Leader for the Kap Vley Wind Energy Project near Kleinsee in the Northern Cape. Authorisation for this project was received in November 2018. Minnelise managed the Special Needs and Skills Development Programme of DEA (from 2014 to 2018) which provided *pro bono* environmental assessments (BAs) to applicants with special needs, i.e. applicants who do not have the financial means to appoint an EAP to undertake a BA for their small-scale projects. Thirty BAs have been undertaken and received EAs under this Programme. Minnelise is currently managing four BAs for WEFs and associated EGI near Kleinsee in the Northern Cape Province. These include the Komas WEF (assessed in this BA), the Gromis WEF as well as the associated power lines and EGI to support these WEFs. Separate applications for each of the four projects will be submitted to the Competent Authority.

Minnelise is supported by Rohaida Abed (Project team member, CSIR) (Pr.Sci.Nat. Number 400247/14):

Rohaida Abed is an EAP in the EMS group of the CSIR. She has 10 years of experience in the Environmental Management field, and has been involved in various transport infrastructure related project as an ECO. She has also been involved in BAs and EIAs relating to renewable energy, port infrastructure and Bulk Liquid Storage facility in the capacity of Project Manager. She also worked on the SEA for Gas Pipeline and EGI, which was commissioned by the National Departments of Environmental Affairs, Energy and Public Enterprises. She is a registered Professional Natural Scientist (400247/14) with the South African Council for Natural Scientific Professions (SACNASP).

Project Officer: Dhiveshni Moodley (Cand.Sci.Nat. Number 1472997/19):

Dhiveshni Moodley is the Project Officer on the BA and is an EAP Intern in the EMS group of the CSIR. She holds a BSc, BSc Honours (*cum laude*), MSc *cum laude* degrees in Environmental Science from the University of KwaZulu-Natal and has experience in the research and consulting sectors. She has about two year's work experience in flood risk, hydropedological- and wetland functional assessment specialist studies, as well as conducting BAs and Scoping/EIAs in the Renewable Energy sector. Her key interest lies in using GIS analyses to apply the formation of accurate, feasible solutions to complex environmental challenges. She is registered as a Candidate Natural Scientist with the SACNASP (1472997/19).

Various specialists and additional members from the CSIR have contributed to this BA. The team which is involved in this BA process is listed in Table A.2 below.

Table A.2. Details of the BA Team

Name	Organisation	Role/ Specialist Study
CSIR Project Team		
Minnelise Levendal (*Pr.Sci.Nat*.)	CSIR	Environmental Assessment Practitioner (EAP) and Project Leader
Rohaida Abed (*Pr.Sci.Nat*.)	CSIR	Project Team member
Dhiveshni Moodley (*Cand.Sci.Nat.*)	CSIR	Project Officer
Luanita Snyman-van der Walt (*Pr.Sci.Nat.*)	CSIR	Project Mapping
Abulele Adams *(Pr.Sci.Nat.)*	CSIR	Project Mapping
Specialists		
Simon Todd	3Foxes Biodiversity Solutions	Terrestrial Biodiversity Impact Assessment
Louise Zdanow and Joshua Gericke	Enviroswift (Pty) Ltd	Aquatic Biodiversity Compliance Statement
Dr. Rob Simmons	Birds and Bats Unlimited	Avifauna Impact Assessment (including 12 months preconstruction monitoring)
Stephanie Dippenaar	Stephanie Dippenaar Consulting	Bat Impact Assessment (including 12 months preconstruction monitoring)
Kerry Schwartz	SiVEST SA (Pty) Ltd	Visual (including Flicker) Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology, Cultural Landscape)
John Pether	Private	Palaeontology Impact Assessment
Johann Lanz	Private	Agriculture Compliance Statement
Tony Barbour and Schalk van der Merwe	Tony Barbour Environmental Consulting	Socio-Economic Impact Assessment
Morné de Jager	ENVIRO-ACOUSTIC RESEARCH cc (EAR)	Noise Assessment
Adrian Johnson	JG AFRIKA (Pty) Ltd	Transport Impact Assessment

Name	Organisation	Role/ Specialist Study
Dr. Robert Leyland	WSP Environmental (Pty) Ltd	Geotechnical Impact Assessment
Minnelise Levendal (*Pr.Sci.Nat.*), Abulele Adams (*Pr.Sci.Nat.*) and Rohaida Abed (*Pr.Sci.Nat.*)	CSIR	Civil Aviation Site Sensitivity Verification
Minnelise Levendal (*Pr.Sci.Nat.*), Abulele Adams (*Pr.Sci.Nat.*) and Rohaida Abed (*Pr.Sci.Nat.*)	CSIR	Defence Site Sensitivity Verification
Technical Input		
Simon Todd	3Foxes Biodiversity Solutions	Initial Biodiversity Offset Analysis
Mark Botha	Conservation Strategy Tactics and Insight	Additional Biodiversity Offset Report (including proposed implementation)
Kennett Sinclair	DNV GL South Africa (Pty) Ltd	Wake Effect Assessment
Dr. Robert Leyland	WSP	Geology Assessment

It is important to note at the outset that the above technical inputs are purely technical and serve to inform the layout, mitigation and management requirements of the proposed WEF (as required), and do not constitute specialist studies in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended.

The list of specialist studies was discussed and agreed to by DEFF at the pre-application meeting held on 18 August 2020 (Appendix H). The Wake Effect Assessment was requested by DEFF at the second pre-application meeting as discussed below.

Wake Effect Assessment

At the second pre-application meeting with DEFF on 7 October 2020 (Appendix H.3), DEFF requested that a Wake Effect assessment be conducted to determine the potential wake effect on the adjacent proposed WEFs, i.e. the Kap Vley (proposed by Kap Vley Wind Farm (Pty) Ltd), Namas (proposed by Genesis Namas Wind (Pty) Ltd) and Zonnequa (proposed by Genesis Zonnequa Wind (Pty) Ltd) and Gromis WEFs (proposed by Genesis ENERTRAG Gromis Wind (Pty) Ltd). A Wake Effect Assessment was therefore commissioned by the Project Applicant and has been undertaken by Mr. Kennett Sinclair of DNV GL South Africa (Pty) Ltd as part of the BA process. Please refer to Appendix J.2 for the Wake Effect Assessment. A summary of the Wake Effect Assessment is provided in Section D of this BA Report.

Terrestrial Biodiversity Offset Analysis

A Terrestrial Biodiversity Analysis was also commissioned by the Project Applicant and is included in Appendix J.3(2) of this BA report. This study was undertaken to ascertain the need to determine and implement a Biodiversity offset to mitigate the potential negative impacts on terrestrial biodiversity. This is due to the fact that the project site is partly located within a Critical Biodiversity Area (CBA), the national and Northern Cape Protected Area Expansion Strategy (NC-PAES) Focus Area and the Namaqua National Park's Expansion footprint. The proposed development of the Komas WEF raises a concern regarding the possible impact of the development on CBAs, the NC-PAES Focus Area and the long-term conservation value of the affected area.

The outcome of the study is that the proposed Komas WEF site is not unique and does not have any features present that would be impacted by the development that are of a high conservation value. Although the southern section of the Komas site falls within a CBA 2 and NC-PAES Focus Area, the analysis suggests that impacts on these features would be acceptable and that there are no high or moderate impacts following mitigation on terrestrial biodiversity associated with the proposed Komas WEF development that would warrant an offset. The study therefore concluded that a Biodiversity Offset is not required, but proposed that a reduction in livestock grazing on site would be a suitable mitigation measure to reduce the impact on the biodiversity on site.

However, these on-site mitigation and avoidance measures were not deemed acceptable to DEFF and SANParks following the pre-application meetings we had with them. Therefore, based on these objections and following official comments received from SANParks dated 15 February 2021 (see Appendix D of the BA Report), the Project Applicant commissioned an additional Biodiversity Offset Study (including proposed implementation) which was undertaken by Mr. Mark Botha of Conservation Strategy, Tactics and Insight (dated 24 February 2021). This study is included in Appendix J.3(1) of this BA Report (together with the initial Biodiversity Offset Analysis which was undertaken by Mr. Simon Todd). **It should be noted that the recommendations of the additional Biodiversity Offset Report (including proposed implementation) (Botha, 2021) replace those in the initial Biodiversity Offset Analysis (Todd, 2021(b)) which was undertaken prior to the comments raised by DEFF and SANParks during the pre-application phase.**

A.3 Project Overview in terms of Energy Planning

As noted above, the proposed project falls within the Springbok REDZ (REDZ 8) which was promulgated in GN 114 in February 2018. The REDZs represent areas where wind and solar PV development is being incentivised from resource, socio-economic and environmental perspectives. The Wind and Solar Phase 1 SEA identified REDZs in five provinces, namely the Eastern Cape, Western Cape, Northern Cape, Free State and North West. Projects which fall within a REDZ are subject to a BA process instead of a full Scoping and EIA Process and will be subjected to a reduced decision-making timeframe of 57 days (instead of the 107 days).

In addition, five EGI Power Corridors were gazetted for implementation on 16 February 2018 in Government Gazette 41445, GN 113. The Gazette documented notice, given by the Minister of Environmental Affairs, of alternative procedures to be followed when applying for EA for large scale electricity transmission and distribution development activities, identified in terms of section 24(2)(a) of the NEMA in the identified Strategic Transmission Corridors (i.e. areas declared as geographical areas of strategic importance). Developers proposing to submit applications for EA for large scale electricity transmission infrastructure within any of the five gazetted Strategic Transmission Corridors, that trigger Listed Activity 9 of Listing Notice 2 of the NEMA EIA Regulations, 2014, as amended, or any other listed and specified activities that are necessary for the realisation of such infrastructure and facility, would need to follow a BA process, as opposed to a full Scoping and EIA Process. The proposed project also falls within the Northern EGI Corridor, one of the five EGI Corridors gazetted in February 2018. While Listed Activity 9 of Listing Notice 2 of the NEMA EIA Regulations, 2014, as amended, is not triggered by the proposed project, the fact that the proposed project falls within the Northern EGI Corridor is still important as it indicates that the proposed project aligns with the strategic objectives of the country in terms of infrastructure placement.

Refer to Figure A.2 which shows the location of the proposed project in relation to the REDZ 8 and Northern EGI Corridor.

A.4 Project Co-ordinates

The proposed Komas WEF project will take place on the farm portions indicated in Table A.1.

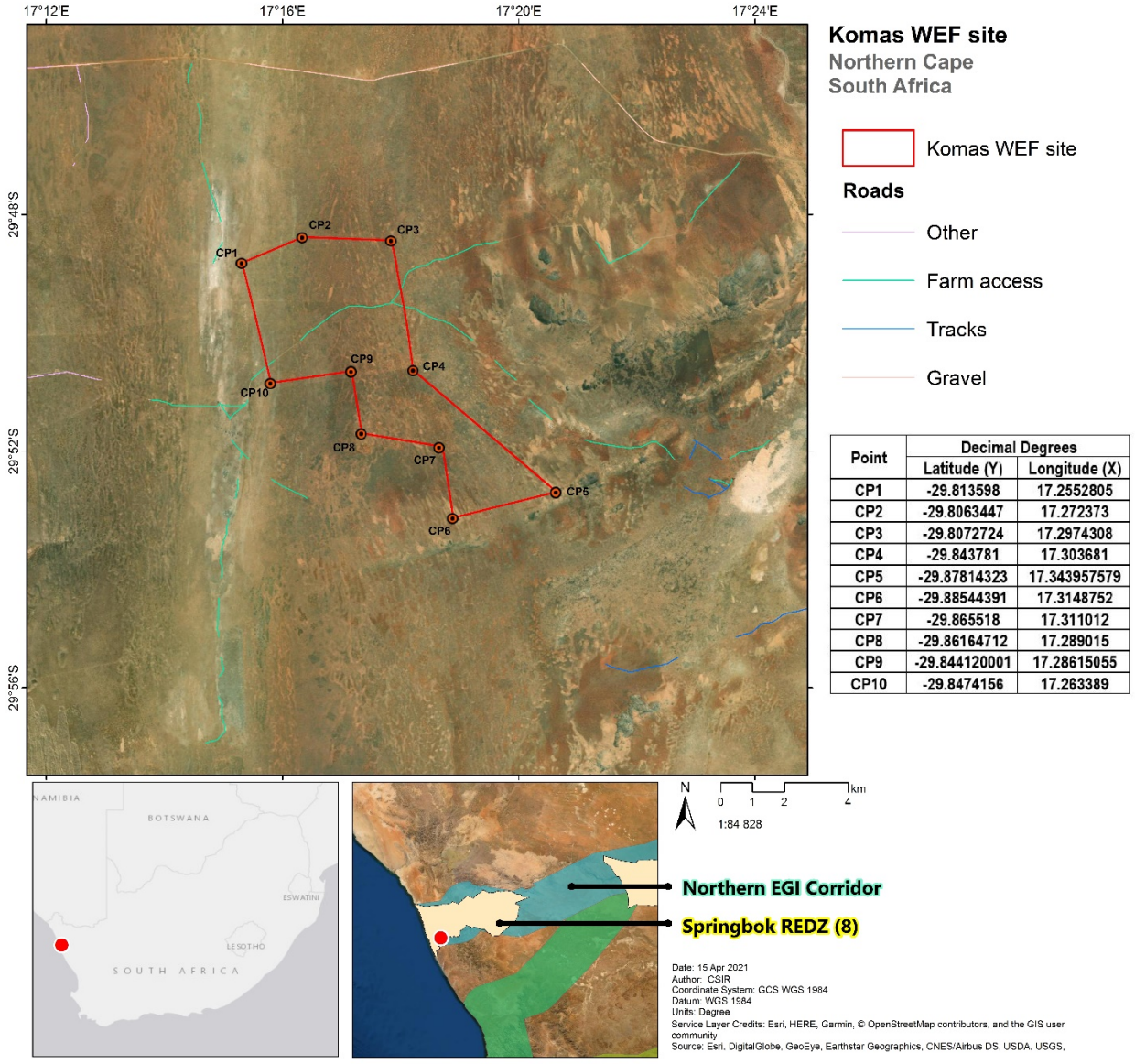
The approximate co-ordinates of the boundary points of the project site for the proposed Komas WEF are detailed in Table A.3a. A map corresponding to the co-ordinate points are indicated in Figure A.3. Coordinates of the mid-point of the development area as well as the mid-point of the preferred BESS and on-site SS site (Option 1) are also included in Table A.3b.

Table A.3a. Co-ordinate Points along the boundary of the proposed Komas WEF

Point	Decimal Degrees		Degrees, Minutes, Seconds	
	Latitude (Y)	Longitude (X)	Latitude (S)	Longitude (E)
CP1	-29.813598	17.2552805	29°48'48.95"S	17°15'19.01"E
CP2	-29.8063447	17.272373	29°48'22.86"S	17°16'20.56"E
CP3	-29.8072724	17.2974308	29°48'26.20"S	17°17'50.74"E
CP4	-29.843781	17.303681	29°50'37.63"S	17°18'13.22"E
CP5	-29.87814323	17.343957579	29°52'41.34"S	17°20'38.22"E
CP6	-29.88544391	17.3148752	29°53'7.62"S	17°18'53.56"E
CP7	-29.865518	17.311012	29°51'55.89"S	17°18'39.63"E
CP8	-29.86164712	17.289015	29°51'41.93"S	17°17'20.47"E
CP9	-29.844120001	17.28615055	29°50'38.85"S	17°17'10.14"E
CP10	-29.8474156	17.263389	29°50'50.70"S	17°15'48.22"E

Table A.3b. Co-ordinate Points of the mid-point of the proposed Komas WEF study area and mid-point of the preferred BESS and on-site Substation complex area (Option 1)

Point	Decimal Degrees		Degrees, Minutes, Seconds	
	Latitude (Y)	Longitude (X)	Latitude (S)	Longitude (E)
Mid-point of project area	-29.843279	17.296014	29° 50' 35.8044"	17°17' 45.6504"
Mid-point of preferred BESS and on-site SS (Option 1)	-29.840287	17.271397	29° 50' 25.0332''	17° 16' 17.0292''



Point	Decimal Degrees	
	Latitude (Y)	Longitude (X)
CP1	-29.813598	17.2552805
CP2	-29.8063447	17.272373
CP3	-29.8072724	17.2974308
CP4	-29.843781	17.303681
CP5	-29.87814323	17.343957579
CP6	-29.88544391	17.3148752
CP7	-29.865518	17.311012
CP8	-29.86164712	17.289015
CP9	-29.844120001	17.28615055
CP10	-29.8474156	17.263389

Figure A.3. Komas WEF Boundary Co-ordinate Point Map

A.5 Project Description

It is important to note at the outset that the above technical inputs are purely technical and serve to inform the layout, mitigation and management requirements of the proposed WEF (as required), and do not constitute specialist studies in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended.

The footprint of the proposed Komas WEF with a capacity of up to 300 MW will cover an approximate area of 90 hectares (ha). This excludes access roads leading to the site. Several specialists assessed larger areas on the affected farm portions in order to avoid environmental constraints and sensitivities

(highlighted by the specialists), during the siting and final design of the facilities and associated infrastructure.

The proposed Komas WEF and associated infrastructure include the following components:

- Up to 50 WTGs with a maximum capacity of up to 300 MW.
- Turbines with a hub height of up to 200 m and a rotor diameter of up to 200 m.
- Hardstand areas of approximately 1 500m^2 per turbine.
- Temporary construction laydown and storage area of approximately 4 500m^2 per turbine.
- Medium voltage cabling connecting the turbines will be laid underground.
- A solid state Lithium-ion BESS comprising of several utility scale battery modules within shipping containers or an applicable housing structure on a concrete foundation.
- Internal roads with a width of up to 10 m providing access to each turbine, the BESS, on-site SS and laydown area. The roads will accommodate cable trenches and stormwater channels (as required) and will include turning circle/bypass areas of up to 20 m at some sections during the construction phase. As such, the roads and cables will be positioned within a 20 m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.
- A temporary construction laydown/staging area of approximately 4.5 ha which will also accommodate the O&M buildings.
- A 33/132kV on-site SS to feed electricity generated by the proposed Komas WEF into the national grid at the Gromis MTS.

The BESS and 33/132kV on-site SS will be located within a 4 ha BESS and SS complex to allow for micro-siting of the BESS components and to accommodate internal roads (as required), a temporary construction laydown area and a firebreak around the BESS footprint. Two site alternatives have been identified for assessment as part of the BA process (i.e. Option 1 and Option 2).

Once a Power Purchase Agreement (PPA) is awarded, the proposed Komas WEF will generate electricity for a minimum period of 20 years. The construction phase for the proposed project is expected to extend approximately 24 months.

The proposed Komas WEF and associated infrastructure include the main components and associated specifications as tabulated in Table A.4.

Table A.4 Description of the main project components and associated specifications for the proposed Komas WEF and associated infrastructure

Component	Description
WEF	
Proposed technology	WTGs and associated infrastructure, including a lithium-ion BESS
WEF capacity	Up to 300 MW
BESS capacity	Up to 300 MW/1200 MWh
Number of turbines	Up to 50 turbines
Turbine Hub Height (HH) from ground	Up to 200 m
Turbine Rotor Diameter	Up to 200 m
Turbine Blade Length	Up to 100 m
Voltage of on-site SS	33/132 kV
On-site SS and BESS complex area	Approximately 4 ha (200 m x 200 m)

Component	Description
Height of BESS	Approximately 5 – 10 m
Height of on-site SS	Approximately 7 – 10 m Up to 22 m (including lighting)
Construction laydown area	A temporary construction laydown/staging area of approximately 4.5 ha which will also accommodate the O&M buildings.
Permanent laydown area	To be determined based on the final layout
O&M building area	Part of the construction laydown area
Turbine hardstand area	Approximately 1 500 m² per turbine
Width of internal access roads	Approximately 10 m, including turning circle/bypass areas of up to 20 m at some sections during the construction phase. As such, the roads and cables will be positioned within a 20 m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.
Length of internal access roads	To be determined based on final layout
Site access	Unnamed public gravel road off the R355
Grid connection and proximity (This will be subject to a separate Environmental Assessment process)	Approximately 30 km to connect to the Gromis MTS
Height of SS, BESS and O&M area fencing	Approximately 2 m to 3 m high
Type of fencing	Galvanised steel
Fencing around the WEF Perimeter	Type: Galvanised steel Height: 1 m to 3 m
Site area	Approximately 5 070 ha (the assessed area is approximately 2 725 ha).
Total project footprint area (including internal roads, but excluding access roads leading to the site)	Approximately 90 ha

As noted above, the proposed EGI, listed below will be assessed as part of a separate BA process to be undertaken by the Applicant, which includes:

- 132 kV overhead single or double power line to connect the proposed Komas WEF to the national grid at the existing Gromis MTS;
- 33/132 kV Eskom Switching SS;
- 132 kV Collector SS (if required); and an
- Access road providing access along the power line servitude.

Power line corridors with a width of approximately 500 m are being assessed to allow flexibility when determining the final route alignment. The proposed gridline however only requires a 31 m wide servitude and as such, this servitude would be positioned within the corridor as required by Eskom. Further details on the EGI component will be included in the separate BA which will be submitted to the Competent Authority for decision-making.

Two separate draft Environmental Management Programmes (EMPrs) have been compiled and are provided in Appendix D of this BA Report:

- Draft EMPr for the **proposed Komas WEF and associated infrastructure**, excluding the 132 kV on-site SS. **This Draft EMPr is in Appendix G.1 of this BA Report.**
- Draft EMPr for the **proposed 33/132 kV on-site SS**. **It complies with the Generic EMPr published for SS development (Government Gazette 42323, GN 435, dated 22 March 2019). This Draft EMPr is included in Appendix G.2 of this BA Report.**

Two separate BA processes are currently being undertaken, i.e. one for the proposed Komas WEF and one for the associated power line and EGI. The approach to conduct two separate BA processes (one for the proposed Komas WEF and 132 kV on-site SS) and one for the 132 kV power line and Eskom Switching SS has been structured to meet the requirements of the REIPPPP and to allow for the associated power line and EGI to be handed over to Eskom for operation and maintenance. This approach was also confirmed with DEFF at the pre-application meeting held on 18 August 2020 (see presentation in Appendix H.3 and approval of the pre-application meeting notes in Appendix H.4).

A.5.1 General description of a wind turbine and wind turbine technology

Wind turbines generate electricity by converting movement or kinetic energy produced by the wind into electricity. Different turbine technologies achieve this through slightly different means. A typical horizontal-axis wind turbine consists of a number of components, which work together to generate electricity as depicted in Figure A.4 below. When the rotor spins the shaft, the shaft spins the assembly of magnets, which generate voltage in the coil of wire. This voltage provides alternating electrical current which can then be distributed through power lines. The wind turbine tower supports the rotor and nacelle and provides the height for the rotor blades to clear the ground safely, and to capitalise on atmospheric wind resources which occur approximately 80 - 200 m above the earth's surface. It is anticipated that the individual wind turbines and rotor blades will have a maximum height of 200 m and a maximum rotor diameter of 200 m.

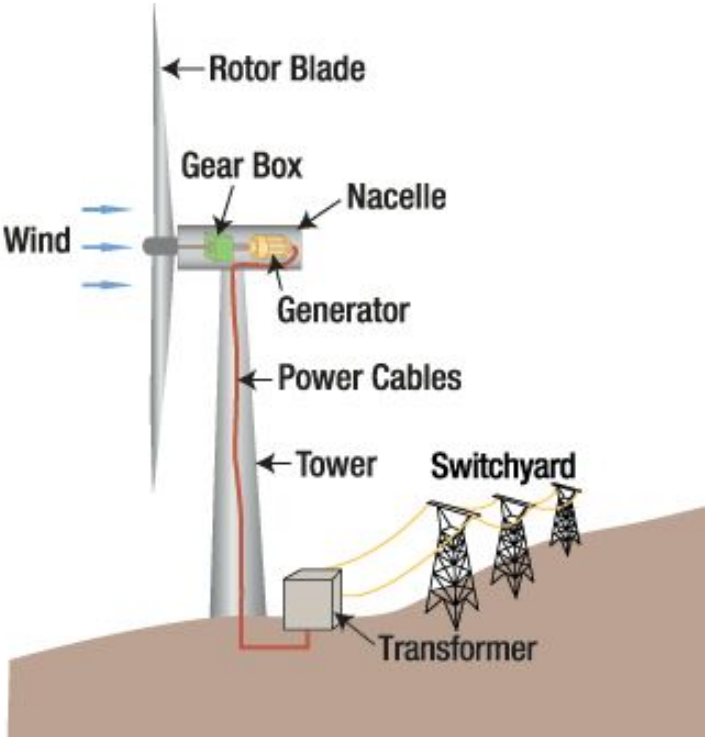


Figure A.4: Generic design for a wind turbine (Source: Tennessee Valley Authority, Wikimedia).

The energy output of a wind turbine ultimately depends on the size of the generator, velocity of the wind, the height of the hub, and the length of the rotor blades. Wind turbines operate at a range of wind speeds and have a start-up speed, which is the speed at which the blades and rotor start to rotate, and a cut-in speed, which reflects the minimum wind speed at which usable power is generated. This is typically about 3 - 4 m/s with full power output occurring at higher wind speeds of approximately 10 to 12 m/s. Wind turbines are also equipped with a cut-out speed or pitch control system as a safety feature to prevent mechanical damage at high or turbulent wind speeds. The cut-out speed is the highest wind speed after which a wind turbine will stop producing power, and a braking system will be activated. This is typically between 25 and 28 m/s depending on the manufacturer and type of turbine selected for implementation. The pitch control system will turn the rotor out of the mean wind direction and change the orientation of the blades so the rotor will capture lower wind speeds and the output power of generator stays within the allowed range. Once the wind drops below the cut-out speed back to a safe level, the turbine can resume normal operation.

Even though wind turbines are relatively tall they do not require extensive land space. Each turbine will have a concrete base. The concrete foundation of each turbine will have a footprint of approximately
1 500 m^2. The comparatively small base of the turbine allows other activities to continue uninterrupted in the space underneath and around the turbine. Conventional large scale development footprints often lead to habitat fragmentation and interference with fauna. As such the micro-siting of the wind turbines will be in an optimum position that minimises the possibility of habitat fragmentation and interference with movement of fauna.

In terms of wind turbine technology to be used as part of the proposed development, the Project Applicant is currently considering a range of wind turbine designs and capacity. The exact turbine specifications have not been determined yet. Some turbine specifications will only be finalised closer to construction. However, the “worst-case scenario” was presented and assessed by the specialists.

The turbine technology selection process shall be subjected to further wind analysis and is also dependent on technical, commercial and site suitability assessment that will, in part, be informed by the BA.

A.5.2 Associated Infrastructure

Construction Laydown and Hardstand Areas

During construction, a temporary laydown area with a maximum footprint of 4.5 ha (including the O&M buildings) and hardstand areas (including boom erection, storage and assembly area) will be established. These hard stand areas will be utilised by cranes during the construction phase (and also possibly when maintenance is done in the operational phase). The crane platform covering a footprint of approximately 1 500 m^2 will be established at each wind turbine. The crane platform will support turbine assembly, off-loading and storage during the construction phase. A schematic illustration of a typical hard stand area and crane platform is provided in Figure A.5 below.

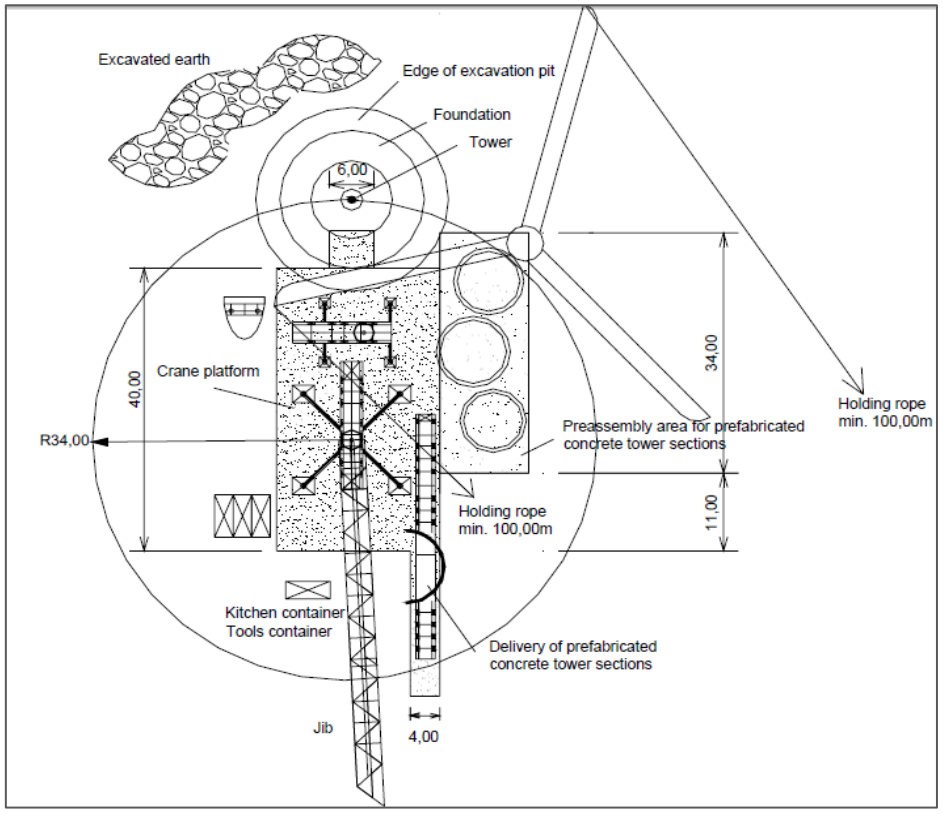


Figure A.5: Example of a hard standing area and crane platform.

Fencing

For various reasons (such as security, public protection and lawful requirements), the proposed Komas WEF will be secured via the installation of boundary fencing. Permanent fencing will be required around the O&M Building, BESS and on-site SS. The fencing, comprising of galvanised steel, is planned to be approximately 2 - 3 m high. Access points will be managed and monitored by an appointed security service provider.

Stormwater Channels

Stormwater drainage systems will be constructed on site to ensure that stormwater run-off from site is appropriately managed. Water from these systems will not contain any chemicals or hazardous substances, and will be released into the surrounding environment based on the natural drainage contours. Details of storm water management are to be confirmed once the Engineering, Procurement and Construction (EPC) contractor has been selected and the design is finalised. It is proposed that a detailed storm water management plan be developed during the detailed design phase. Recommendations for the management of storm water are included in Section 6 of the EMPr (Appendix G).

Batching plant

A concrete batching plant is proposed on site and the footprint will be determined by the EPC contractor.

Operations and Maintenance Area

The on-site O&M area is required to support the functioning of the proposed Komas WEF and provide services to personnel who will be responsible for the operation and routine maintenance of the facility. The O&M buildings will form part of the temporary construction laydown area. The proposed infrastructure entails establishment of the following: operational control centre, workshop or warehouse, ablution facilities, site office, security enclosures, and an area for the storage of maintenance equipment.

- **Lithium-ion BESS and On-site Substation complex area**

The proposed project will include a lithium-ion BESS and on-site SS complex area of 4 ha to allow for micro-siting of the BESS components and to accommodate internal roads (as required), a temporary construction laydown area and a firebreak around the BESS footprint.

The height of the on-site SS will range between approximately 7 - 10 m and may extend up to 22 m including the lighning mast; and from 5 – 10 m for the BESS. Fencing around the on-site SS and BESS complex area as well as the O&M buildings will be approximately 1- 3 m high.

The BESS will be pre-assembled and delivered to site for placement as per specifications of the supplier. It is proposed that the BESS would be housed in containers, with associated operational, safety and control infrastructure. The BESS will be a sealed unit and will remain sealed during operations.

Lithium-ion batteries are solid state batteries that consist of multiple battery cells that are assembled together to form modules. Each cell contains a positive electrode, a negative electrode and an electrolyte. A module may consist of several cells working in conjunction. The negative electrode for a lithium-ion cell is typically carbon. The positive electrode can be lithium-ion phosphate or a lithium metal oxide. The electrolyte is usually a lithium salt dissolved in an organic solvent. Appendix B of the BA Report includes a facility illustration and examples of a typical lithium-ion BESS.

A lithium-ion BESS is different to a Redox Flow Battery (RFB), where the energy is stored in two chemical components, which are dissolved in a liquid to form electrolytes, which in turn are stored in above-ground storage tanks which contain the positive and negative electrolytes separately. Examples of electrolytes for RFB's include Hydrochloric Acid and Sulphuric Acid, which are considered as dangerous goods in terms of the NEMA EIA Regulations, 2014, as amended. The risk of spillage tends to be higher for an RFB than a lithium-ion BESS. Solid State Batteries carry less of a potential risk to the environment in terms of potential spillages. Furthermore, the risk of spillage from lithium-ion BESS is remote due to the sealed state of the BESS, as opposed to the storage tanks of RFB's, which may be subjected to leaks or spills during the replacement or blending of the electrolyte or during transport of the BESS to and from site.

The supplier of the BESS will be confirmed during the detailed design, however the associated impacts and management measures have been captured in Section D of this BA Report, as well as the Draft EMPr included in Appendix G.1.

Battery storage offers a wide range of advantages to South Africa including electricity supply reliability and quality improvement. The main purpose of the BESS is to mitigate intermittency of wind energy by storing and dispatching of electricity when needed i.e. to contribute to the grid 24 hours/day, during peak demand at night or during power outages. In essence, this technology allows renewable energy to enter the completely independent power generation market.

- **Internal Roads**

Internal roads will also be constructed within the footprint of the proposed Komas WEF. The internal roads are expected to be composed of gravel and will extend approximately 10 m wide, including turning circle/bypass areas of up to 20 m wide at some sections during the construction phase. As such, the roads and cables will be positioned within a 20 m wide corridor. These roads will provide access to each turbine and will accommodate cable trenches and stormwater channels, as required. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary. The total internal road length will be determined by the EPC contractor. The total internal road length may vary slightly, depending on the final design.

- **External Access Roads**

The Transport Impact Assessment (Appendix C.10 of the BA Report) states that it will be possible to transport the imported wind turbine components by road to the proposed sites via two possible main routes, both located off the R355. The first option is the surfaced road between the R355 and Komaggas, shown in blue in Figure A.6. The second option is the unnamed gravel road between the R355 and the intersection point of the provincial gravel roads to the west of Komaggas, shown in green in Figure A.6. Although both options are feasible, the surfaced road is the preferred Main Route option as it would require less infrastructure improvements.

The nearest towns in relation to the proposed Komas WEF site are Komaggas, Springbok and Kleinsee. Komaggas is situated within 18 km from the proposed Komas WEF, Kleinsee within 38 km and Springbok within 60 km. The main route linking Kleinsee and Springbok to the proposed Komas WEF is the R355. It is envisaged that the majority of materials, plant and labour will be sourced from these towns and transported to the Komas WEF via the R355.

Should concrete batch plants or quarries not be available in the surrounding areas, mobile concrete batch plants and temporary construction material stockpile yards could be commissioned on vacant land near the proposed Komas WEF site. Delivery of materials to the mobile batch plant and the stockpile yard could be staggered to minimise traffic disruptions.

It is envisaged that most materials, water, plant, services and construction personnel will be procured within a 60 km radius from the proposed Komas WEF.

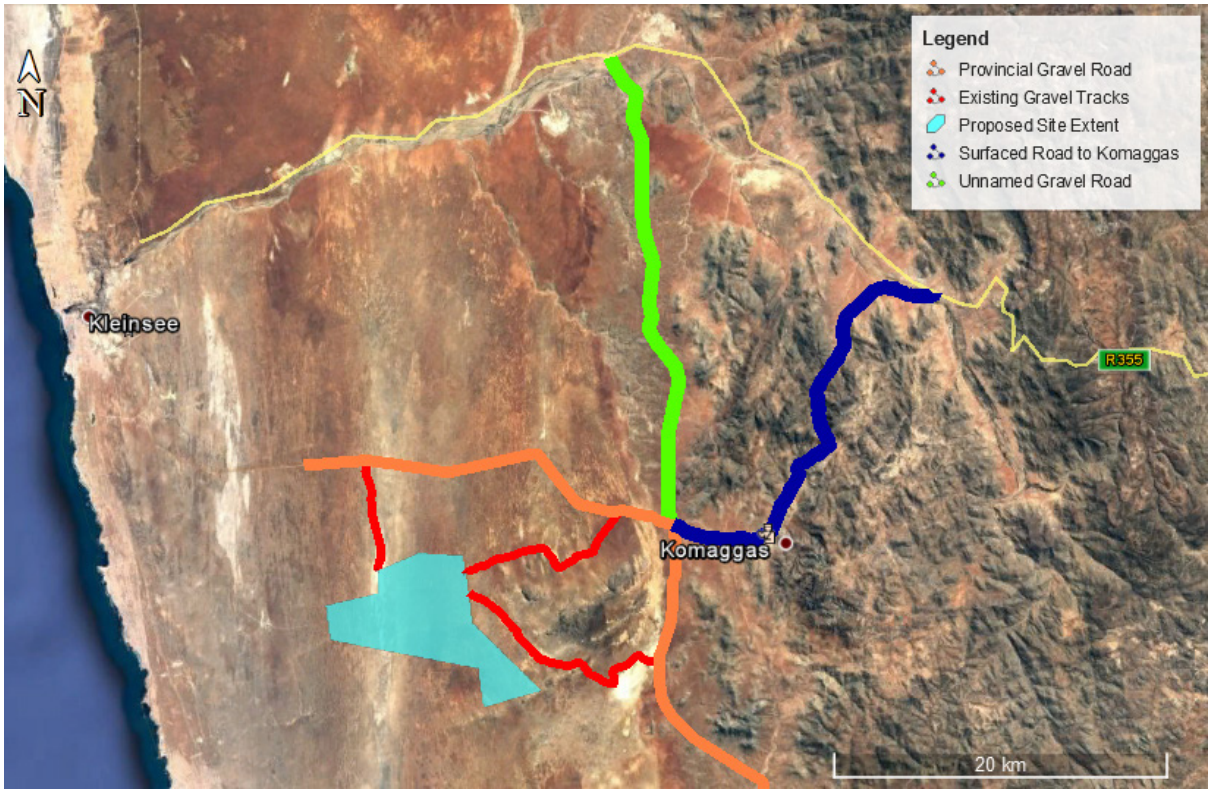


Figure A.6: Main Routes to the Proposed Komas WEF Site

Proposed main access road to the proposed WEF

The proposed site layout indicates three possible access points to the proposed Komas WEF site, shown in the Figure A.7 below. The three potential access points are located off existing provincial gravel roads. The alignment of the proposed access roads follows existing gravel roads and tracks as far as possible.

Proposed access road 1 (show in red in Figure A.7) is not deemed suitable as it falls within the proposed power line alignment alternatives (subject to a separate Environmental Assessment process). Proposed access roads 2 and 3 are both deemed suitable (light blue and purple respectively in Figure A.7).

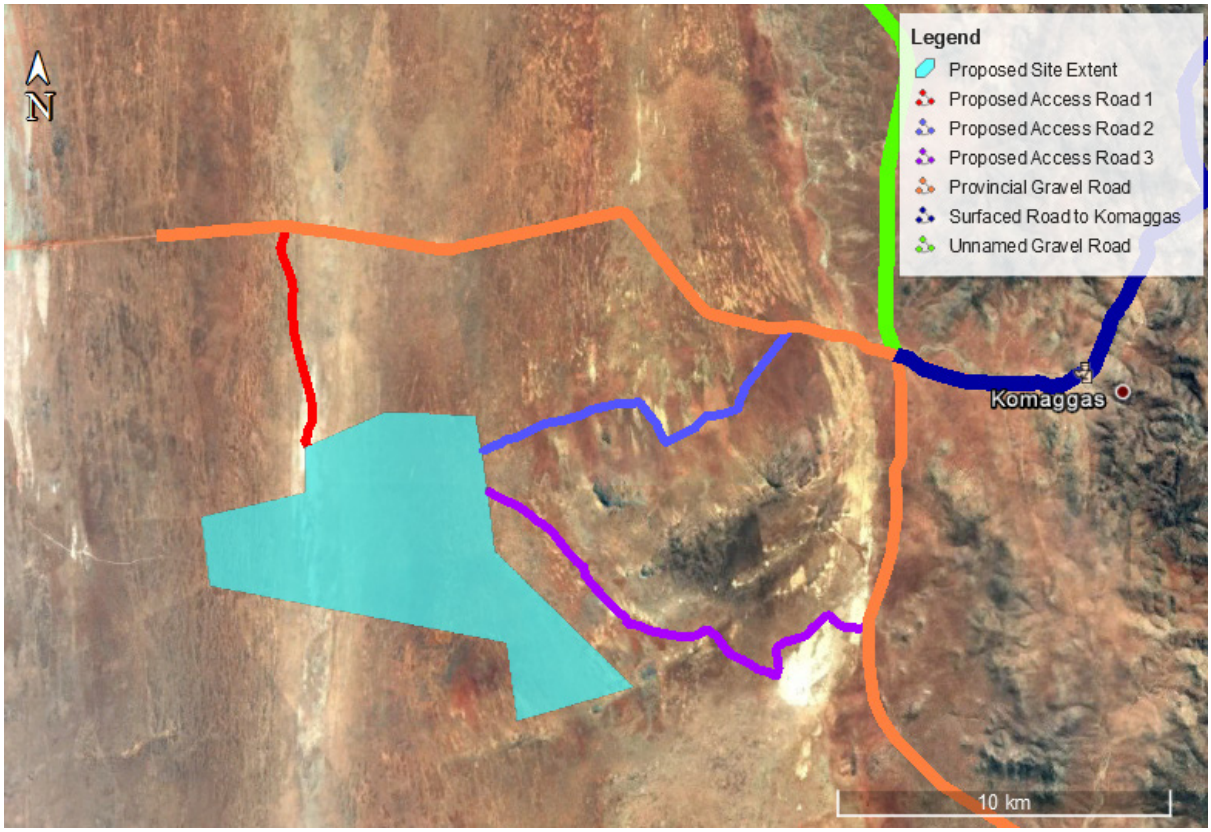


Figure 1: Proposed Access Roads to the Komas WEF site.

The proposed Komas WEF will predominately comprise of new internal gravel roads as there are few existing gravel roads. These roads will be approximately 10 m wide, including turning circle/bypass areas of up to 20 m wide at some sections during the construction phase.

A minimum required road width of 4 m needs to be kept and all turning radii must conform with the specifications needed for the abnormal load vehicles and haulage vehicles. Turning radii will be dependent on the size of the abnormal load vehicle and the size of the component being transported.

It needs to be ensured that the gravel sections of the haulage routes remain in good condition and will hence need to be maintained during the additional loading of the construction phase and then reinstated after construction completion. The gravel roads will require grading with a road grader to obtain a flat even surface and the geometric design of these gravel roads need to be confirmed at detailed design stage. The road designer should take cognizance that roads need to be designed with smooth, relatively flat gradients to allow an abnormal load vehicle to ascend to the top of a hill.

It should be noted that any overhead lines (e.g. Eskom lines) along the gravel road will have to be moved to accommodate any abnormal load vehicles.

A.6 Overview of the Project Development Cycle

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

- Planning and Design Phase (Pre-construction phase);
- 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 (summarised in Section D and full studies included Appendix C of this BA Report).

A.6.1 Planning and Design Phase (Pre-construction phase)

The project layout, including the placement of each individual turbine and subsequent proposed access roads, was finalised prior to the submission of the Draft BA Report for comment. The project layout was informed by the findings of the specialist studies, which included the identification of sensitive biophysical areas that need to be avoided. The specialists were requested to comment on the final layout. The specialists confirmed that the updated project layout does not impact their specialist studies and assessment ratings and is therefore acceptable. The turbine manufacturer and turbine capacity to be used will be dependent on availability of turbines in the international market, suitability to the South African wind climate, and service levels and experience in South Africa.

A.6.2 Construction Phase

The construction phase will take place subsequent to the issuing of an EA from the DEFF and a successful bid in terms of the REIPPPP (i.e. the issuing of a PPA from the Department of Mineral Resources and Energy (DMRE)). The construction phase for the proposed project is expected to extend approximately 24 months.

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

- Removal of vegetation within the footprint of the infrastructure that will be constructed (including but not limited to the turbines, laydown areas, internal access roads and building structures);
- Stockpiling of topsoil and cleared vegetation, where necessary;
- Establishment of a temporary laydown area to enable the storage of construction equipment and machinery and will include the establishment of the construction site camp (including site offices and other temporary facilities for the appointed contractors);
- Excavations for the wind turbine foundations at each turbine location and excavations for other infrastructure;
- Construction and erection of the wind turbines on site, and additional infrastructure;
- Construction of the on-site SS, including the SS building. The construction of the SS building will entail construction of the foundation and building structure as well as the installation of electrical infrastructure (such as transformers, conductors, etc.); and
- Transportation of material and equipment to site, and personnel to and from site.

In addition to the above, skilled as well as unskilled temporary employment opportunities will be created during the construction phase. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however approximately 200 – 250 employment

opportunities are expected to be created during the construction phase. It is anticipated that approximately 55% (110 - 138) of the employment opportunities will be available to low skilled workers (construction labourers, security staff etc.), 30% (60 - 75) to semi-skilled workers (drivers, equipment operators etc.) and 15% (30 - 38) for skilled personnel (engineers, land surveyors, project managers etc.).

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 compiled EMPrs which are included in Appendix G of this BA Report. An independent Environmental Control Officer (ECO) will be appointed during the construction phase and will monitor compliance with the recommendations and conditions of the EMPrs and EA respectively.

A.6.3 Operational Phase

The following activities will occur during the operational phase:

- The generation of electricity from the proposed WEF which will be fed into the national grid at the Gromis MTS via a 132 kV power line (to be assessed in a separate BA); and
- Maintenance of the WTGs and associated infrastructure.

During the life span of the proposed project (approximately 20 years), on-going maintenance will be required on a scheduled basis. Wind turbines will be operational for this entire period except under circumstances of mechanical breakdown, extreme weather conditions and/or maintenance activities. Wind turbines will be subject to regular maintenance and inspection (i.e. routine servicing) to ensure the continued optimal functioning of the turbine components. It is anticipated that the proposed WEF will operate throughout the day and night. The only development related activities on-site will be routine servicing and unscheduled maintenance.

The projected operations are expected to provide several services and added economic spin offs (as highlighted in Section D of this BA Report). Approximately 20 permanent employment opportunities (skilled and unskilled) will be created during the operational phase of the project. Of this total approximately 12 will be low skilled workers, 6 semi-skilled and 2 skilled workers.

In addition to the above, a Community Trust will be established. The establishment of a community benefit structure such as a Community Trust also creates an opportunity to support local economic development in the area. The requirement for the project to allocate funds to socio-economic contributions (through structures such as Community Trusts) provides an opportunity to advance local community projects, which is guaranteed for a 20-year period (project lifespan). The revenue from the proposed WEF can be used to support a number of social and economic initiatives in the area, including but not limited to:

- Creation of employment opportunities;
- Education;
- Support for and provision of basic services;
- School feeding schemes;
- Training and skills development; and
- Support for Small, Medium and Micro Enterprises (SMMEs).

The 2019 IPPPP Overview notes that the Socio-Economic Development (SED) contributions associated with the 64 IPPs has to date amounted to R 860.1 million. The province with the highest

SED contribution has been the Northern Cape Province, followed by the Eastern Cape and Western Cape (Department of Energy et al. 2016).

The Green Jobs study (2011), found that the case for wind power is enhanced by the positive effect on rural or regional development. Wind farms located in rural areas create an opportunity to benefit the local and regional economy through the creation of jobs and tax revenues. In this regard the towns of as Komaggas, Buffelsrivier, Kleinsee, and Springbok are small rural towns.

The additional income for the landowners from the WEF would also improve job security for farm workers and benefit the community.

A.6.4 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 WEF becomes outdated or the land needs to be used for other purposes), the decommissioning procedures will be undertaken in line with the EMPr and the site will be rehabilitated and returned to the pre-construction state.

Various components of the proposed Komas WEF which are decommissioned will be reused, recycled or disposed of in accordance with the relevant regulatory requirements. All of the components of the wind turbines are considered to be reusable or recyclable. The turbines may also be traded or sold as there is an active second hand market for wind turbines and/or it may be used as scrap metal. The decommissioning phase of the project is also expected to create skilled and unskilled employment opportunities.

On the down-side, approximately 20 permanent employment opportunities associated with the operational phase would be lost. The potential impacts associated with the decommissioning phase can however be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the significance of the impacts is assessed to be Low Negative. The Socio-Economic Impact Assessment (Appendix C.8) recommends that the proponent should also investigate the option of establishing an Environmental Rehabilitation Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20-year operational life of the facility.

A.7 Traffic Generation

As noted above, in terms of traffic generation, a Transport Impact Assessment was undertaken and is included in Appendix C.10 of this BA Report. The types of materials and equipment that will need to be transported to site during the construction phase include the following:

- Building materials will be transported by single-unit trucks within the road freight limitations of South Africa;
- Transformers and turbine components will be transported by abnormal load trucks for which a permit will need to be applied for in terms of Section 81 of the National Road Traffic Act and authorisation needs to be obtained from the relevant road authorities to modify the road reserve to accommodate turning movements at intersections;
- In addition to transporting the wind turbine components and specialised lifting equipment, Civil Engineering construction materials, plant and equipment will need to be brought to the site (e.g. sand, stone, cement, concrete batching plant, gravel for road building purposes, excavators,

trucks, graders, compaction equipment, cement mixers, transformers in the SS, cabling, transmission pylons etc.). Other components, such as electrical cables, pylons and SS transformers, will also be transported to site during construction. The transportation of these items will generally be conducted with normal heavy loads vehicles; and

- In addition, workers from the surrounding area will be transported by taxi/bus/shuttle or private car.

The following number of daily trips has been calculated for the construction phase:

For the transportation of the turbines to the proposed Komas WEF site, it was assumed that the turbine blades will be transported to site individually. Consequently**,** for each steel wind turbine:

- 1 abnormal load for the nacelle;
- 3 abnormal loads will be required for the blades; and
- 10 abnormal loads for the tower sections.

All further components will be transported with normal limitations haulage vehicles. With approximately 14 abnormal load trips (as specified above, the total trips to deliver the components of 50 steel tower turbines to the WEF site will be around 700 trips (14 trips x 50 turbines). **This would amount to approximately 1.3 vehicle trip per day (700 trips / 24 months / 22 working days per month) to site for a typical construction period of 24 months[2].**

The concrete tower sections are typically delivered in 2-4 precast segments, which are then assembled on-site to form the respective tower section. It was assumed that the first 140 m sections will be precast in four segments each and the last 60 m sections in two segments each. The total number of abnormal load trips for a concrete[3] turbine is approximately 34 trips. For concrete tower sections, the 20 m sections of the 200 m tower will be split into 4 segments (1 trip per segment), except for the last 60 m of the tower which would have 2 segments per section. The calculation is therefore – 140 m of the tower / 20 m section = 7 sections, 7 sections x 4 segments = 28 segments (trips). The remaining 60 m of the tower (3 sections of 20m) will consist of 2 segments each = 6 segments. Therefore, the total number of abnormal trips is 28 + 6 segments = 34 segments or trips for concrete towers. The total trips to deliver the components of 50 turbines to the WEF site will be around 1 700 trips (34 trips x 50 turbines). This would amount to approximately 3.2 vehicle trips per day (1 700 trips / 24 months / 22 working days per month) to site for a typical construction period of 24 months.

The construction and decommissioning phases of a WEF are the only significant traffic generators. Fortunately, the duration of these phases is short term i.e. the potential impact of the traffic generated by the proposed Komas WEF during the construction and decommissioning phases on the surrounding road network is temporary and WEFs, when operational, do not add any significant traffic to the road network.

Refer to the Appendix C.10 for the complete Transport Impact Assessment. It is important to note that the Transport Impact Assessment has assumed the worst case construction period of 24 months, and has assumed that water will be trucked in from the municipality or private contractors (in order to cater

[2] Please note that trips are one-directional as it is assumed that trips to the development will occur during the peak hour, whilst the returning trip will occur outside the peak hour.

[3] This refers to the use of concrete tower sections instead of steel. The calculation is included in case concrete tower sections are deemed feasible at a later stage.

for potential traffic generation for water requirements). The section below provides a description of the water usage and other service requirements.

A.8 Service Provision: Water Usage, Sewage, Solid Waste and Electricity Requirements

The Applicant will consult with the surrounding municipalities in order to confirm the supply of services (in terms of water usage, sewage removal, solid waste removal, and electricity requirements) for the proposed project. The municipality will be consulted as part of the 30-day public review period of this Draft BA Report and the confirmation services provision will be included in the Final BA Report, if obtained.

However, it must be noted that should the local municipality not have adequate capacity for the handling of waste, provision of water and sewage handling provisions available; then the Project Applicant will make use of private contractors to ensure that the services are provided. An outline of the services that will be required are discussed below.

A.8.1 Water Usage

Raw and potable water will be required during the construction, operation and decommissioning phases of the proposed Komas WEF project, for staff consumption purposes, for the roads and earthworks, as well as for the batching plant.

Water supply will be sourced by the contractor and is typically through a water purchase agreement between the municipal water board and the contractor. Should the onsite existing boreholes not be able to meet the water demands, water will be purchased and trucked to the site in water tankers. The monthly was consumption will vary during the construction phase, however it is anticipated that a maximum of 3000 m^3/month would be required for the construction phase. During the operational and decommissioning phases, water use will be minimal.

A.8.2 Sewage or Liquid Effluent

The proposed project will require sewage services during the construction, operational and decommissioning phases of the proposed Komas WEF project. Low volumes of sewage or liquid effluent are estimated. More specifically, it is estimated that a peak approximately 28,000 *l* per month of sewage will be generated during the construction phase. During the operational phase, it is estimated that 10,000 *l* of sewerage per month will be generated.

Liquid effluent will be limited to the ablution facility during the construction and operational phases. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction phase, which will be regularly serviced and emptied by a suitable (private) contractor on a regular basis. Permanent ablution facilities may be installed during the operational phase. The effluent will be stored on site in watertight concrete structures (conservancy tanks) and thereafter transported to and disposed of at the Local Municipal sewerage treatment works. Due to the remote locality of the project site, sewage cannot be disposed in the municipal waterborne sewage system. The provisioning of this service will also be confirmed with the NKLM before construction commences.

A.8.3 Solid Waste Generation

The quantity of waste generated will depend on the construction phase, which is estimated to extend over 24 months. However, it is estimated that approximately 2 000-5 000 kg of general waste will be generated every month during the construction phase. During the construction phase, the following waste materials are anticipated:

- 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 EMPrs during the construction and operational phases (Appendix G of the BA Report), which incorporates waste management principles. During the construction phase, general solid 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 monthly basis by an approved waste disposal Contractor (i.e. a suitable Contractor) or the municipality. In addition, a skip will be placed on site and any damaged or broken WEF components (i.e. those not returned to the supplier) will be stored in this skip. A specialist waste management company will be commissioned to manage and dispose of this waste.

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 EMPrs (Appendix G of this BA Report).

During the operational phase, the facility will produce minor amounts of general waste (as a result of the offices). It is estimated that approximately 2.5 m^3 of waste will be generated every month during the operational phase. Waste management is discussed in the EMPrs (Appendix G of this BA Report).

A.8.4 Electricity Requirements

In terms of electricity supply for the construction and operational phases, since there are no existing Eskom or municipal infrastructure supply services in the area, the Project Developer will make use of generators on site during the construction, operation and decommissioning phases of the proposed Komas WEF project.

A.9 Applicable Legislation

The scope and content of this BA Report has been informed by the legislation, guidelines and information series documents listed in Table A.5. It is important to note that the specialist studies included in Appendix C of this BA Report also include a description of the relevant applicable legislation.

Table A.5. Legislation Applicable to the Proposed Project

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
The National Environmental Management Act, 1998 (Act 107 of 1998), as amended	The proposed project will require the implementation of appropriate environmental management practices.	National DEFF	19 November 1998
NEMA EIA Regulations published in GN R982, R983, R984 and R985 on 8 December 2014, 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 DEFF	8 December 2014 and amended on 7 April 2017
NEMA EIA Regulations published in Government Notice R983 and R985, and as amended on 7 April 2017 in GN R327, R325 and R324	These Regulations contain the relevant listed activities that are triggered, thus requiring a BA. Please refer to Section A (10) of this BA Report for the complete list of listed activities.	National DEFF	8 December 2014 and amended on 7 April 2017
GN 114 – Notice of identification in terms of section 24(5)(a) and (b) of the NEMA of the procedure to be followed in applying for EA for large scale wind and solar PV energy development activities identified in terms of section 24(2)(a) of the NEMA when occurring in geographical areas of strategic importance (i.e. REDZs)	The proposed project falls within the Springbok REDZ (REDZ 8) and a BA process is therefore required instead of a full EIA.	National DEFF	16 February 2018
GN 960 – Notice of the requirement to submit a report generated by the National Web Based Environmental Screening Tool, in terms of Section 24(5)(h) of the NEMA and Regulation 16(1)(b)(v) of the NEMA EIA Regulations, 2014, as amended, when submitting an Application for EA in terms of Regulations 19 and 21 of the NEMA EIA Regulations, 2014, as amended	GN 960 was published on 5 July 2019 and came into effect for compulsory use of the National Web Based Environmental Screening Tool from 4 October 2019. As such, the Application for EA for the proposed project has been run through the National Web Based Environmental Screening Tool, and an associated report was generated and attached to the Application for EA.	National DEFF	5 July 2019

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
GN 320 - Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of NEMA, when applying for EA	GN 320 prescribes general requirements for undertaking site sensitivity verifications and for protocols for the assessment and minimum report content requirements of environmental impacts for environmental themes for activities requiring EA. The Specialist Assessments undertaken as part of this BA process comply with GN 320, where applicable, such as the Aquatic Biodiversity and Agriculture Compliance Statements as well as the Noise Specialist Assessment. The Defence and Civil Aviation Site Sensitivity Verifications comply with GN 320. The Bat, Visual, Heritage (including Archaeology, Cultural Landscape and Palaeontology), and Transport specialist studies comply with Part A of GN 320, which contains site sensitivity verification requirements where a Specialist Assessment is required but no specific assessment protocol has been prescribed. The Terrestrial Biodiversity, Avifauna, Socio-Economic and Transport Impact Assessments were undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The protocols were enforced within 50 days of publication of the notice i.e. on 9 May 2020.	National DEFF	20 March 2020
GN 1150 - Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the NEMA, when applying for EA	GN 1150 prescribes protocols in respect of specific environmental themes for the assessment of, as well as the minimum report content requirements on, the environmental impacts for activities requiring EA. GN 1150 includes a protocol for the specialist assessment	National DEFF	30 October 2020

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	and minimum report content requirements for environmental impacts on a) terrestrial animal species and b) terrestrial plant species. The requirements of these protocols apply from the date of publication (i.e. from 30 October 2020), except where the Applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned by the date of publication of these protocols in the Government Gazette, in which case Appendix 6 of the NEMA EIA Regulations, 2014, as amended, will apply to such applications. It is important to note that the Specialist Assessments undertaken as part of this BA process were commissioned prior to the publication of the Species Protocols published on 30 October 2020. Details of the specialist site visits (as applicable) undertaken prior to 30 October 2020 is detailed in Appendix C. Contractual proof showing appointments of the specialists prior to 30 October 2020 is included in Appendix J of the BA Report.		
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. Such management actions are recommended in the EMPrs, which are included in Appendix G of this BA Report.	National DEFF	6 March 2009
		National DEFF	2 June 2014
National Environmental Management: Air Quality Act	The proposed stockpiling activities, including	National DEFF	19 February 2005

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
(Act 39 of 2004)	earthworks, may result in the unsettling of, and temporary exposure to, dust. Appropriate dust control methods will need to be applied. Such management actions are recommended in the EMPrs, which are included in Appendix G of this BA Report.		
Section 50 of the National Environmental Management: Protected Areas Act (Act 57 of 2003), as amended (NEMPAA)	Section 50 of NEMPAA relates to the regulation of commercial and community activities in nature reserves and world heritage sites. Section 50 (5) states: *No development, construction or farming may be permitted in a national park, nature reserve or world heritage site without the prior written approval of the management authority.* The proposed Komas WEF does not fall inside the Namaqua National Park, but falls partly within the Parks' Expansion Footprint Area and its Buffer Zone. SANParks acknowledged in their letter dated 12 February 2012 that the NNP expansion footprint and buffer zone are not currently within the declared area of the NNP, and confirms that Section 50 of NEMPAA would not apply to the proposed Komas WEF.	National DEFF	2003
Water Services Act (Act 108 of 1997)	Raw and potable water will be required during the construction, operation and decommissioning phases of the proposed Komas WEF project, for staff consumption purposes, for the roads and earthworks, as well as for the batching plant. Water supply will be sourced by the contractor and is typically through a water purchase agreement between the municipal water board and the	National Department of Water Affairs	1997

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	contractor. Should the onsite existing boreholes not be able to meet the water demands, water will be purchased and trucked to the site in water tankers. Compliance with this act will be undertaken during the relevant phases of the project, in consultation with the local and district municipalities, if relevant (i.e. if water is sourced from the local municipality).		
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 relevant phases. Such management actions are recommended in the EMPrs, which are included in Appendix G of this BA Report.	Department of Health	1973
National Forest Act (Act 84 of 1998)	Protected Tree species are listed under the National Forests Act (Act 84 of 1998, as amended). In terms of section 15(1) of 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, except under a license granted by the Minister. The Terrestrial Biodiversity Assessment (Appendix C.1 of the BA Report) notes that two protected tree species have been observed in the area, *Aloe dichotoma* and *Acacia erioloba*. However, neither of these has been observed present on the proposed	National DEFF	1998

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	Komas WEF site and no protected trees are likely to be affected by the proposed Komas WEF. If any protected plant species are found on site during the search and rescue or construction, the DEFF will be contacted to discuss the relevant permitting requirements.		
National Water Act (Act 36 of 1998), as amended (NWA)	The NWA controls activities in and around water resources, as well as the general management of water resources, including abstraction of groundwater and disposal of water. Authorisation for changes in land use, up to 500 m from a defined water resource / wetland system will require at the minimum the compilation of a risk assessment and depending upon outcome, an application for use under a General Authorisation or a Water Use Licence from the Department of Human Settlements, Water and Sanitation (DHSWS). The crossing of watercourses e.g. roads and cables is considered to be a water use as defined within the NWA and would require authorisation from the DHSWS. However, the Aquatic Biodiversity Compliance Statement (Appendix C.2 of the BA Report) confirms that no watercourses are located within the study area boundary and the proposed Komas WEF infrastructure does not fall within the	DHSWS	1998

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	regulated area of a watercourse. The regulated area of a watercourse as defined in GN 509 (General Authorisation in terms of Section 39 of the NWA) is indicated below (it includes wetlands): *"regulated area of a watercourse" for section 21(c) or (i) of the Act water uses in terms of this Notice means: (a) The outer edge of the 1 in 100 year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; (b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or (c) A 500 m radius from the delineated boundary (extent) of any wetland or pan".* Water uses listed within Section 21 (c) and (i) of the NWA therefore do not apply to the proposed construction and operation of the proposed Komas WEF as there will be no crossing of water courses on site. However, water may be abstracted from existing		

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	boreholes on site as raw and potable water will be required during the construction, operation and decommissioning phases of the proposed Komas WEF project, for staff consumption purposes, for the roads and earthworks, as well as for the batching plant. Therefore, Section 39 of the NWA may be applicable and a General Authorisation (or WUL) may be required. This will be confirmed with DHSWS prior to construction.		
Integrated Environmental Management (IEM) guideline series published by DEFF (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. Relevant guidelines have been considered in this BA process.	National DEFF	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, 1999 (Act 25 of 1999) (NHRA) prior to any fossils or artefacts being removed by professional palaeontologists and archaeologists. If archaeological mitigation is needed, then the appointed archaeologist will need to submit a Work Plan to the South African Heritage Resources Agency (SAHRA) to do the work. This must be carried out well in advance of construction to ensure that there is	National Department of Arts and Culture	1999

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	enough time for SAHRA to approve the mitigation work before construction commences. Should professional palaeontological mitigation be necessary during the construction phase, the palaeontologist concerned will need to apply for a Fossil Collection Permit from SAHRA. Palaeontological collection should comply with international best practice. All fossil material collected must be deposited, together with key collection data, in an approved depository (museum / university). Palaeontological mitigation work including the ensuing Fossil Collection reports should comply with the minimum standards specified by SAHRA (2013). Additional information regarding this is provided in the Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (Appendix C.6 of the BA Report).		
Conservation of Agricultural Resources Act (Act 43 of 1983)	The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA) 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. CARA defines different categories of alien plants and those listed under Category 1 are prohibited and must be	National Department of Agriculture	1983

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	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 Terrestrial Biodiversity Assessment (Appendix C.1 of the BA Report) notes that the predominant alien of concern at the site is *Acacia cyclops*, which is listed as Category 1b. The relevant application will be submitted to the Department of Agriculture and the requirements in terms of CARA will be adhered to. Rehabilitation after disturbance to agricultural land is managed by the CARA.		
National Environmental Management: Biodiversity Act (Act 10 of 2004), as amended (NEMBA)	This Act serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. Effective disturbance and removal of threatened or protected species encountered on or around the site, will require specific permission from the applicable authorities, i.e from DEFF. Should protected plant and animal species be found on site, DEFF will be contacted to discuss the permitting requirements. In addition, the management of exotic plant species, will be governed by the Alien and Invasive Species	National DEFF	September 2004

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	(AIS) regulations, which were gazetted in 2014. These regulations compel landowners to manage exotic weeds on land under their jurisdiction and control. The Terrestrial Biodiversity Assessment (Appendix C.1 of the BA Report) notes that the predominant alien of concern at the site is *Acacia cyclops*. The relevant requirements of NEMBA will be adhered in terms of the effective management thereof by the relevant landowners. In addition, the most prominent statute containing provisions directly aimed at the conservation of birds is the National Environmental Management: Biodiversity Act (Act 10 of 2004), as amended, read with the Threatened or Protected Species Regulations, February 2007 (TOPS Regulations). Chapter 1 sets out the objectives of the Act, and they are aligned with the objectives of the Convention on Biological Diversity, which are the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of the benefits of the use of genetic resources. The Act also gives effect to CITES, the Ramsar Convention, and the Bonn Convention on Migratory Species of Wild Animals. The State is endowed with the trusteeship of biodiversity and has the responsibility to manage, conserve and sustain the biodiversity of South Africa.		

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
Subdivision of Agricultural Land Act (Act 70 of 1970)	The Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA) requires that any long term lease associated with the renewable energy facility be approved by the Department of Agriculture, Land Reform and Rural Development (DALRRD). The SALA consent is separate from the Application for EA, and needs to be applied for and obtained separately. An application for the change of land use (re-zoning) for the development on agricultural land will be lodged by the Applicant for approval in terms of the SALA as required.	Republic of South Africa	1970
Section 53 of the Mineral Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as amended (MPRDA)	This section of the MPRDA deals with the use of land surface rights contrary to objects of the Act. It states "any person who intends to use the surface of any land in any way which may be contrary to any object of this Act or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner". Therefore, the Project Applicant will submit an application to DMRE in terms of Section 53 of the MPRDA. All mining right holders on the farm portions to be affected by the proposed Komas WEF and within a 2km radius have been included on the database of I&APs in order to ensure meaningful consultation.	DMRE	2002
The Astronomy Geographic Advantage Act (Act 21 of 2007)	The Astronomy Geographic Advantage (AGA) Act (Act 21 of 2007) aims to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; to	Department of Higher Education, Science and Technology (previously the Department of Science and	2007

Title of legislation, policy or guideline	Applicability to the Proposed Project	Administering Authority	Date
	provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and to provide for matters connected therewith. The purpose of the AGA Act is to preserve the geographic advantage areas that attract investment in astronomy. The AGA Act also notes that declared astronomy advantage areas are to be protected and properly maintained in terms of Radio Frequency Interference (RFI). The AGA Act is administered by the Department of Higher Education, Science and Technology (previously the Department of Science and Technology). The location of the proposed project does not pose an Electromagnetic Interference (EMI) or RFI risk to the Square Kilometre Array (SKA), as the proposed project is located outside of the Karoo Central Astronomy Advantage Area (KCAAA). Refer to Figure A.8 for the location of the proposed project in relation to the SKA and KCAAA. The National Web-Based Screening Tool indicates that the project Komas WEF site falls within an area of low sensitivity in terms of the relative RFI theme sensitivity).	Technology).	

A.10 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 comprises the NEMA EIA Regulations, 2014, as amended, listed activities that require either a BA, or Scoping and EIA be conducted. As noted previously, due to the project being proposed in a REDZ, the proposed project requires a BA process and is subject to a reduced decision-making period of 57 days (instead of the 107 days).

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

Table A.5 below provides a list of the applicable listed activities associated for the proposed project in terms of Listing Notice 1 (GN R 327), Listing Notice 2 (GN R325) and Listing Notice 3 (GN R324) in terms of the NEMA EIA Regulations, 2014, as amended.

Table A.6. Applicable Listed Activities

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327) of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity – (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is — (a) temporarily required to allow for maintenance of existing infrastructure; (b) 2 kilometres or shorter in length; (c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development.	The proposed project will entail the construction of a 33/132 kV on-site SS. The proposed project will take place outside of an urban area. *This activity would therefore be triggered.*
Activity 14	The development and related operation of facilities or infrastructure, or for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	Storage tanks will be required on site at the proposed Komas WEF site for the storage of diesel and other fuels to service the generators for electricity supply. The storage tanks constitute the development and related operation of infrastructure, for the storage and handling, of a dangerous good (i.e. fuel), where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres. *This activity would therefore be triggered*.
Activity 24 (ii)	The development of a road – (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;	An existing unnamed gravel public road off the R355 will be used to gain access to the site. Internal access gravel roads of approximately 10 m wide, including turning circle/bypass area of up to 20 m at some sections during the construction phase are proposed. As such, the roads and cables will be positioned within a 20 m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.

Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327) of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates.**
		This activity would therefore be triggered.
Activity 28 (ii)	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; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	The land is currently used for agricultural purposes (mainly grazing). The proposed Komas WEF is considered to be a commercial/industrial development and, will have a footprint of approximately 90 ha (including internal roads, but excluding existing access roads leading to the site which will be used). The associated infrastructure includes a solid state lithium-ion BESS and various structures, buildings and electrical grid infrastructure (EGI) such as, but not limited to an on-site 33/132 kV SS. The BESS and on-site SS (known as the BESS and SS complex) comprises a site of approximately 4 ha. The proposed project will take place outside of an urban area. *This activity would therefore be triggered.*
Activity 56 (i) (ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres;	The existing unnamed public gravel road off the R355 and existing onsite gravel roads may be widened by more than 6 m in some places to provide access to the WEF site. Internal access roads will be up to 20 m wide. Where possible existing gravel roads will be upgraded, and may be widened by more than 6 m and lengthened by more than 1 km. *This activity would therefore be triggered*.
Activity No(s):	Provide the relevant **Scoping and EIA Activity(ies**) as set out in **Listing Notice 2 (GN R 325)** of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
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 facility or infrastructure is for photovoltaic installations and occurs -	The proposed Komas WEF entails the construction of a WEF with a maximum capacity of up to 300 MW. It will be located on Portion 1 of the Farm Zonnekwa No. 326, Portions 2, 3 and 4 of the Farm Zonnekwa No. 328 and on Portion 4 of the Farm Kap Vley No. 315. The proposed wind farm will therefore be developed outside of an

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327) of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	a) within an urban area; or b) on existing infrastructure.	urban area. Note that GN 114 states that Applications for EA for large scale Wind and Solar PV energy facility, when such facility trigger Activity 1 of Listing Notice 2 of 2014 of the NEMA EIA Regulations, 2014, as amended, and any other listed and specified activities necessary for the realisation of such facility, and where the entire proposed facility is to occur in such REDZs, must follow a BA process, in order to obtain EA. *Therefore although this activity would therefore be triggered, a BA will be undertaken instead of a Scoping and EIA*.
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.	The proposed 300 MW Komas WEF will have a footprint of approximately 90 ha (i.e. more than 20 ha). As a result, more than 20 ha of indigenous vegetation would be removed for the construction of the proposed Komas WEF. It is located outside an urban area where indigenous vegetation will be cleared for the construction of the proposed WEF. Note that GN 114 states that Applications for EA for large scale Wind and Solar PV energy facility, when such facility trigger Activity 1 of Listing Notice 2 of 2014 of the NEMA EIA Regulations, 2014, as amended, and any other listed and specified activities necessary for the realisation of such facility, and where the entire proposed facility is to occur in such REDZs, must follow a BA process, in order to obtain EA. *Therefore although this activity would therefore be triggered, a BA will be undertaken instead of a Scoping and EIA*.
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3 (GN R 324)** of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 4 (g) (ii) (bb)	The development of a road wider than 4 metres with a reserve less than 13,5	An existing unnamed gravel public road off the R355 will be used

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327) of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
(ee) (gg)	metres. g. Northern Cape ii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Areas within 10 kilometres from national parks.	to gain access to the site. Internal access gravel roads of approximately 10 m wide, including turning circle/bypass area of up to 20 m at some sections during the construction phase are proposed. As such, the roads and cables will be positioned within a 20 m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary. Although the proposed Komas WEF Development Area is 13.2 km from the boundary of NNP and the nearest turbine placement is 15.66 km from the boundary, it falls partly within the Park's buffer zone. The proposed project area falls within the National Protected Areas Expansion Strategy Focus Areas (NPAES) and within a CBA 2. *This activity would therefore be triggered.*
Activity 10 (g) (iii) (bb) (ee) (gg)	The development and related operation of facilities or infrastructure for the storage, or storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. g. Northern Cape iii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Areas within 10 kilometres from national parks.	Storage tanks will be required on site at the proposed Komas WEF site for the storage of diesel and other fuels to service the generators for electricity supply. The storage tanks constitute the development and related operation of infrastructure, for the storage and handling, of a dangerous good (i.e. fuel), where such storage occurs in containers with a combined capacity of 30 cubic metres or more but not exceeding 80 cubic metres. The proposed Komas WEF falls within a National Protected Area Expansion Strategy Focus Area and within a CBA2. Although the proposed Komas WEF Development Area is 13.2 km from the boundary of NNP and the nearest turbine placement is 15.66 km from the boundary, it falls partly within the Park's buffer zone. The 2014 NEMA EIA Regulations, as amended, defines a "protected area" as those protected areas contemplated in section

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327) of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		9 of the NEMPAA and the core area of a biosphere reserve and shall include **their buffers.** *This activity would therefore be triggered*.
Activity 12 (g) (ii)	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 (ii) Within critical biodiversity areas identified in bioregional plans;	The proposed 300 MW WEF will have an estimated footprint of approximately 90 ha. As a result, more than 300 m^2 of indigenous vegetation would be removed for the construction of the proposed Komas WEF and associated infrastructure. The southern section of the project area falls within a CBA 2. *This activity would therefore be triggered.*
Activity 18 (g) (ii) (bb) (ee) (ii)	The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometre: g) Northern Cape ii) Outside Urban Areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans. (gg) Areas within 10 kilometres from national parks.	The existing unnamed gravel public road off the R355 may be widened by more than 4 m in some places to provide access to the WEF site. Internal access roads will be up to 20 m wide. Where possible existing gravel roads will be upgraded, and may be widened by more than 4 m and lengthened by more than 1 km. The southern section of the project area falls within a NC-NPAES Focus Area and a CBA 2. Although the proposed Komas WEF Development Area is 13.2 km from the boundary of NNP and the nearest turbine placement is 15.66 km from the boundary, it falls partly within the Park's buffer zone. *This activity would therefore be triggered.*

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

- The activities in Listing Notice 2 (GN R325); i.e. Activities 1 and 15, have been provided above, however as captured in GN 114 of February 2018, a BA process is required for Renewable Energy Developments in the REDZ (instead of a Scoping and EIA process).
- Based on the sensitivity screening undertaken and the Terrestrial Biodiversity Impact Assessment for the site, the proposed project falls within a CBA 2, an Ecological Support Area (ESA) and the NC-PAES Focus Area.
- Activity 21 of GN R327 (Listing Notice 1) is not applicable at this stage of the BA. However, if the EPC contractor in future determines that a borrow pit is required, then the necessary approvals will be obtained.

A.11 National Web-Based Environmental Screening Tool

As noted above, GN 960 (dated 5 July 2019) published a notice of the requirement to submit a report generated by the National Web Based Environmental Screening Tool, in terms of Section 24(5)(h) of the NEMA and Regulation 16(1)(b)(v) of the NEMA EIA Regulations, 2014, as amended, when submitting an Application for EA in terms of Regulations 19 and 21 of the NEMA EIA Regulations, 2014, as amended, GN 960 came into effect for compulsory use of the National Web Based Environmental Screening Tool from 4 October 2019. As such, the Application for EA for the proposed project has been run through the National Web Based Environmental Screening Tool, and an associated report was generated and attached to the Application for EA.

Based on the selected classification, the National Web Based Environmental Screening Tool provides a list of specialist studies that should be undertaken as part of the BA process, as well as identifies the sensitivities on site that need to be verified by either the EAP or the specialists, where relevant, as noted in the Assessment Protocols of 20 March 2020 (GN 320). The classification that applies to the proposed project is **Utilities Infrastructure; Electricity; Generation; Renewable; Wind**

The following list of Specialist Assessments have been identified by the National Web Based Environmental Screening Tool for inclusion in the BA Report (Table A.7). The National Web Based Environmental Screening Tool Report notes that it is the responsibility of the EAP to confirm this list and to motivate in the BA Report, the reason for not including any of the identified specialist studies (if applicable).

Table A.7. List of Specialist Assessments identified by the Screening Tool and confirmation of assessment and type thereof undertaken in this BA.

	Specialist Study Required by the Screening Tool	Assessment undertaken in BA	Type of Assessment undertaken in BA	Appendix of BA Report
1a	Terrestrial Biodiversity Impact Assessment	Yes	Appendix 6: Impact Assessment. The Terrestrial Biodiversity Impact Assessment includes feedback on Terrestrial Plant and Animal Species. This study was commissioned in September 2018. This is a substantial period prior to the Assessment Protocol published in GN 320 on 20 March 2020 came into effect. This study was also undertaken and commissioned prior to the Species Protocol published in GN 1150 dated 30 October 2020 (as discussed above in Section A.10) came into effect. Proof of the date of appointment of the Biodiversity specialist, Simon Todd of 3Foxes Biodiversity Solutions, is provided in Appendix F.2 of this BA report. Therefore, this study was undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended. The study undertaken as part of the BA is referred to as Terrestrial Biodiversity Impact Assessment.	C.1
1b	Plant Species Assessment			
1c	Animal Species Assessment			
2	Aquatic Biodiversity Assessment	Yes	Protocol GN320: Aquatic Biodiversity Compliance Statement. Please note that although the Screening Tool notes that an Aquatic Biodiversity Assessment must be undertaken, a Compliance Statement was undertaken instead. The motivation for this is provided in the section below and also in Section B.8 of this BA report. The study undertaken as part of the BA is referred to as the Aquatic Biodiversity Compliance Statement. Note there is no Species Protocol published yet for Aquatic Plants and Animals.	C.2
3	Avian Impact Assessment	Yes	Appendix 6: Impact Assessment Please refer to the section below this table for a motivation why an Avifauna Impact was done in terms of Appendix 6 of the 2014 NEMA EIA Regulations and not in terms of the Avifauna protocol	C.3

	Specialist Study Required by the Screening Tool	Assessment undertaken in BA	Type of Assessment undertaken in BA	Appendix of BA Report
			in GN320.	
4	Bat Impact Assessment	Yes	Appendix 6: Impact Assessment As there is no relevant protocol applicable.	C.4
5	Landscape/Visual Impact Assessment	Yes	Appendix 6: Impact Assessment As there is no relevant protocol applicable	C.5
6	Archaeological and Cultural Heritage Impact Assessment	Yes	Appendix 6: Impact Assessment. An integrated HIA, including Archaeology, Cultural Landscape and Palaeontology, has been undertaken. Refer to Appendix C.6. As there is no relevant protocol applicable	C.6
7	Palaeontology Impact Assessment			
8	Agricultural Specialist Assessment	Yes	Protocol GN320: Agricultural Assessment Compliance Statement	C.7
9	Socio-Economic Assessment	Yes	Appendix 6: Impact Assessment As there is no relevant protocol or theme on the National Web-based Screening Tool.	C.8
10	Noise Specialist Assessment	Yes	Protocol GN 320: Noise Specialist Assessment	C.9
11	Traffic Impact Assessment	Yes	Appendix 6: Impact Assessment As there is no relevant protocol or theme on the National Web-based Screening Tool.	C.10
12	Geotechnical Impact Assessment	Yes	Appendix 6: Impact Assessment As there is no relevant protocol or theme on the National Web-based Screening Tool.	C.11
13	Civil Aviation Assessment	Yes	Protocol GN 320: Site Sensitivity Verification (No requirements for low sensitivity in terms of GN 320)	C.12
14	Defense Assessment	Yes	Protocol GN 320: Site Sensitivity Verification (No requirements for low sensitivity in terms of GN 320)	C.13
15	RFI Assessment	No	Motivation not to undertake a specialist assessment. This motivation was discussed and approved by the DEFF at the pre-application meeting that took place on 18 August 2020. Refer to the motivation provided below in Section A.12.1.	N/A

Therefore, all the Specialist Assessments identified in the Screening Tool had been undertaken and are included in this BA Report (Appendices C.1 - C.13).

The Terrestrial Biodiversity Impact Assessment (Appendix C.1) was commissioned in September 2018. It was therefore commissioned a substantial period prior to the Assessment Protocol for Terrestrial Biodiversity and Species in GN 320 dated 20 March 2020 came into effect. This study was also commissioned and undertaken prior to the Species Protocol published in GN 1150 dated 30 October 2020 (as discussed above in Section A.10) came into effect. Therefore, the Terrestrial Biodiversity Impact Assessment was undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended. Proof of the date of appointment of the Terrestrial Biodiversity specialist, Simon Todd of 3Foxes Biodiversity Solutions, is provided in Appendix F.2.

The Avifauna Impact Assessment (Appendix C.3) was commissioned in February 2019. It was therefore also commissioned a substantial period prior to the publishing and promulgation of the Assessment Protocol in GN 320 on 20 March 2020. Therefore, the Avifauna Impact Assessment was also undertaken in terms of Appendix 6 of the NEMA EIA Regulations, 2014, as amended. This aspect was discussed with the DEFF at the second pre-application meeting which took place on 7 October 2020 (see Presentation of meeting and meeting notes included in Appendix H.2 and Appendix H.3 respectively). DEFF agreed to this approach that the Avifauna Impact Assessment could be undertaken in accordance with Appendix 6 of the NEMA EIA Regulations, 2014, as amended, as confirmed via approval of the pre-application meeting notes (included in Appendix H.4 of this BA Report). In addition, proof of the date of appointment of the Avifauna specialist, Dr. Rob Simmons of Birds and Bats Unlimited, is provided in Appendix F.2 of this BA Report.

An Aquatic Biodiversity Compliance Statement was undertaken (Appendix C.2). According to the National Wetland Map 5 (CSIR, 2018), a large depression wetland is located within the western portion of the Komas WEF study area (Figure B.23). This depression has been indicated as an area of very high sensitivity in terms of Aquatic Biodiversity by the National Environmental Screening Tool (Figure B.24). However, upon investigation of this area during the field survey undertaken in January 2020 it was found that the area indicated as wetland habitat is in fact an extensive dune field. This dune field is a flat area located between two ridge lines and is characterised by fresh, wind-blown sand and dry terrestrial vegetation (Figure B.25). There is no indication that water accumulates within this area, and no wetland indicators as defined by the delineation guidelines (DWAF 2005, updated 2008) were encountered e.g. hydromorphic soils, wetland vegetation, signs of salt accumulation or hardened / cracked surface layers. Therefore, the site sensitivity verification disputes the rating of very high sensitivity assigned to this area in the National Web-Based Screening Tool in terms of Aquatic Biodiversity. An Aquatic Biodiversity Compliance Statement was therefore undertaken instead of an Aquatic Biodiversity Specialist Assessment. This approach was discussed and confirmed with DEFF at the first pre-application meeting held on 18 August 2020 (see Appendix H.2 for the presentation, Appendix H.3 for the meeting notes and Appendix H.4 for DEFF's approval of the meeting notes).

A Noise Specialist Assessment was conducted in accordance with the requirements of the Noise Protocol published in GN 320 on 20 March 2020 as there are WTGs within 2 000 m from NSDs (as per the requirements of SANS 10328:2008). This approach was discussed and confirmed with DEFF at the first pre-application meeting held on 18 August 2020 (see Appendix H.2 for the presentation, Appendix H.3 for the meeting notes and Appendix H.4 for DEFF's approval of the meeting notes).

In addition to the specialist studies noted above, technical studies were also undertaken to inform the BA process:

- Terrestrial Biodiversity Mitigation Strategy Assessment
- Biodiversity Offset Implementation
- Wake Effects Assessment
- Geology Assessment

It is important to note that these technical reports do not comply to Appendix 6 of the NEMA EIA Regulations, 2014, as amended. This approach was discussed and confirmed with DEFF at the first and second pre-application meetings held respectively on 18 August 2020 and 7 October 2020 (see Appendix H.2 for the presentations, Appendix H.3 for the meeting notes and Appendix H.4 for DEFF's approval of the meeting notes).

A.11.1 Square Kilometre Array and Radio Frequency Interference

The AGA Act (Act 21 of 2007) aims to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; to provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and to provide for matters connected therewith. The purpose of the AGA Act is to preserve the geographic advantage areas that attract investment in astronomy. The AGA Act also notes that declared astronomy advantage areas are to be protected and properly maintained in terms of RFI. The AGA Act is administered by the Department of Higher Education, Science and Technology (previously the Department of Science and Technology).

According to the CSIR Wind and Solar Phase 2 SEA (DEFF, 2019: Part 3, Page 2), the majority of the mid-frequency dish array of the SKA will be constructed in the core which is in located in the Northern Cape; with dish antennas being located in the spiral arms. The South African component of the SKA will consist of approximately 3 000 receptors comprising dish antennas, each with a diameter of 15 m, and radio receptors known as dense aperture-arrays. The outer stations in the spiral arms will extend beyond the borders of South Africa and at least 3 000 km from the core area. About 80% of the receptors, including a dense core and up to 5 spiral arms, will be located in the KCAAA (DEFF, 2019: Part 3, Page 2).

The KCAAA, which is located between Brandvlei, Van Wyksvlei, Carnarvon and Williston in the Northern Cape Province, was officially declared in 2014 by the Minister of Science and Technology in terms of the AGA Act for the purposes of protection RFI and EMI. The declaration of the KCAAA ensures the long term viability of the area to be used for astronomical installations (DEFF, 2019: Part 3, Page 2).

The main impacts of RE developments on the SKA is RFI. RFI is a part of the Electromagnetic Compatibility (EMC) discipline that includes Electromagnetic emissions and Electromagnetic immunity. The location of the proposed project does not pose an EMI or RFI risk to the SKA, as the proposed project is located outside of the KCAAA. Refer to Figure A.8 for the location of the proposed project in relation to the SKA and KCAAA. Furthermore, based on the findings of the Wind and Solar Phase 1 SEA (DEA, 2015), the proposed project site falls within an area of low sensitivity in terms of SKA sensitivity for the development of wind energy. This also aligns with the findings of the Screening Tool (i.e. the proposed project site falls within a low sensitivity in terms of the relative RFI theme sensitivity).

During the pre-application meeting with DEFF undertaken on 18 August 2020, it was explained that it is not intended to commission a RFI study for the proposed project due to its location away from the

SKA and KCAAA and the findings of the Screening Tool. This motivation for exclusion was acknowledged and approved by the DEFF during the pre-application meeting, with the recommendation for such motivation to also be included in the BA Report. All correspondence relating to the pre-application meeting is addressed in Appendix H of this BA Report.

Furthermore, the SKA is on the project I&AP database as a key stakeholder, and will be informed of the availability of the Draft BA Report for a 30-day comment period. Therefore, the SKA can provide comment on the project during the 30-day comment period.

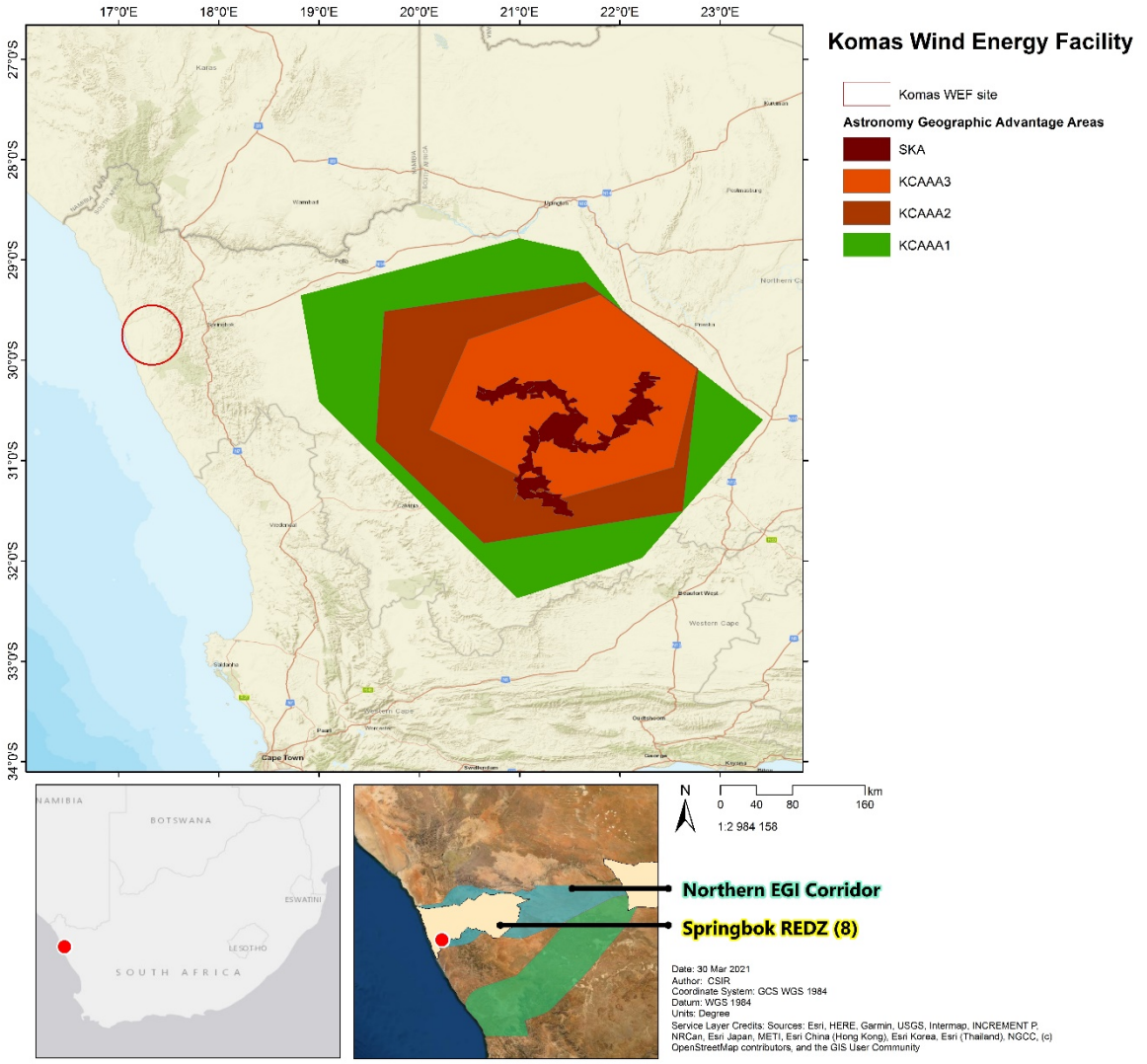


Figure A.8. Location of the proposed project in relation to the SKA and KCAAA

A.12 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 Competent Authority, 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.

The NEMA EIA Regulations, 2014, as amended, define alternatives, in relation to a proposed activity, as "different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

- property on which or location where the activity is proposed to be undertaken;
- type of activity to be undertaken;
- design or layout of the activity;
- technology to be used in the activity;
- operational aspects of the activity; or
- and includes the option of not implementing the activity."

Regulation 2 (e) of Appendix 1 of the NEMA EIA Regulations, 2014, as amended, states that one of the objectives of the BA 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 site 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.

A.12.1No-go Alternative

The No-Go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Komas WEF and associated infrastructure. This alternative would result in no environmental impacts on the site or surrounding local area as a result of the proposed project. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

The following implications will occur if the "No-Go" alternative is implemented (i.e. the proposed project does not proceed):

- No benefits will be derived 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 “no go” alternative will not contribute to and assist the government in achieving its renewable energy target of 26 630 MW total installed capacity by 2030 (for Wind, Solar PV and Concentrated Solar Power);
- Electricity generation will remain constant (i.e. no renewable energy generation will occur on the site for the proposed project) and the local economy in terms of surrounding communities and towns within the local municipality will not be diversified;
- There will be lost opportunity for skills transfer and education/training of local communities;
- The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realised;
- There will be no opportunity for additional employment in an area, where job creation is identified as a key priority;
- The local economic benefits associated with the REIPPPP will not be realised, and socio-economic contribution payments into the local community trust will not be realised;
- Coal fired power stations will not promote the generation of green energy and will therefore not directly contribute to South Africa’s response to climate mitigation; and
- Electricity from coal is more expensive compared to Wind and solar energy which are the cheapest sources of electricity in South Africa. The development of the proposed Komas WEF can contribute to the competitive nature of the REIPPPP to drive prices down even further to ensure that South Africans have access to affordable yet clean electricity. Hence, if renewable energy facilties are not developed, this opportunity will be lost.

Converse to the above, the following benefits could occur if the “No-Go” alternative is implemented:

- The agricultural land use, i.e. sheep farming will remain;
- No vegetation or SCC (flora and fauna) will be removed or disturbed during the development of the proposed project;
- No impact on the CBA 1 and CBA 2 and the NC-PAES Focus Area;
- No destruction of habitat will occur;
- No visual impacts due to the establishment of the project and no change to the current landscape will occur;
- No heritage artefacts or palaeontological resources will be impacted on;
- No avifaunal impacts will occur due to the establishment of the project;
- No impacts to bats will occur due to the establishment of the project;
- No noise impacts either during the construction phase or during the operational phase when wind turbines are rotating;
- No additional traffic generation and no associated dust will be generated during the construction of the proposed Komas WEF; and
- No additional water use will be required during the construction or operational phases.

Table A.8. Summary of No-Go Alternative from Specialist Assessments

Specialist Study	No-Go Alternative Assessment
Terrestrial Biodiversity Impact Assessment	The No-Go alternative would result in the development not going ahead and the current land-use of extensive livestock grazing continuing at the site. Although extensive livestock grazing can be compatible with biodiversity maintenance, it can also result in a decline in plant and animal species richness if grazing pressure is too high. In the long-term the No-Go alternative would result in the maintenance of the status quo, which can be considered to represent a low negative impact on biodiversity.
Aquatic Biodiversity Impact Assessment	There are no water courses on the proposed Komas WEF project site. Therefore, there will be no impact to the aquatic biodiversity, regardless if the proposed Komas WEF is developed or not.
Avifauna Impact Assessment	The No-Go alternative will result in no additional impacts on avifauna (especially on the Priority bird species) and will result in the ecological status quo being maintained, which will be advantageous to the avifauna. Should the proposed Komas WEF (and other renewable energy projects) not be developed SA will continue its dependence on fossil-fuel instead of turning to green energy which will reduce greenhouse gas emissions and associated climate change which will be a hugely positive move for South Africa.
Bat Impact Assessment	Although the No-Go option was investigated, it is understandable that this is a renewable energy development within the Springbok REDZ, and development is inevitable. One development option, i.e. the proposed WEF, was provided, which is the preferred option.
Visual Impact Assessment	The 'No-Go' alternative is essentially the option of not developing a WEF in this area. The area would thus retain its visual character and sense of place and there would be no visual impacts
Heritage Impact Assessment (Archaeology, Cultural Landscape and Palaeontology)	• **Archaeology and Cultural Landscape:** The No-Go alternative would entail the site staying as it currently is. This means its continued use for small stock grazing and the continued natural erosion, weathering and trampling by animals. Palaeontological resources would not likely be affected because significant fossils will remain buried, but archaeological materials would suffer very minimal impacts. The landscape would remain unchanged. Overall, the significance of impacts related to the No-Go alternative is considered to be very low negative. • **Palaeontology:** The No-Go alternative would entail the site staying as it currently is. This means its continued use for small stock grazing and the continued natural erosion, weathering and trampling by animals. Palaeontological resources would not likely be affected because significant fossils will remain buried. Overall, the significance of impacts related to the No-Go

Specialist Study	No-Go Alternative Assessment
	alternative is considered to be very low negative.
Agricultural Compliance Statement	The No-Go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. The one identified potential such impact is that due to continued low rainfall in the area, in addition to other economic and market pressures on farming, the agricultural enterprises will come under increased pressure in terms of economic viability, with resultant potential decrease in productivity. The proposed development has both positive and negative agricultural impacts. The balance of positive and negative agricultural impacts associated with both the development and the No-Go alternative – that is the extent to which the development and the No-Go alternative will impact agricultural production – cannot reliably be determined to be significantly different. Therefore, from an agricultural impact perspective, there is no preferred alternative between the development and the No-Go alternative. The agricultural impact of the proposed development can confidently be assessed as negligible without entering into a more formal assessment.
Socio-Economic Impact Assessment	The No-Go alternative would represent a lost opportunity for South Africa to supplement is current energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producer of carbon emissions in the world, this would represent a High negative social cost. The No-Go Development alternative also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed Komas WEF and the benefits associated with the establishment of a Community Trust. This also represents a negative social cost. However, at a provincial and national level, it should be noted that the proposed Komas WEF development is not unique. In this regard, a significant number of other renewable energy developments are currently proposed in the Northern Cape and other parts of South Africa. Foregoing the proposed establishment of WEFs would therefore not necessarily compromise the development of REFs in the Northern Cape Province and or South Africa. However, the socio-economic benefits for local communities in the NKLM would be forfeited. Given the decline in the role played by mining and the limited economic opportunities in the NKLM, the No-Go Development Alternative would represent a significant lost opportunity for the area and is not supported by the findings of the Socio-Economic Assessment. The No-Go Development alternative is rated as High Negative.
Noise Assessment	The No-Go alternative will result in the ambient sound levels remaining

Specialist Study	No-Go Alternative Assessment
	as is (relatively low).
Transport Impact Assessment	Based on the findings of this assessment, the potential increase in traffic and the associated noise and dust pollution have been rated as high before mitigation during the construction and decommissioning phases of the proposed Komas WEF. However, the phases will be short-term and the traffic volumes are expected to be low. Therefore, the significance of the impacts can be reduced to moderate after mitigation. It is envisaged that most materials, water, plant, services and people will be procured within a 60 km radius from the proposed Komas WEF. The potential impacts associated with proposed Komas WEF and associated infrastructure are acceptable from a transport perspective and it is therefore recommended that the proposed facility be authorised, provided that the proposed recommendations and mitigation measures are adhered to.
Geotechnical Impact Assessment	Should the proposed Komas WEF not be developed, there will be no geotechnical impacts associated with the proposed development.

As outlined in Section D of this report, the majority of the negative impacts identified as part of this assessment can be reduced to moderate or low significance with the implementation of mitigation measures. None of specialists found that the proposed project should not go ahead i.e. no fatal flaws were identified. As noted above, the Socio-Economic Impact Assessment identified positive impacts from a social upliftment perspective. These include benefits to the local community via employment opportunities and the development of locally-owned industries to support construction related activities.

Hence, while the “No-Go” alternative will not result in any negative environmental impacts as a result of the proposed project; it will also not result in any positive community development or socio-economic benefits. It will not assist government in addressing climate change, reaching its set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. Hence the “No-Go” alternative is not a preferred alternative, or a reasonable and feasible alternative considered in this BA process.

A.12.2Land-use Alternatives

All farm portions forming part of the project are zoned for agricultural land-use, and are mainly used for either commercial livestock grazing, communal use or subsistence farming. As noted in the Agriculture Compliance Statement (Appendix C.7) of this BA Report, agricultural potential is uniformly low across the affected farms. The major limitations to agriculture are the severely limited climatic moisture availability and the sandy soils with low water holding capacity. As a result of these limitations, the agricultural use of the study area is limited to low intensity grazing only. The project site is classified with a predominant land capability evaluation value of 5 (low), although it varies from 4 to 6 across the site (Land Capability Classification for South Africa, 2017). The grazing capacity on AGIS is classified as low at 45 hectares per large stock unit. Hence, agricultural land use is not a preferred, or a reasonable and feasible alternative considered in this BA process. The proposed Komas WEF will generate an additional income stream to the landowners and is therefore the preferred land use alternative and will not impede on the existing agricultural practises to still continue on site.

In order for South Africa to achieve its renewable energy generation goals, agriculturally zoned land will need to be used for renewable energy generation. It is far more preferable to incur a cumulative loss of agricultural land in a region such as the one being assessed, which has no cultivation potential, and low grazing capacity, than to lose agricultural land that has a higher potential, and that is much scarcer, to renewable energy development elsewhere in the country. The limits of acceptable agricultural land loss are far higher in this region than in regions with higher agricultural potential.

It is important to re-iterate that the economic benefits to the landowners associated with the proposed WEF are likely to be more significant than that of the current livestock farming activities on site. The proposed development offers a land use with much higher income generating capacity than any viable agricultural land use on the site. Based on the above, the agricultural land use is not a preferred alternative.

Refer to Sections B and D of this report for a summary of the Agriculture Compliance Statement, as well as Appendix C.7 for the complete report.

A.12.3Type of Activity - Renewable Energy Alternatives

Where the "activity" is the generation of electricity from a renewable energy source, i.e. wind, possible alternatives that could be considered on the project site include renewable energy technologies such as Hydro Energy, Biomass, and Solar Energy. **However, based on the preliminary investigations undertaken by the Applicant, the generation of electricity from wind is deemed to be most appropriate for the site**. The other renewable energy development options for the site, as well as the potential risks and impacts of each, are discussed below.

A.12.3.1 Hydro Energy

The proposed project site does not contain any large inland water bodies, which excludes the possibility of renewable energy from small or large scale hydro energy generation. In terms of micro hydro power potential, the South African Renewable Energy Resource Database (SARERD), has classified the proposed project site as "Not Suitable" (Figure A.9). Therefore, the implementation of a Hydro Energy Facility at the proposed site is not considered to be a reasonable and feasible alternative to be assessed as part of this BA process.

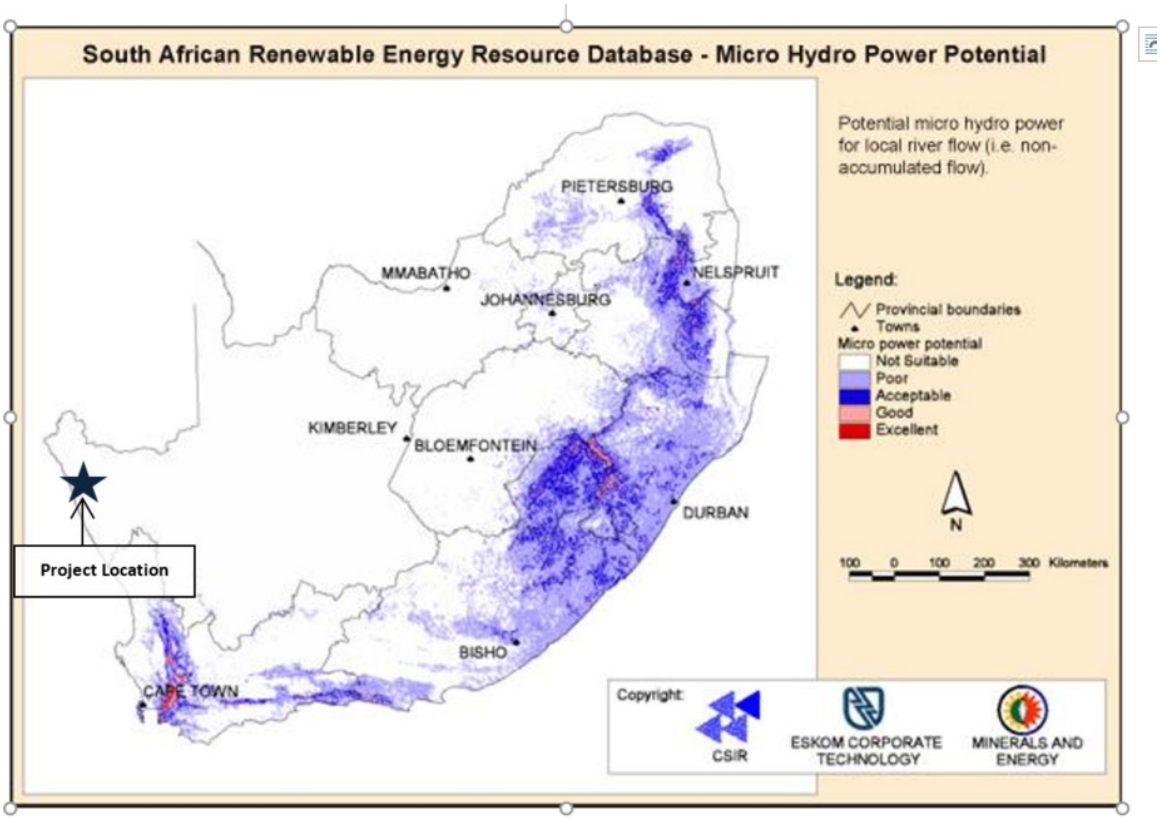


Figure A.9: Micro Hydro Power Potential (Source: SARERD, 2016).

A.12.3.2 Biomass Energy

According to the SARERD, the project site does not contain any abundant or sustainable supply of biomass (Figure A.10). Therefore, the implementation of a Biomass Energy Facility at the proposed site is not considered to be a reasonable and feasible alternative to be assessed as part of this BA process.

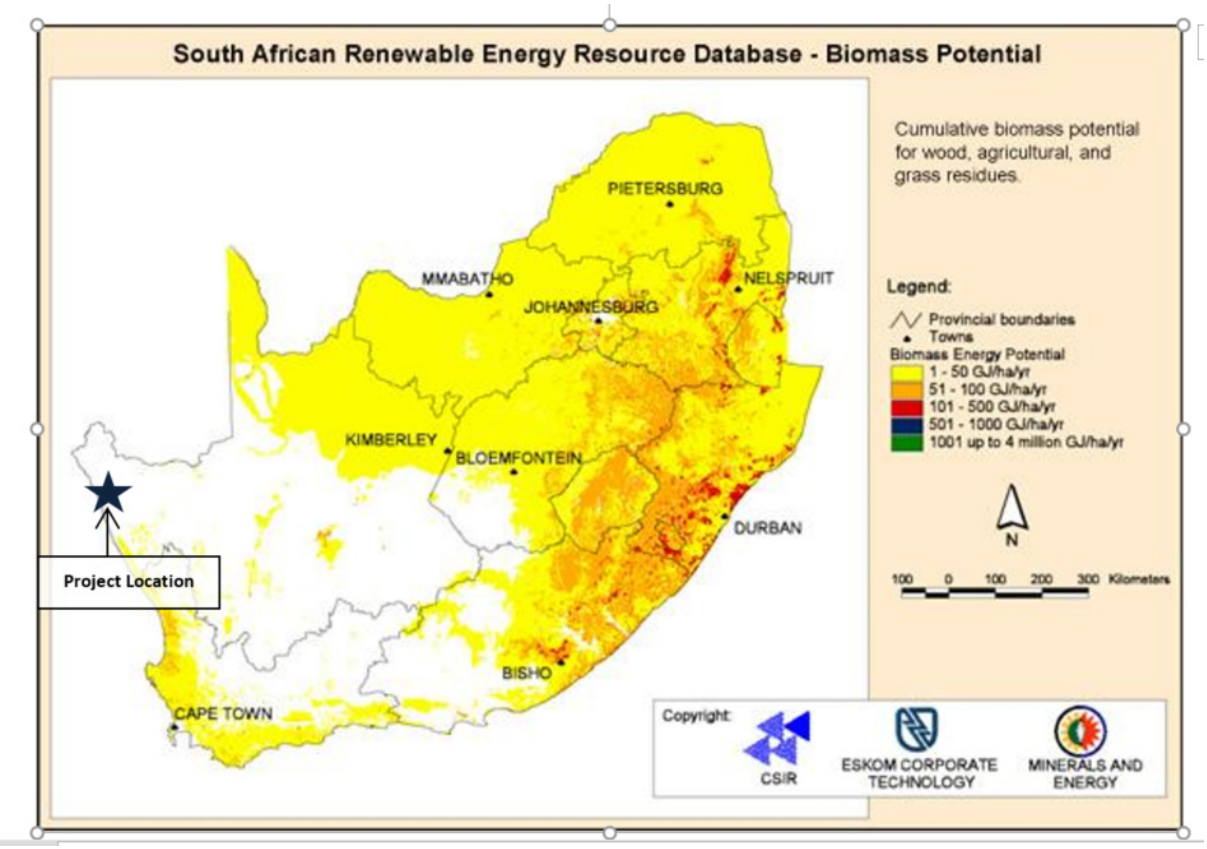


Figure A.20: Biomass Potential (Source: SARERD, 2016).

A.12.3.3 Wind and Solar Energy

- 2019 Integrated Resource Plan, Wind and Solar SEA

The 2019 Integrated Resource Plan (IRP) was published in GG 42784, GN 1360 on 18 October 2019 for the period 2019 to 2030. As indicated in Figure A.11, coal makes up approximately 43 % of the total installed capacity indicated in the 2019 IRP, whereas Wind and Solar PV respectively make up 23 % and 10 %.

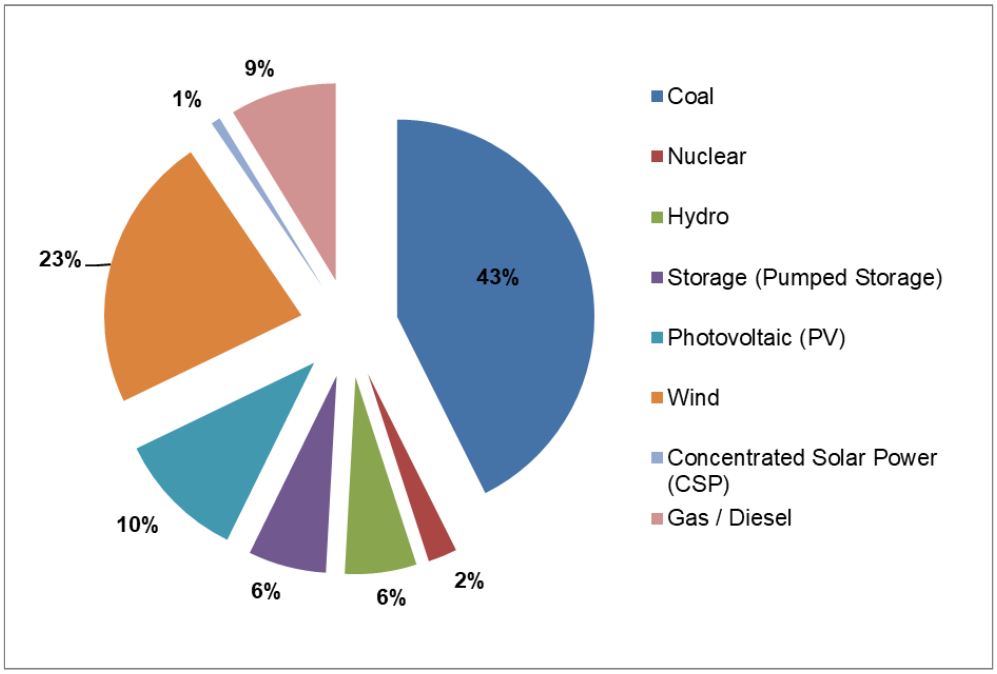


Figure A.11. 2019 IRP Total Installed Capacity (% of MW)

The 2019 IRP proposes to secure 26 630 MW of renewable energy capacity by 2030 (for Wind, Solar PV and Concentrated Solar Power (CSP)). This amount excludes Hydropower and Pumped Storage. Of this total, 1 980 MW of Wind, 1 474 MW of Solar PV, and 300 MW of CSP is already installed capacity. In addition, of the 26 630 MW, approximately 1 362 MW of Wind, 814 MW of Solar PV, and 300 MW of CSP is committed or already contracted capacity. Furthermore, 14 400 MW of Wind and 6 000 MW of Solar PV is new additional capacity. This is indicated in Figure A.12.

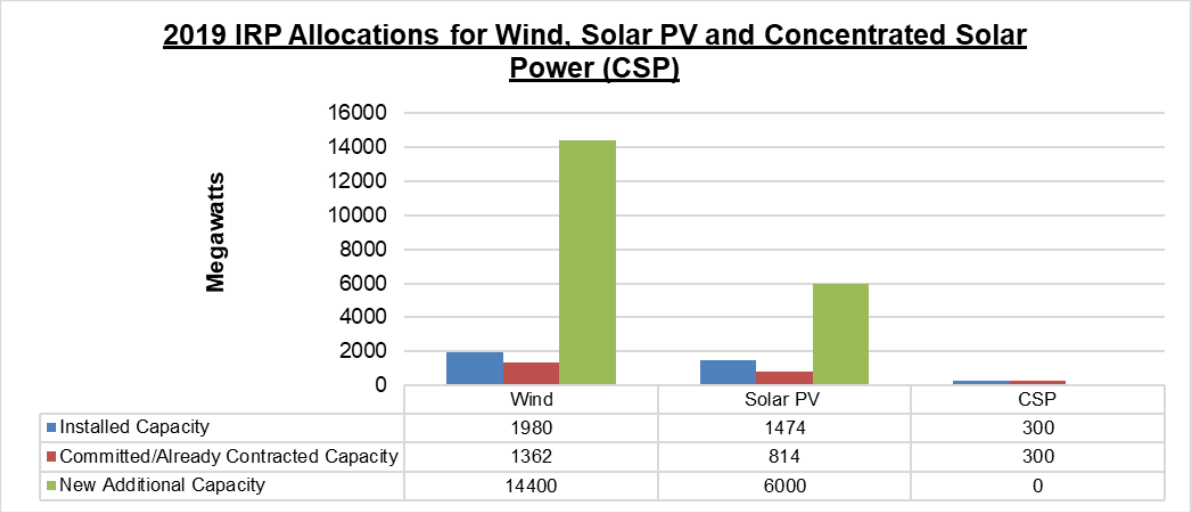


Figure A.12. 2019 IRP Allocations for Wind, Solar and CSP in MW

Linked to the 2010 IRP, the DMRE entered into a bidding process for the procurement of 3 725 MW of renewable energy from IPPs by 2016 and beyond. On 18 August 2015, an additional procurement target of 6 300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in GG 39111.

On 7 July 2020, in GG 43509 and GN 753, the Minister of the DMRE, in consultation with the National Energy Regulator of South Africa (NERSA), determined that new generation capacity needs to be procured to contribute towards energy security. Specifically, 2 000 MW will be procured from a range of energy source technologies in accordance with the short-term risk mitigation capacity allocated for the years 2019 to 2022 (under "other" in the allocation table contained in 2019 IRP). In line with this, the Risk Mitigation IPP Procurement Programme (RMIPPPP) was designed and launched in August 2020 by the DMRE in order to fulfil the GN 753 Ministerial Determination.

In order to submit a bid in terms of the REIPPPP, the proponent is required to have obtained an EA in terms of the NEMA EIA Regulations, 2014, as amended as well as several additional authorisations or consents. Linked to this, the DEA in discussion with the Department of Energy (DoE) (now respectively operating as the DEFF and DMRE), was mandated by Ministers and Members of Executive Council (MinMec) to commission a SEA to identify the areas in South Africa that are of strategic importance for Wind and Solar PV development. The Phase 1 Wind and Solar PV SEA[4] was completed in 2015, and was in support of the Strategic Infrastructure Plan (SIP) 8, which focuses on the promotion of green energy in South Africa. As noted above, the SEA aimed to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy project, referred to as REDZs. Through the identification of the REDZs, the key objective of the SEA was to enable strategic planning for the development of large scale wind and solar PV energy facility in a manner that avoids or minimises significant negative impact on the environment while being commercially attractive and yielding the highest possible social and economic benefit to the country – for example through strategic investment to lower the cost and reduce timeframes of grid access. Following the completion of the SEA, the REDZs were gazetted in February 2018 in GN 114 by the Minister of Environmental Affairs. The location of the proposed project within a REDZ (specifically the Springbok REDZ (REDZ 8)) supports the development of a large scale renewable energy project in the location (Refer to Figure A.13). The proposed project is therefore in line with the national planning vision for wind and solar development in South Africa.

[4] More information on the SEA can be accessed at https://redzs.csir.co.za

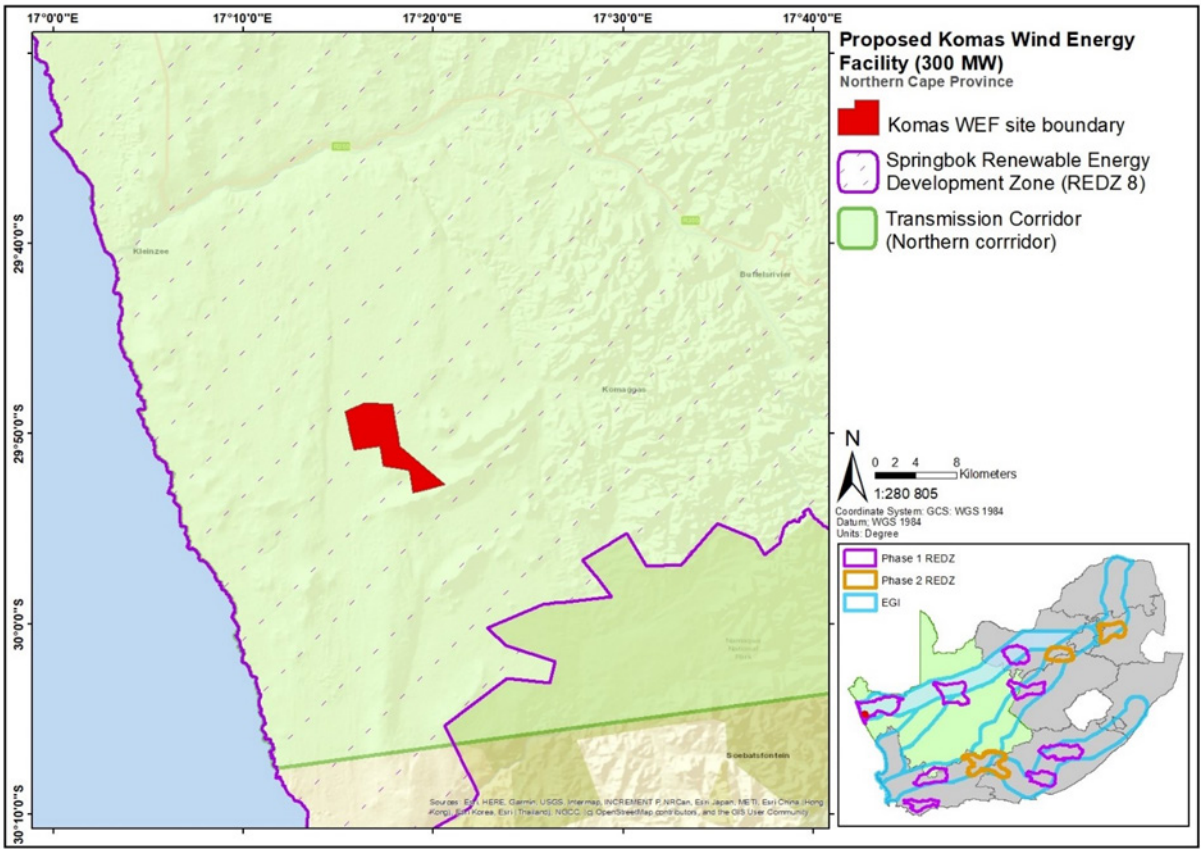


Figure A.13: Renewable Energy Development Zones identified in the SEA which were gazetted in Phase 1 in GG 41445 on 16 February 2018 (the proposed Komas WEF falls within the Springbok REDZ (REDZ 8)) and Phase 2 in Gazette 44191, GN 144 on 26 February 2021.

Solar Energy

- National Level Considerations: Solar Radiation

In terms of the suitability of solar development at this location, the proposed project site has a high Global Horizontal Irradiation[5] (GHI), relevant to solar PV installations (Figure A.14). As indicated in Figure A.14, the site has a GHI of 2 000 – 2 200 kWh/m^2 in terms of the long-term yearly total. Therefore, this area is deemed suitable for the construction and operation of solar PV facilities as opposed to other areas and provinces within South Africa.

[5] Global Horizontal Irradiance is the total amount of shortwave radiation received from above by a surface horizontal to the ground

Solar energy is therefore considered to be the most feasible alternative to wind energy for this site when compared to biomass and hydro energy; however, the site specific requirements for a solar PV facility make it a less feasible alternative when compared to wind energy for this particular site. The most important limitation for a solar PV development on this site is the topography. With sandy ridges there is limited flat suitable land on which to place large PV arrays. Furthermore, the site is foggy in the morning, so the solar panels will only be able to absorb the sun later in the day, hence the generation of electricity will be less effective. Solar panels need to be cleaned regularly and access to good quality water is required. Due to the scarcity of water in the area this is a limiting factor. Solar PV facilities comprises a bigger footprint compared to WEF and would thefore require more vegetation clearing which is a limiting factor to the conservation of biodiversity on site.

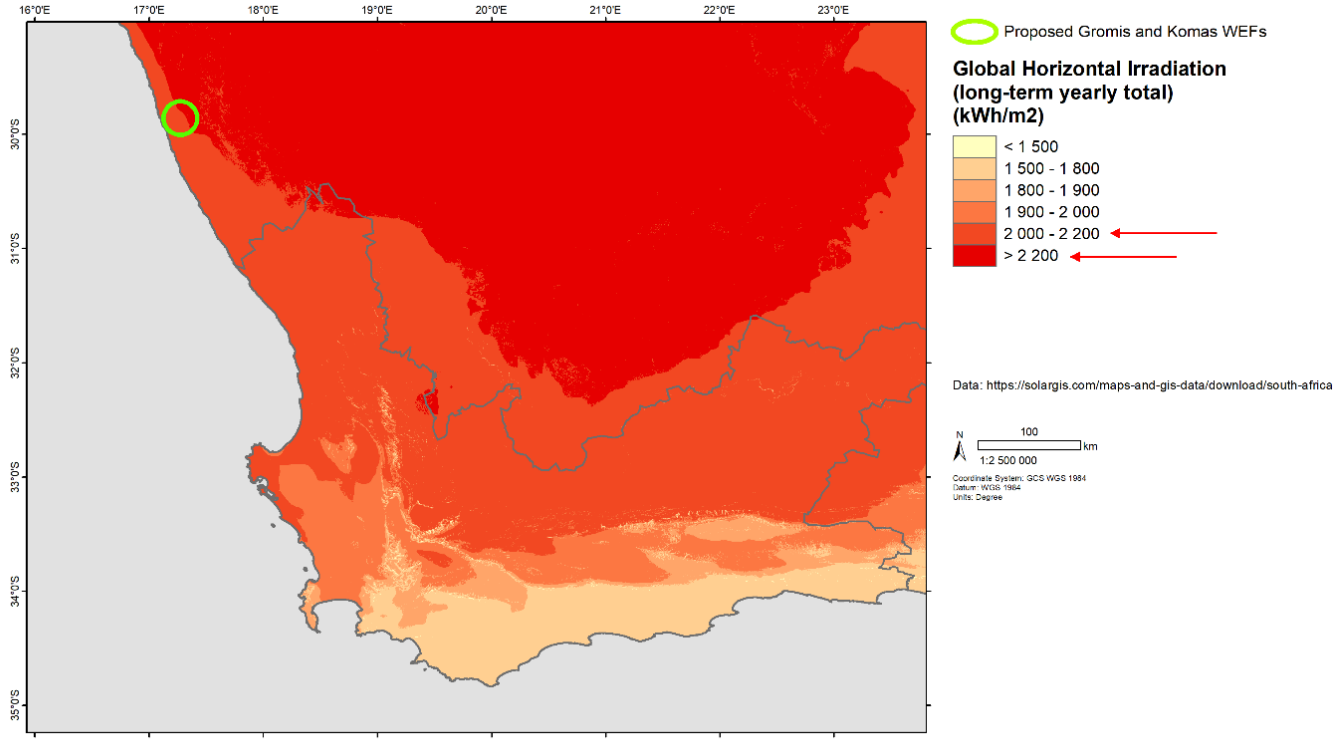


Figure A.14. Solar Resource Availability in South Africa and at the proposed Komas WEF site

Concentrated Solar Power (CSP)

Due to the scarcity of water in the proposed project area and the large volume of water required for CSP, this technology is not deemed feasible or sustainable and will not be considered in the BA. Furthermore, CSP technology requires a larger development footprint to obtain the same energy output as wind technology, and it requires active solar tracking to be effective. As described above, in terms of the 2019 IRP, 300 MW capacity is already installed for CSP; and an additional 300 MW has been allocated for 2019, whilst there is no new additional capacity allocated for this technology. Wind energy is allocated an additional new capacity of 14 400 MW in terms of the 2019 IRP. This means that the need and desirability of CSP is not as evident and justified compared to wind energy. Due to the proximity to the coast and resulting fogging, the scarcity of water, and the uneven topography of

the site, solar PV and CSP technologies are therefore not considered to be reasonable and feasible alternatives to be assessed as part of this BA process.

Wind Energy

One of the most important criterion to take into consideration when selecting a potential site for a WEF is the availability of a reliable wind resource. Wind resource is defined in terms of average wind speed and includes Weibull distribution (used to describe wind speed distributions); turbulence, wind direction, and pattern of wind direction (as depicted by a wind rose). These factors are all key considerations used in determining whether a site is suitable for the development of a WEF. Measurements provided by the Wind Atlas of South Africa (WASA) indicate that the mean wind speed at the proposed Komas WEF site is 6-8 ms^{-1} (as shown in Figure A.15).

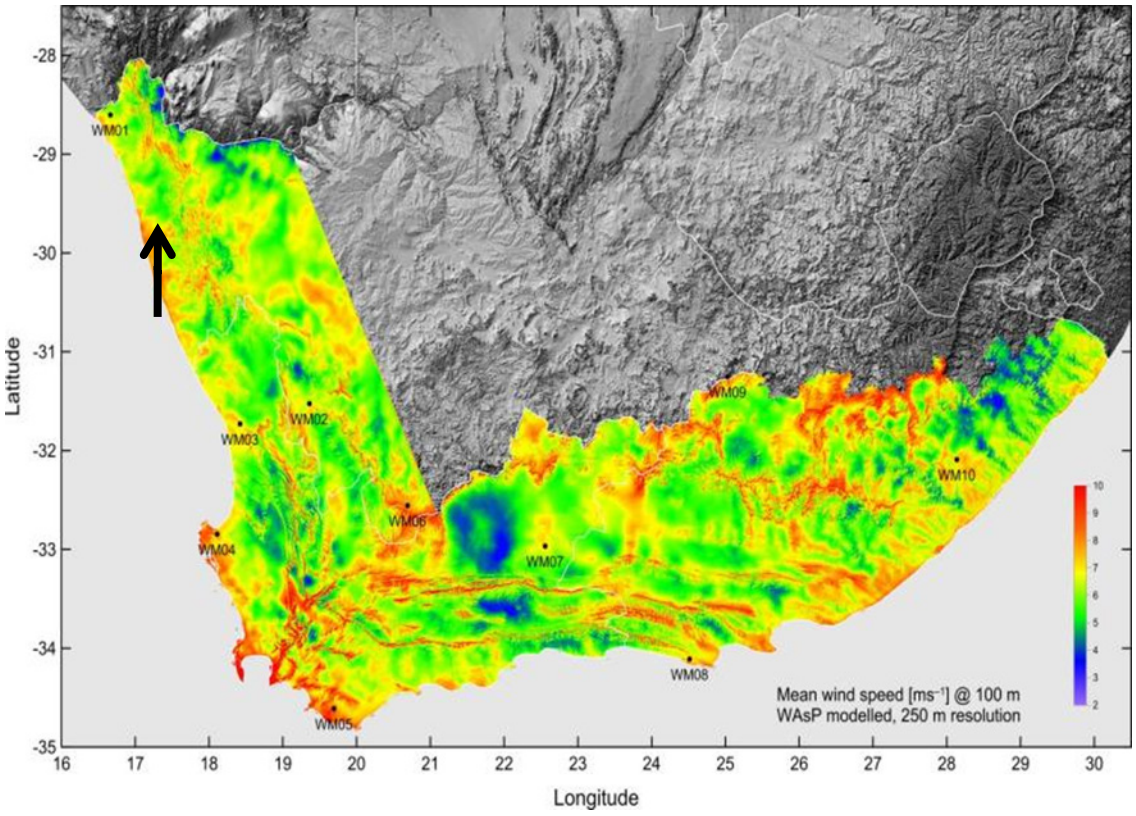


Figure A.15: Representation of Mean Wind Speed (ms^{-1} at 100 m) (*Source*: WASA, 2014).

A mean wind power density map has also been created (CSIR, 2018), which is not related to any specific turbine type and demonstrates the wind resource of the country. The mean wind power density map shows that the project site falls within an area of 400 W/m^2, which is considered as good viability for a wind project (Figure A.16).

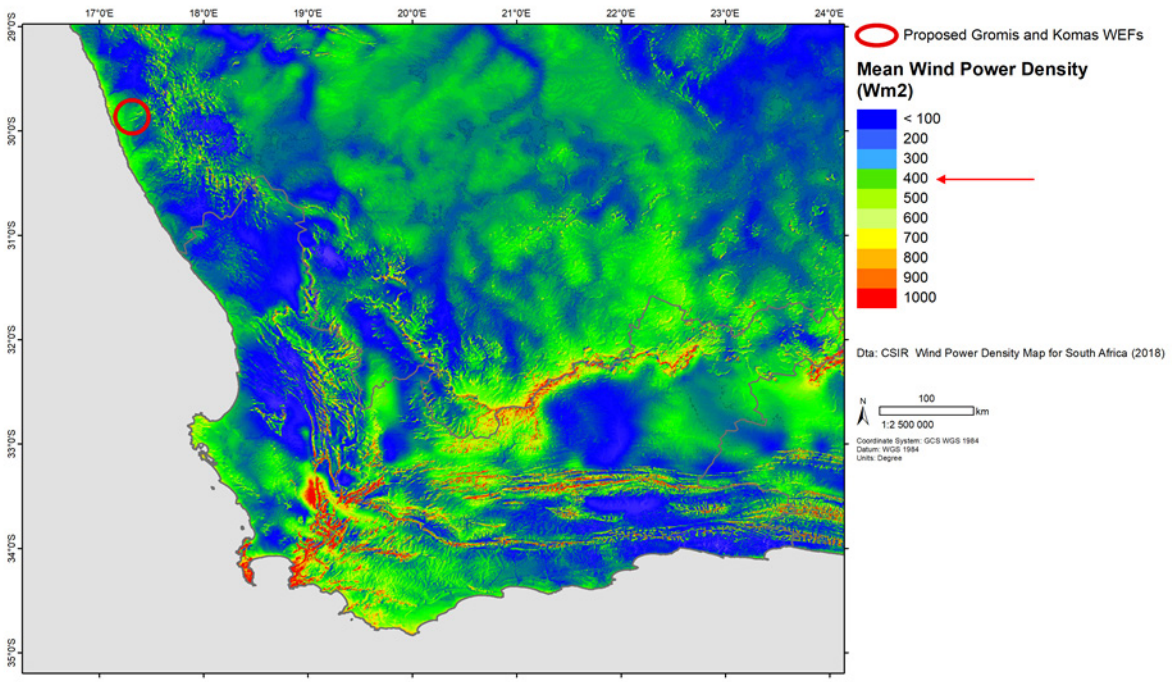


Figure A.16: Wind Power Density map (Wm^2) for South Africa and the Komas WEF site (Source: CSIR, 2018).

Based on the Project Applicant's research of the proposed Komas WEF site as a potential site for the development of a WEF, the proposed land portions located near Kleinsee were selected as an area with a good wind resource. A wind measuring mast has been installed on site to provide wind measurements to verify the potential of the resource. The process of collecting on-site wind data is necessary to confirm the bankable viability of the proposed project. The provision of at least 12 months' on-site wind monitoring data is also a requirement of the REIPPPP. Data received from consistent measurements for more than a year indicated that the wind resource at the proposed Komas WEF site is very good. Furthermore, the 2019 IRP allocated a higher additional target to wind energy compared to solar energy (i.e. 14 400 MW as opposed to 6 000 MW) which further supports the development of a WEF at this location.

Therefore, the Project Applicant has determined that the generation of electricity from wind at the Komas site is considered to be the preferred technology alternative, as it would be able to generate sufficient energy to support an economically viable WEF.

Given the above, the **development of a WEF is the preferred technology** to be developed on site because:

- The proposed Komas WEF falls within the Springbok REDZ (REDZ 8). The REDZs were gazetted on 16 February 2018 in GG No. 41445. The proposed project is therefore aligned with the criteria of the SEA and located in an area of strategic importance for wind energy development in South Africa;
- The site has a good wind resource based on WASA data (6-8 ms^{-1}) on-site measurements, and based on the wind power density map prepared by the CSIR;

- Solar energy, a potential developable technology on site, would not be as economically viable compared to wind development at this location. Limitations include the topography of the site, fog in the morning which prohibits the absorption of sunlight and the scarcity of water in the area to wash the solar panels; and
- The IRP2019 allocated a higher allocation target to wind energy compared to solar energy (i.e. 14 400 MW compared to 6 000 MW).

Based on the motivation provided above, no other renewable energy technologies alternatives (apart from wind energy) were further assessed during the BA process.

A.12.4Site Alternatives

The following farm portions are considered feasible for the proposed development of the Komas WEF:

- Portion 1 of the Farm Zonnekwa No. 326;
- Portion 2 of the Farm Zonnekwa No. 328;
- Portion 3 of the Farm Zonnekwa No. 328
- Portion 4 of the Farm Zonnekwa No. 328; and
- Portion 4 of the Farm Kap Vley No. 315.

The above areas were subject to intensive screening by the specialists in order to identify the areas to be avoided from an environmentally sensitivity perspective. Therefore, the initial layout went through several iterations following specialist inputs and outcomes to identify the most suitable site from an environmental perspective, whereby all the No-Go areas have been avoided.

The requirement to avoid impacts (and consider alternatives) is paramount in environmental assessment and the mitigation hierarchy and must be pursued before subsequent mitigation steps, especially offsets, are considered.

However, in this context, a few aspects militate against complete avoidance being pursued as usually envisaged:

1. **National planning initiatives:** The proposed Komas WEF is located within the Springbok REDZ (REDZ 8) and the Northern EGI Corridor. The area has therefore been identified as being suitable for the establishment of REFs and the associated grid connection infrastructure. The location of the proposed development is also aligned with the national planning and investment initiatives which aim to strengthen the transmission infrastructure in order to support much needed new generation capacity set out in the IRP, which has allocated 14.4 GW of wind power by 2030.
2. **Proximity to the grid:** The location of a WEF in relation to the EGI is a key consideration of the feasibility of the proposed project. The proposed Komas WEF will connect to the existing Gromis MTS which is approximately 30 km from the site. This was one of the key factors which informed the suitability of the proposed Komas WEF from a technical and feasibility perspective.
3. **Connection to the Gromis MTS:** As the area is a designated REDZ, several IPPs are developing REFs in the area. As such, Eskom has a strategic plan for all IPPs to connect to the Gromis MTS via two 132 kV servitudes running alongside the Juno-Gromis 400 kV line via a Collector SS where all IPPs will connect to avoid multiple power lines running to Gromis MTS.

4. **Land use conflicts and existence of mining rights:** The multiple degraded areas in this landscape are almost invariably located along the coast, in current mine lease areas. Section 53 (1) of the Mineral Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) requires permission from the Minister of Mineral Resources and Energy to use the surface of any land contrary to the object of the Act. There is a long history of frustrated attempts to obtain approval in terms of Section 53 (1) of the MPRDA and to secure old mine land to locate turbines– most of which have been unsuccessful unless the applicant is or is supported by the mining right holder. This requirement excludes most of the prospective degraded areas along the coast.
5. **Degraded areas within a REDZ:** The process of securing sites for WEF development prevents any applicant from perfectly exhausting degraded areas within any REDZ: it can only really be achieved at a site scale. Almost all the areas are extensive stock farms, with only small degraded areas which do not always align with turbine placement requirements.
6. **Agreements with landowners:** Concluding an agreement with the landowner giving the developer the exclusive option to register a lease over the property for the development of the wind farm can be complicated and challenging on land that is not privately owned.
7. **Other competing WEF applications:** The DEFF Renewable Energy EIA Application (REEA) database (q3 2020) indicates that much of the surrounding areas are subject to some form of renewable energy lease application, environmental assessment process, or already have authorised WEFs located on the land. This is not surprising given the location in a REDZ.
8. **Physical and technical constraints:** Salt-driven corrosion militates against many coastal sites, and geotechnical concerns prevent (or make extremely costly) turbine location on unconsolidated sediments.
9. **Joint Venture:** The Project Applicant comprises a Joint Venture (JV) between Genesis Eco-Energy Developments (Pty) Ltd (Genesis) and ENERTRAG South Africa (Pty) Ltd (ENERTRAG). Genesis also formed a JV to develop the Namas and Zonnequa WEFs which is located in close proximity to the proposed Komas WEF. The Namas and Zonnequa WEFs received EA and are proposed by Genesis Namas Wind (Pty) Ltd and Genesis Zonnequa Wind (Pty) Ltd respectively. The site was therefore also chosen as Genesis has already established themselves as a wind energy Project Developer in this specific area.

On a site specific (local) level, the site was deemed suitable due to all the site selection factors (such as land availability, high wind speed levels, distance to the national grid, site accessibility, topography, current land use and landowner willingness) being favourable. The site selection criteria considered by the Project Applicant are discussed in detail below Table A.9.

Table A.9. Site selection factors and suitability of the site

FACTOR	SUITABILITY OF THE SITE
Land Availability	The land assessed to develop the proposed Komas WEF extends approximately 5 070 ha. The area identified for the Komas WEF site within the affected farms is approximately 2 725 ha. However, the footprint of the Komas WEF within the WEF site is only approximately 90 ha (excluding access roads to the site). Therefore, the site is of a suitable size for the proposed project.
Wind Speed Levels	Above average (6-8 m/s^{-1})
Distance to the Grid	The proposed Komas WEF will connect to the existing Gromis MTS which is located approximately 30 km from the site. The proposed connection of the proposed Komas WEF to the Gromis MTS was assessed as part of a separate BA process.

FACTOR	SUITABILITY OF THE SITE
Site Accessibility	The proposed project site can be accessed via an existing, unnamed public gravel road off the R355. Internal access gravel roads of approximately 10 m wide, including turning circle/bypass area of up to 20 m at some sections during the construction phase. As such, the roads and cables will be positioned within a 20 m wide corridor. Existing roads will be upgraded wherever possible, although new roads will be constructed where necessary.
Topography	The maximum slopes that would be impacted by any footprint of the development is not likely to exceed 10%. There are no steep slopes of 1:4 on the proposed project site.
Fire Risk	The proposed Komas WEF site is restricted almost entirely to the Namaqualand Strandveld vegetation type with a small extent of Namaqualand Klipkoppe Shrubland in the southeast corner of the site. The Namaqualand Strandveld has a low fire risk as it is dominated by succulent species which don't burn easily. For the Namaqualand Klipkoppe Shrubland the fire risk is very low and not likely to be an issue.
Current Land Use	Agriculture – Low potential grazing
Landowner Willingness	The landowners have signed consent for the use of the land for the proposed project (Copies of the letters of consent are included as an appendix to the Application form). This is considered an important aspect of the proposed project in terms of its viability (i.e. this will limit potential appeals during the decision-making process, as the landowners are willing and supportive of the proposed project being undertaken on their farms).

Furthermore, from an impact and risk assessment perspective, the implementation of the proposed Komas WEF on the said farms will most likely result in fewer risks in comparison to its implementation at alternate site within the Northern Cape (i.e. regions with similar wind speeds), based on the following points:

- There is no guarantee that the current land use of an alternative site will be flexible in terms of development potential, for example the agricultural potential for an alternative site/s might be higher and of greater significance. An alternative site may also have mining rights that prohibit the development.
- There is no guarantee of the willingness of other landowners to allow the implementation of a WEF on their land and if the landowners strongly object, then the project will not be feasible.
- There is no guarantee that other alternative sites will be located close to existing or proposed EGI to enable connection to the national grid. The proximity to the Eskom Gromis MTS was a major determinant for identifying a suitable site for the proposed development. The further away a project is from the grid, the higher the potential for significant environmental and economic impacts.

Given the site selection requirements associated with the proposed WEF and the suitability of the land available on the said farms and no fatal flaws identified on site, no other site alternatives were considered as part of the BA process. The proposed Komas WEF site was therefore deemed feasible and selected as the preferred site.

A.12.5Development Footprint Location and Layout Alternatives

The project assessment area extends approximately 5 070 ha, while only approximately 90 ha (i.e. 1.78% of the available land) will be required for the proposed development of the Komas WEF. The preferred development footprint of the Komas WEF on the site is shown in Figure A.17, Figure D.13 and in Appendix A.2. The project site and location were screened and assessed in detail in order to develop the proposed WEF, power line routings and associated electrical infrastructure for the proposed Komas project. The determination of the development footprint within the sites was determined through detailed sensitivity screening which was done by the specialists on the team to identify possible areas that should be avoided by the proposed development (i.e. exclusion zones or No-Go areas). These No-Go areas have been excluded from the proposed development footprints as shown in the sensitivity maps in Figure D.12 and in Appendix A.5). The specialist studies (Appendix C) have highlighted sensitive features within the original development footprint, and thus the footprint has been adjusted multiple times to avoid such features Following the exclusion of the required sensitive areas, sufficient developable area is still available on the sites which does not compromise the current ecological integrity of the sites. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (as included in Figure D.12 in Section D of this report and in Appendix A.5). This map shows the sensitivities on site (e.g. terrestrial biodiversity, avifauna, bats, visual, and sensitive heritage features etc.) within the study area that need to be avoided.

The sensitive environmental features found within the preferred site, as described in the specialist studies (Appendix C) and discussed in Sections B and D of this BA Report, have been avoided by the location, layout and design of the proposed project.

Following the exclusion of the required areas, sufficient developable area is still available on site which does not compromise the current ecological integrity of the site or go against the requirements of the landowners.

A semi-detailed engineering design has also been undertaken to develop the current layout contained in Appendix A and B of this BA Report, which avoids all the environmental sensitivities identified on site, where required. The current layout is thus a culmination of extensive technical, economic and environmental planning.

A.12.5.1 BESS and On-site Substation complex area alternatives

Two site alternatives for the BESS and on-site SS (known as the BESS and SS complex) (i.e. Option 1 and Option 2) have been identified for assessment as part of the BA process (Figure A.1). The preferred alternative identified by each specialist on the specialist team is provided in Table A.10 below.

All the specialists, indicated that both BESS and on-site SS complex area alternatives (Option 1 and Option 2) are feasible. The Aquatic Bat, Heritage, Agriculture, Socio-Economic, Noise, Transport and Geotechnical specialists indicated that there is no preference between the Option 1 and Option 2 alternatives and that both are feasible (Table A.10). The Terrestrial Biodiversity specialist indicated that there is not a strong preference, but Option 2 is preferred as it is adjacent to the proposed Collector SS (if required). The Avifauna specialist noted that Option 2 is the preferred avian alternative since it is (i) closer to the incoming power line and (ii) there are slightly fewer priority bird flights in this area than at Option 1. However, both these specialists confirmed that Option 1 is also favourable from a Terrestrial Ecology and Avifauna impact perspective and does therefore not comprise a fatally flawed alternative. The Visual specialist noted that Option 1 is their preferred alternative as Option 2 is closer to the nearest receptor.

Based on the assessment undertaken by the specialists it is apparent that both BESS and on-site SS site alternatives (Option 1 and Option 2) are feasible and can be implemented. Therefore, as none of the alternatives are fatally flawed, the Project Applicant selected Option 1 to be the preferred alternative as the site is in an optimal location in relation to the proposed turbine layout (see Figure A.17).

Table A.10. Selection of the preferred BESS and on-site Substation complex area alternative (Option 1 or Option 2) by the specialists

Specialist study	**BESS and on-site Substation complex area alternative**	
	Option 1	**Option 2**
Terrestrial Biodiversity	✓	✓
Aquatic Biodiversity	✓	✓
Avifauna	✓	✓
Bats	✓	✓
Visual (including Flicker)	✓	✓
Heritage (Archaeology, Cultural Landscape and Palaeontology)	✓	✓
Agriculture	✓	✓
Socio-Economic	✓	✓
Noise	✓	✓
Transport	✓	✓
Geotechnical	✓	✓

Legend:

	Preferred
	No preference
	Favourable

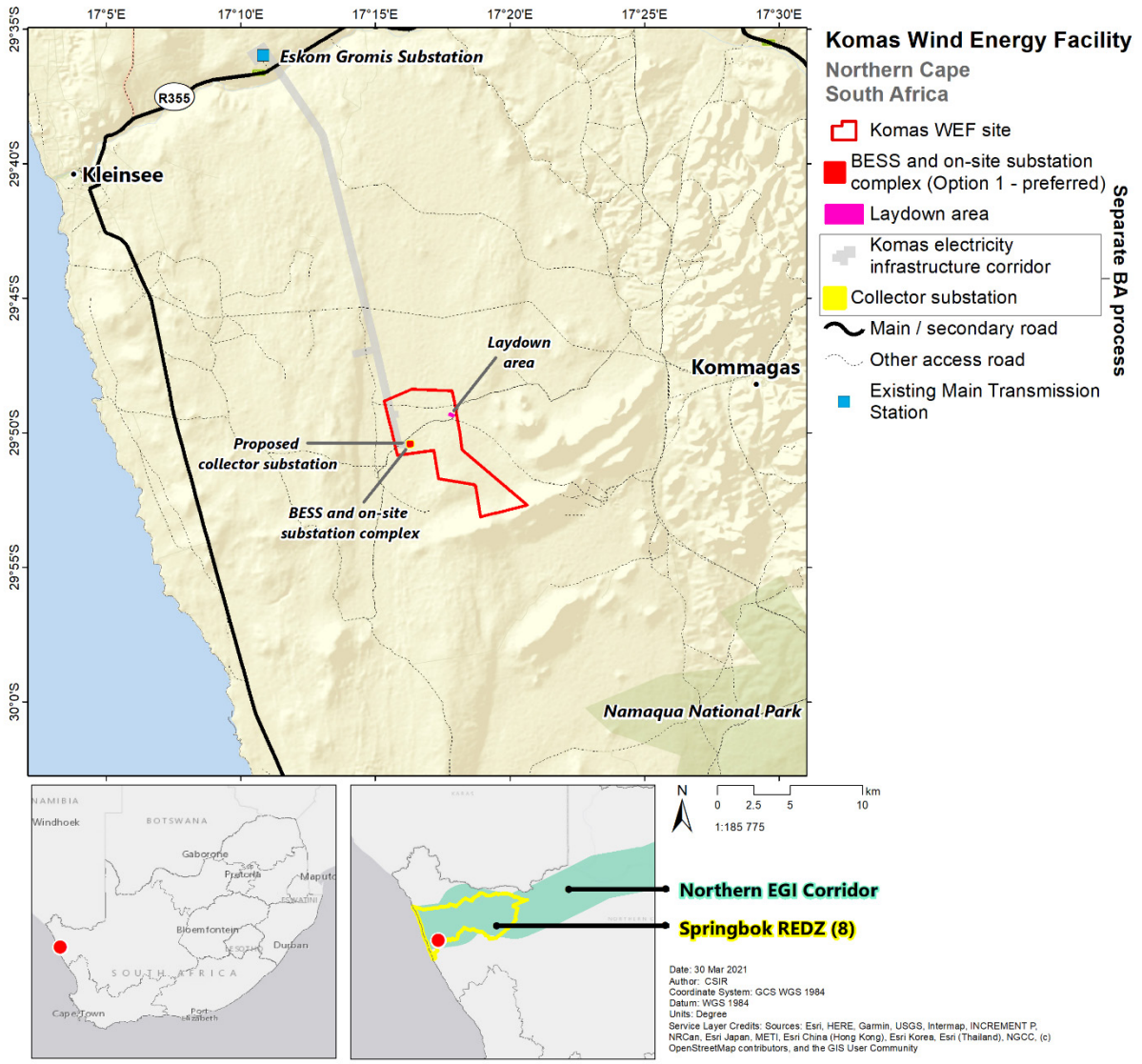


Figure A.17: Preferred layout for the Komas WEF which includes the preferred BESS and on-site SS complex area alternative (Option 1)

A.12.6 Concluding Statement for Alternatives

The following alternatives were considered in the BA Phase:

- **No-Go Alternative:**

The No-Go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Komas WEF. This alternative would result in no environmental impacts (positive and negative) on the site or surrounding local area, as a result of the proposed facility. The No-Go alternative was investigated in this BA. **The No-Go alternative is not the preferred alternative.**

- **Land Use Alternative:**

The site has very low agricultural potential because of, predominantly, aridity constraints, but also due to soil constraints. It is generally unsuitable for cultivation, and agricultural land use is limited to low density grazing. The economic benefits to the landowner associated with the proposed WEF is likely to be more significant than that of the current livestock grazing activities on site. **Based on the above, the agricultural land use is not a preferred alternative.**

- **Type of Activity - Renewable Energy Alternatives:**

In terms of project and location compatibility, the proposed WEF is considered to be the most favourable and feasible renewable energy activity alternative (i.e. in comparison to Hydro Energy, Biomass and Solar Energy (solar PV and CSP)). **Wind energy is the preferred and only renewable energy technology alternative to be developed on site as a result of**:

- The proposed Komas WEF falls within the Springbok REDZ (REDZ 8). The proposed project is therefore aligned with the criteria of the SEA and located in an area of strategic importance for wind energy development;
- The site has a good wind resource (6-8 m/s^{-1});
- Solar energy, a potential developable technology on site, would not be as economically viable compared to wind development at this location. This is due to its proximity to the coast and the resulting fogging, the scarcity of water, and the uneven topography of the site, solar PV and CSP technologies are therefore not considered to be reasonable and feasible alternatives to be assessed as part of this BA process; and
- IRP2019 allocated a higher additional target to wind energy compared to solar energy (14 400 MW vs 6 000 MW).

- **Site Alternatives:**

The site has a good wind resource 6-8 m/s^{-1}, it is located within approximately 30 km from the Gromis MTS, and is located in the Springbok REDZ (REDZ 8). In addition, the landowners consented to the development of a WEF on their farms. Given these factors and the site selection requirements associated with a WEF and the suitability of the land available on the said farms and no initial fatal flaws being present, **no other site alternatives were considered as part of the BA process**.

- **Development Footprint Location and Layout Alternatives:**

The land assessed to develop the proposed Komas WEF extends approximately 5 070 ha. The area identified for the Komas WEF site within the affected farms is approximately 2 725 ha. However, the footprint of the Komas WEF within the WEF site is only approximately 90 ha (excluding access roads to the site). Therefore, there is sufficient land available to develop the proposed Komas WEF.
The project footprint was informed by environmental sensitivities identified by the specialists. Based on the inputs from the specialists, the layout was revised multiple times to avoid environmentally sensitive areas (No-Go areas), while still retaining technical and financial viability, as well as the requirements of landowners (as applicable). The current proposed layout is the preferred layout that was assessed by all the specialists on the project team (Figure D.13 and Appendix A.2 of this BA Report).

- **BESS and on-site Substation complex area alternatives:**

Two site alternatives for the BESS and on-site SS (known as the BESS and SS complex) (i.e. Option 1 and Option 2) have been identified for assessment as part of the BA process (Figure A.1). The specialists indicated that none of the alternatives are fatally flawed. The Terrestrial Ecology and Avifauna specialists selected Option 2 as their preferred alternative, but indicated that Option 1 is also feasible from a Terrestrial Ecology and Avifauna impact perspective and can therefore be implemented. Therefore, as none of the alternatives are fatally flawed, the Project Applicant selected Option 1 to be the preferred alternative as the site is in an optimal location in relation to the proposed turbine layout (see Figure A.17). The Visual specialists also confirmed that Option 1 is their preferred alternative. BESS and SS complex.

- **Summary Statement:**

Based on the above, the preferred activity is the development of renewable energy facility on site using wind energy as the preferred technology. In terms of the preferred location of the site, the location of the proposed Komas WEF on Portion 1 of the Farm Zonnekwa No.326 as well as on Portions 2, 3 and 4 of Farm Zonnekwa No. 328 and on Portion 4 of Farm Kap Vley No. 315 is preferred. The location and layout of the activity have been informed by the outcomes of the specialist assessments and technical feasibility, as well as landowner requirements. The initial layout went through several iterations to avoid areas of very high and high environmental sensitivity. The preferred layout is therefore a culmination of all the specialist inputs and outcomes to ensure that the proposed Komas WEF footprint avoids all No-Go areas and that the project is developed in an environmentally sustainable manner. The preferred layout is further discussed in Section D of this report. Two site alternatives for the BESS and SS complex area (i.e. Option 1 and Option 2) have been identified for assessment as part of the BA process (Figure A.1). Both alternatives are deemed feasible by the specialists. However, the Project applicant selected Option 1 as the preferred BESS and on-site SS complex area alternative as the site is in an optimal location in relation to the proposed turbine layout (see Figure A.17). The Visual specialists also confirmed that Option 1 is their preferred alternative as Option 2 is closer to the nearest receptor.

A.13 Need 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 GG 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 A.11 includes a list of questions based on the DEFF'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 BA process.

Table A.11. The Guideline on the Need and Desirability's list of 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 site, Climate Change, etc.).	**The environmental sensitivities present on site and ecological integrity considerations were addressed within the Terrestrial Biodiversity Impact Assessment undertaken as part of this BA process (Appendix C.1). The Avifauna and Bat Impact Assessments (Appendix C.3 and Appendix C.4 respectively) also address ecological integrity.** **The impact of the proposed Komas WEF on the NNP Expansion Footprint, the National and Northern Cape PAES Focus Area, and the CBA2 have been assessed by Mr. Botha in his additional Biodiversity Offset Report. The impacts have been assessed to be of Moderate significance before and after mitigation, but prior to the implementation of a Biodiversity Offset. According to the additional Biodiversity Offset Report (Botha 2021), should an offset be implemented, the impact has been assessed to be of low significance.** **According to the additional Biodiversity Offset Report (Botha 2021), the implementation of a Biodiversity Offset is appropriate as the residual impact is negative and of moderate significance. An offset of 810 ha, in Namaqualand Strandveld or an adjacent, related vegetation type in the PAES Focus Area is prudent. The implementation of an offset is supported by the Project Applicant and the EAP.** **The project site and location were screened and assessed in detail in order to develop the proposed WEFs, power line routings and associated electrical infrastructure for the proposed Komas projects. The determination of the development footprint within the sites was determined through detailed sensitivity screening which was done by the specialists on the team to identify possible areas that should be avoided by the proposed development (i.e.**

NEED	
Question	**Response**
	exclusion zones or No-Go areas). These No-Go areas have been excluded from the proposed development footprints as shown in the sensitivity maps in Figure D.12 and in Appendix A.5). The specialist studies (Appendix C) have highlighted sensitive features within the original development footprint, and thus the footprint has been adjusted multiple times to avoid such features Following the exclusion of the required sensitive areas, sufficient developable area is still available on the sites which does not compromise the current ecological integrity of the sites. Based on the findings of the specialist studies, an environmental sensitivity map has been produced (as included in Figure D.12 in Section D of this report and in Appendix A.5). This map shows the sensitivities on site (e.g. terrestrial biodiversity, avifauna, bats, visual, and sensitive heritage features etc.) within the study area that need to be avoided.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	**The environmental sensitivities present on site and ecological integrity considerations were addressed within the Terrestrial Biodiversity Impact Assessment (Appendix C. 1 of the BA Report). The Avifauna and Bat Impact Assessments (Appendix C.3 and C.4 respectively of the BA Report) also address ecological integrity and environmental sensitivities. The specialists identified all ecological sensitive areas on site that would need to be avoided by the proposed development as well as how to suitably develop around these areas so that the ecological integrity of the areas is maintained (refer to Section D and Appendix C of this BA Report).** **The No-Go and buffer areas recommended by the specialists have been avoided in the updated layout of the proposed Komas WEF. A sensitivity map produced based on the input obtained from the various specialist studies is included in Figure D.12 in Section D and in Appendix A.5 of this BA Report.** **Measures to avoid, remedy, mitigate and manage impacts are included within the Terrestrial Biodiversity Assessment as well as within the Avifauna and Bat**

NEED	
Question	**Response**
	Impact Assessments (Appendices C.3 and C.4 respectively). It is also included in the EMPr which is included in Appendix G 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?	**This proposed development has the potential to impact on the ecology of the area. The proposed development of the Komas WEF and associated infrastructure is expected to result in an overall moderate ecological impact that may be reduced to "low" significance if suitable mitigation measures are employed. Refer to the Terrestrial Biodiversity Impact Assessment (Appendix C.1 of the BA Report) as well as the summary of the assessment provided in Section D of the BA Report.** **Measures to avoid, remedy, mitigate and manage impacts are included within the Terrestrial and Aquatic Biodiversity Assessment as well as within the Avifaunal and Bat Impact Assessment. It is also included in the EMPr, included as Appendix G of this BA 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?	**The description of the potential waste generation is included in Section A of this BA Report (this Section). It is not anticipated that a significant amount of waste will be generated. Waste generation during the construction phase will include liquid effluent and solid waste, and other general and hazardous waste (e.g. contaminated spilled material). Waste generation during the operational phase will be very limited.** **Measures to avoid, remedy, mitigate and manage impacts are included within the EMPr, included as Appendix G of this BA Report.**
1.5. How will this development disturb or enhance landscapes and/or site 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 HIA (Archaeology, Cultural Landscape and Palaeontology) was undertaken as part of this project (included as Appendix C.6 of this BA Report). Potential impacts to archaeological resources was identified as an impact during the construction and decommissioning phases. Potential impacts to the cultural landscape was identified as an impact during the construction, operation and decommissioning phases. Potential impacts to palaeontological resources were identified during the construction phase. The overall findings of the HIA are that**

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	impacts to Archaeology are of very low significance during the construction phase. Impacts to the Cultural Landscape are of moderate significance during the construction and operational phases. **From a palaeontology perspective, disturbance, damage or destruction of fossils within the development footprint due to excavations and surface clearance was identified as an impact, rated with an overall low significance during construction with the implementation of mitigation measures.**
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?	**Raw and potable water will be required during the construction, operation and decommissioning phases of the proposed Komas WEF project, for staff consumption purposes, for the roads and earthworks, as well as for the batching plant.** **Water supply will be sourced by the contractor and is typically through a water purchase agreement between the municipal water board and the contractor. Should the onsite existing boreholes not be ableto meet the water demands, water will be purchased and trucked to the site in water tankers.** **Management actions to ensure the responsible and equitable use of water during the construction, operation and decommissioning phases are provided in the EMPr (Appendix G of this BA 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? 1.7.1. Does the proposed development exacerbate the increased dependency	**The proposed project aims to harness wind energy for the generation of electricity. This proposed project is seen as a source of 'clean energy' and reduces the dependence on non-renewable energy sources, such as coal fired power plants. The proposed development is located in the Springbok REDZ (REDZ 8). The REDZs represent areas where wind and solar PV energy development is being incentivized from resource, socio-economic and environmental perspectives. For more information, refer to Section A.12 of this BA Report, which deals with Alternatives, and thus outlines the suitability of this activity.**

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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?	**The environmental sensitivities present on site and ecological integrity considerations were addressed within the Terrestrial Biodiversity Impact Assessment (Appendix C.1 of the BA Report) undertaken as part of this BA process. The Avifauna and Bat Impact Assessments (Appendix C.3 and Appendix C.4 respectively of the BA Report) also address ecological integrity.**
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 environmental sensitivities present on site and ecological integrity considerations were addressed within the Terrestrial Biodiversity Assessment (Appendix C.1 of the BA Report). The Avifauna and Bat Impact Assessments (Appendix C.3 and Appendix C.4 respectively of the BA Report) also address ecological integrity.** **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. For example, the cumulative impact assessment considered that all approved renewable energy projects within the 50 km radius would be constructed. However, in reality it is unlikely that all will be constructed as most will be based on the outcomes of the bidding windows in terms of the REIPPPP. Therefore, this approach is considered to be precautionary in nature. Additionally, the location of the proposed WEF within the assessed area and the layout thereof was determined based on the specialist findings.** **Refer to Appendix C of this BA Report for the complete specialist studies. These**

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	studies outline the assumptions and limitations that were applicable to the respective studies.
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?	**Refer to Section D and Appendix C of this BA Report which respectively include the findings of the specialist assessments, as well as the complete studies undertaken.** **The Socio-Economic Impact Assessment (included in Appendix C.8 of this BA Report) notes that overall the potential negative impacts are rated with a low significance, whilst the positive impacts are rated with an overall moderate to high significance. The Socio-Economic Assessment further notes that it can be concluded that the prospective socio-economic benefits of the proposed project outweigh the socio-economic losses or impacts. Creation of temporary employment, increased household income attainment and standard of living, and the development and/or growth of locally-owned industries were identified as some of the positive socio-economic impacts during the construction phase of the proposed project. The creation of permanent employment and a Community Trust were also identified as a positive socio-economic impacts during the operation phase of the proposed Komas WEF.** **With regards to the Visual Impact Assessment (VIA) (Appendix C.5 of this BA Report), the visual impact significance was considered to be low after mitigation during the construction and decommissioning phases. The potential visual impact was identified to be of moderate significance following mitigation during the operational phase. The visual landscape could be restored after potential decommissioning.** **With regards to the Noise Assessment (Appendix C.9 of this BA Report), the significance of the potential noise impact was considered to be very low after mitigation. This is except for the potential noise impact identified during the night during the operational phase which was assigned a low significance rating**

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	following mitigation. There are no NSDs within 500 m from the turbines. **Therefore, the overall negative impact to the environmental right of people in terms of social, visual and noise impacts are considered to be low after mitigation.**
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.)?	**This is considered and addressed as part of the Socio-Economic Assessment undertaken for this project (included in Appendix C.8 of this BA Report, and summarised in Section D).** **The study confirmed that it should be accepted that the development of the proposed project is likely to result in some form of negative social impact to the local community. However, such a negative impact needs to be weighed against the potential benefits likely to result from the same development. Given the overall low significance of potential negative impacts associated with the proposed project, as compared to the overall moderate to high significance after mitigation of potential positive impact of the project; it can be concluded that the prospective socio-economic benefits of the proposed project outweigh the socio-economic losses or impacts. From a socio-economic impact perspective, in light of the above argument, the specialist conducting the Socio-Economic Assessment recommended that the proposed project should be authorised by the competent authority.** **The above is also supported in terms of the status quo of the socio-economic conditions present in the NKLM, as indicated in the Socio-Economic Impact Assessment (Appendix C.7 of the BA 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 and the Biodiversity Mitigation Strategy which were undertaken for the proposed project (Appendices C.1 and C.15 respectively).**

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	The proposed activity does not compromise any of the objectives set within the NKLM IDP and the NDM's IDP (2017 – 2022). The proposed project will also be supportive of the IDP's objective of creating more job opportunities. The proposed WEF will assist in local job creation during the construction and operation phases of the project (if an EA is granted by the DEFF). However, as noted above, employment opportunities will be temporary during the construction phase and long-term during the operational phase as the proposed Komas WEF 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?	**Refer to Section A.12 of this BA Report, which deals with Alternatives. This section outlines the suitability of the proposed activity.**
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?	**Refer to Section D of this BA Report, which includes the Terrestrial Biodiversity Impact Assessment (Appendix C.1 of the BA Report), as well as the Avifauna and Bat Impact Assessments (Appendix C.3 and Appendix C.4 respectively) which provide a description of the negative direct and cumulative ecological impacts.**
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 NDM'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 local or district 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.**

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	One of the economic priority issues identified within the NKLM IDP (2017– 2022) is the high levels of unemployment. The IDP further states that the majority of the adult population within the NKLM 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 DEFF). It is estimated that approximately 200-250 employment opportunities will be created during the construction phase. It is anticipated that approximately 55% (136) of the employment opportunities will be available to low skilled workers (construction labourers, security staff etc.), 30% (76) to semi-skilled workers (drivers, equipment operators etc.) and 15% (38) for skilled personnel (engineers, land surveyors, project managers etc.). **Approximately 20 employment opportunities will be created during the operational phase which is anticipated to extend over 20 years. This includes 12 low skilled, 6 semi-skilled and 2 skilled jobs.** **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 NKLM IDP (2017 – 2022). The proposed project will also be supportive of the IDP's objective of facilitating job creation to address the high unemployment rate.** **The proposed project is located within the Springbok REDZ (REDZ 8) which is a geographical area that has been identified on a strategic planning level to have reduced negative environmental impacts but high commercial attractiveness (due to its proximity to, inter alia, the national grid) and socio-economic benefit to the country. The development of wind energy is therefore important for South Africa to reduce its overall environmental footprint from power generation**

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	(including externality costs), and thereby to steer the country on a pathway towards sustainability. Therefore, the proposed project is in line with strategic plans and national policy to promote the generation of green energy in South Africa.
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.)	**This is not applicable, as 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.)	**Refer to Section B and D of this report for a description of the receiving environment and impact assessment, respectively. The impact of the proposed project on heritage features, including archaeology, cultural landscape, and palaeontology has been assessed in the HIA (Appendix C.6 of this BA Report).** **The area is a sheep farming area. Low density, natural grazing is by far the predominant agricultural activity in the area. Grazing capacity of the site is very low at 45 hectares per large stock unit.** **Should the proposed project proceed, approximately 90 ha of the land will be developed, and it is not expected that this will significantly threaten the agricultural activities present on site. An Agricultural Compliance Statement (Appendix C.7 of this BA Report, and summarised in Section D) was undertaken as part of this BA to reflect the impact of the proposed project in terms of agriculture. The conclusion of the Agricultural Compliance Statement is that the agricultural potential of the proposed Komas WEF site is low and the proposed development will therefore not have an unacceptable negative impact on the agricultural production capability of the site.**
2.1.4. Municipal Economic Development Strategy ("LED Strategy").	**At a district and local level, the NDM IDP, NDM Climate Change Response Plan, NKLM's IDP and NKLM's SDF all support the establishment of renewable facilities. The proposed Komas WEF is also located within the Springbok REDZ 8, which was formally gazetted in 2018. The area has therefore been identified as suitable for the establishment of REFs, including WEFs. The proposed Komas WEF is therefore**

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	aligned with the LED Strategy of the NKLM. **In addition to the above, the Namakwa District Climate Change Response Plan was developed through the Local Government Climate Change Support program. It includes a climate change vulnerability assessment and associated climate change responses which address these vulnerabilities.** **The vulnerability assessment identified 17 of the DM's socio-economic indicators which are both very exposed and highly sensitive to climate change, but have very low capacity to adapt. These included the agricultural sector, tourism, water-dependent municipal services and the coastal and marine environment. Priority responses are identified for the key sectors, including agriculture, biodiversity and habitat conservation, human health, and human settlements. These include mainstreaming climate change preparedness into all future IDPs, and implementation of a Namakwa Renewable Energy Strategy which supports the development and use of non-fossil sources of energy.** **The proposed project would also provide advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area.**
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? 2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report, for an outline of the socio-economic impacts that could occur due to the proposed development of the Komas WEF.**
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	
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	

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economically sustainable in the short- and long-term?	
2.5. In terms of location, describe how the placement of the proposed development will:	
2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report for an outline of the socio-economic impacts that could occur due to the proposed development of the Komas WEF.** **The Socio-Economic Assessment notes that overall the potential negative impacts are rated with a low significance, whilst the positive impacts are rated with an overall moderate to high significance. The Socio-Economic Assessment notes that the prospective socio-economic benefits of the proposed project outweigh the socio-economic losses or impacts. Creation of temporary employment during the construction phase, increased household income attainment and standard of living, and the development and/or growth of locally-owned industries were identified as some of the positive socio-economic impacts during the construction phase of the proposed project. The creation of long-term employment opportunities and a Community Trust during the operational phase (which will extend over 20 years) were also identified as positive socio-economic impacts.**
2.5.2. reduce the need for transport of people and goods,	**Not applicable. This is a renewable energy project proposal.**
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),	**Not applicable. This is a renewable energy project proposal.**
2.5.4. compliment other uses in the area,	**All farm portions forming part of the project are zoned for agricultural land-use, and are mainly used for either commercial livestock grazing, communal use or subsistence farming. As noted in the Agriculture Compliance Statement (Appendix C.7) of this BA Report, agricultural potential is uniformly low across the affected farms. The major limitations to agriculture are the severely limited climatic moisture availability and the sandy soils with low water holding capacity. As a result of these limitations, the agricultural use of the study area is limited to low intensity grazing only. The project site is classified with a predominant land**
2.5.5. be in line with the planning for the area,	

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	capability evaluation value of 5 (low), although it varies from 4 to 6 across the site (Land Capability Classification for South Africa, 2017). The grazing capacity on AGIS is classified as low at 45 hectares per large stock unit. An Agricultural Compliance Statement was undertaken as part of this BA to reflect the impact of the proposed project in terms of agriculture (Appendix C.7 of this BA Report, and summarised in Section D). The conclusion of the Agricultural Compliance Statement is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. In addition, the proposed Komas WEF is located within the Springbok REDZ (i.e. REDZ 8) and is therefore aligned with national initiatives for the placement of WEFs in South Africa. The proposed project also falls within the Northern EGI Corridor, one of the five EGI Corridors gazetted in February 2018. While Listed Activity 9 of Listing Notice 2 of the NEMA EIA Regulations, 2014, as amended, is not triggered by the proposed project, the fact that the proposed project falls within the Northern EGI Corridor is still important as it indicates that the proposed project aligns with the strategic objectives of the country in terms of infrastructure placement.
2.5.6. for urban related development, make use of underutilised land available with the urban edge,	**Not applicable. 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 Komas WEF project will connect to the existing Gromis MTS where the electricity generated will be fed into the national grid. It will make use of existing access roads as far as possible. The existing unnamed public gravel road off the R355 leading to the proposed Komas WEF will be used for access and will be upgraded as part of the proposed project.**
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 a renewable energy project and not related to bulk infrastructure expansion.**
2.5.9. discourage "urban sprawl" and contribute to compaction/densification,	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report, for an outline of the socio-economic impacts that could occur due to the proposed development of the Komas WEF. One of the**

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	potential negative impacts identified is the disruption of local social structures as a result of the construction work force and in-migration of job seekers. Adequate management measures have been identified in this regard and are included in the EMPr (Appendix D of this BA Report.
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,	**This is not applicable as the proposed project is located within a rural area and the site are zoned for agricultural use.**
2.5.11. encourage environmentally sustainable land development practices and Process,	**Based on the findings of this BA, the proposed project will have an overall impact significance rating of moderate to low following the implementation of mitigation measures. Apart from the potential cumulative impacts due to bat fatalities during the operational phase, the proposed project will not have a significant ("high") negative impact on the receiving environment, with the implementation of suitable mitigation measures (Section D). It will therefore not go against sustainable land development practices and process. In addition, the proposed project will be designed according to relevant national specifications and standards which are regarded as best practice in the renewable energy sector. In addition, the proposed project is located in the Springbok REDZ (i.e. REDZ 8) and the development proposal will therefore be aligned with national planning priorities.**
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.),	**Refer to Section A.12 of this BA Report, which deals with Alternatives. This section outlines the suitability of the proposed activity, as well as the selection thereof.**
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),	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report for an outline of the potential socio-economic impacts associated with the proposed development of the Komas WEF. In addition, as noted in the Socio-Economic Assessment, the Applicant will ultimately own the project and, if successful, will compile an Economic Development Plan which will be compliant with REIPPPP requirements and will *inter alia* set out to achieve the following:** ▪ **Create a local community trust which has an equity share in the project life**

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	to benefit historically disadvantaged communities. ▪ **Initiate a training strategy to facilitate employment from local communities.** ▪ **Give preference to local suppliers of components and/or services for the construction of the facility.**
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	**A HIA (Archaeology, Cultural Landscape and Palaeontology) was undertaken as part of this project (included as Appendix C.6 of this BA Report). Potential impacts to archaeological resources was identified as an impact during the construction and decommissioning phases. Potential impacts to the cultural landscape was identified as an impact during the construction, operation and decommissioning phases. Potential impacts to palaeontological resources were identified during the construction phase. The overall findings of the HIA are that impacts to Archaeology are of very low significance during the construction phase. Impacts to the Cultural Landscape are of moderate significance during the construction and operational phases.** **From a palaeontology perspective, disturbance, damage or destruction of fossils within the development footprint due to excavations and surface clearance was identified as an impact, rated with an overall low significance during construction with the implementation of mitigation measures.**
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?	**The proposed facility is proposed in the Springbok REDZ 8. Several renewable energy facilities are proposed in the area, which lends itself potentially to a renewable energy development area. Refer to Section D of this BA Report for an outline of the renewable energy projects authorised and the ones which have submitted applications for EA within a 50 km radius of the proposed Komas WEF site.**
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)?	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report.**
2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic	

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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?	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report.**
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 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	

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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 Public Participation Process (PPP) that has been undertaken as part of this BA is detailed in Section C of this report, as well as in Appendix D. The BA Report is currently being released for a 30-day commenting period to all the relevant authorities and stakeholders. Various methods will or have been employed to notify potential Interested and Affected Parties (I&APs) of the proposed project, namely, through a newspaper advert, site notice boards and notification letters via email, as well as SMS texts. The BA process will take cognisance of all interests, needs and values espoused by all I&APs, where relevant. Opportunity for public participation will be provided to all I&APs throughout the BA process in terms of the NEMA EIA Regulations, 2014, as amended.**
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,	
2.13.5. ensure openness and transparency, and access to information in terms of the process,	
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,	
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.	
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)?	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report.**
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	**An EMPr has been developed to address environmental impacts, as well as health and safety concerns (Appendix G). An ECO will be appointed to monitor compliance during the construction and decommissioning phases.**

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taken to ensure that the right of workers to refuse such work will be respected and protected?	
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,	**Refer to the Socio-Economic Assessment summarised in Section D and included in Appendix C.8 of this BA Report.**
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. This has been included in Section A of this BA Report. Pre-application meetings were held with key authorities and stakeholders namely, the DEFF (on 18 August and 7 October 2020), as well as with SANParks and the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform Northern Cape Department of Environment (DAEARDLR) on 2 November 2020.**
2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	**The PPP that has been undertaken as part of this BA and is detailed in Section C of this report, as well as in Appendix D. The BA Report is currently being released for a 30-day commenting period to all the relevant authorities and stakeholders. Various methods will or have been employed to notify potential I&APs of the proposed project, namely, through a newspaper advert, site notice boards and notification letters via email, as well as SMS texts. The BA process will take cognisance of all interests, needs and values espoused by all I&APs, where relevant. Opportunity for public participation will be provided to I&APs during**

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Question	**Response**
	the BA process in terms of the NEMA EIA Regulations, 2014, as amended.
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?	**The outcomes of this BA process and the associated conditions of the EA (should it be granted) will serve to address this question (see Section E of this BA report for proposed conditions to be included in the EA).**
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	**The proposed mitigation measures included in the EMPr and summarised in Section D 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. A WEF can be dismantled and completely removed from the site leased for the development and do not permanently prevent alternative land-uses on the same land parcel. The proposed project will generate positive socio-economic benefits and opportunities such as the creation of employment opportunities and the support of local busineeses.**
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?	**Refer to Section A12 of this BA Report, which deals with Alternatives. This section outlines the suitability of the proposed activity.**
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?	**Refer to the Executive Summary and Section D of this report for a summary of the cumulative impacts.**

SECTION B: DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section of the BA Report provides a broad overview of the affected environment for the proposed Komas WEF project and the surrounding region. 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.

This information is provided to identify the potential issues and impacts of the proposed project on the environment. The information presented within this chapter has been sourced from:

- Input from the specialists that form part of the project team;
- Feedback from the Screening Tool, where applicable;
- Review of information available on the South African National Biodiversity Institute (SANBI) Biodiversity Geographical Information System (BGIS) and Agricultural Geo-Referenced Information System (AGIS); and
- The NKLM and NDM's Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs).

Feedback from the Screening Tool is provided in the sections below, only where it is applicable. For example, it is not applicable to the Socio-Economic and the Transport Impact Assessments.

It is important to note that this chapter intends to provide a broad overview of the affected environment. Detailed descriptions of the preferred project site (Komas WEF) focused on significant environmental aspects of this project is provided in the relevant specialist studies (Appendix C of this BA Report).

B.1 Background

The proposed Komas WEF project is situated on the following farm portions:

- Portion 1 of the Farm Zonnekwa No. 326;
- Portion 2 of the Farm Zonnekwa No. 328;
- Portion 3 of the Farm Zonnekwa No. 328;
- Portion 4 of the Farm Zonnekwa No. 328; and
- Portion 4 of the Farm Kap Vley No. 315.

The land assessed for development of the proposed Komas WEF extends approximately 5 070 ha. The area identified for the Komas WEF site within the affected farms is approximately 2 725 ha. However, the footprint of the Komas WEF within the WEF site is only approximately 90 ha (excluding access roads to the site).

As previously noted, the proposed project is located within the NKLM, which falls within the NDM. It is situated approximately 53 km south-west of Springbok, 35 km south-east of Kleinsee and 18 km south-west of Komaggas in the Northern Cape Province. The regional context and study area of the proposed project are provided in Figure B.1 and Figure B.2 respectively.

MAP 1: Regional Context

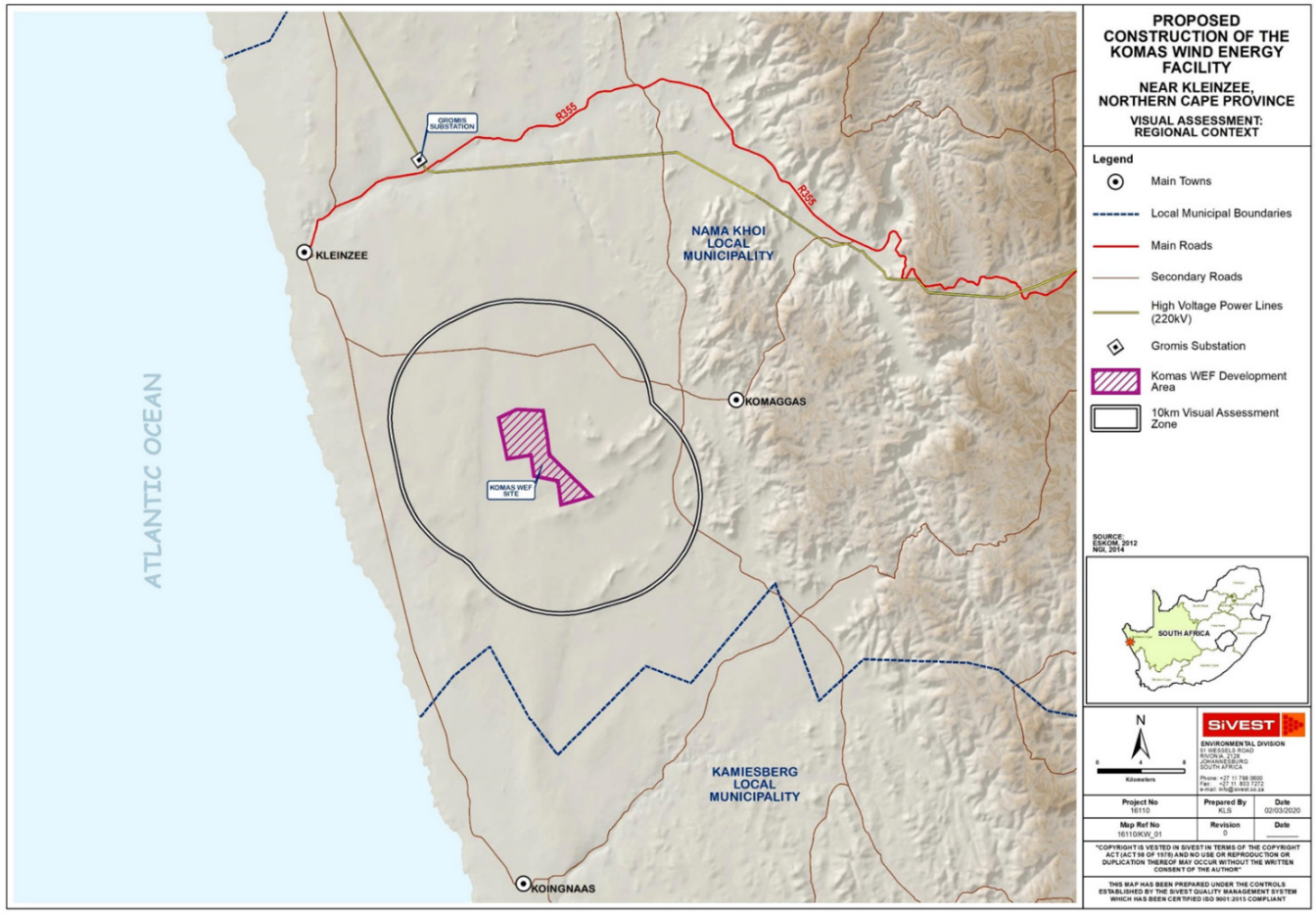

Figure B.1. Regional context of the proposed Komas Wind Energy Facility (SiVEST, 2020).

MAP 2: Study Area

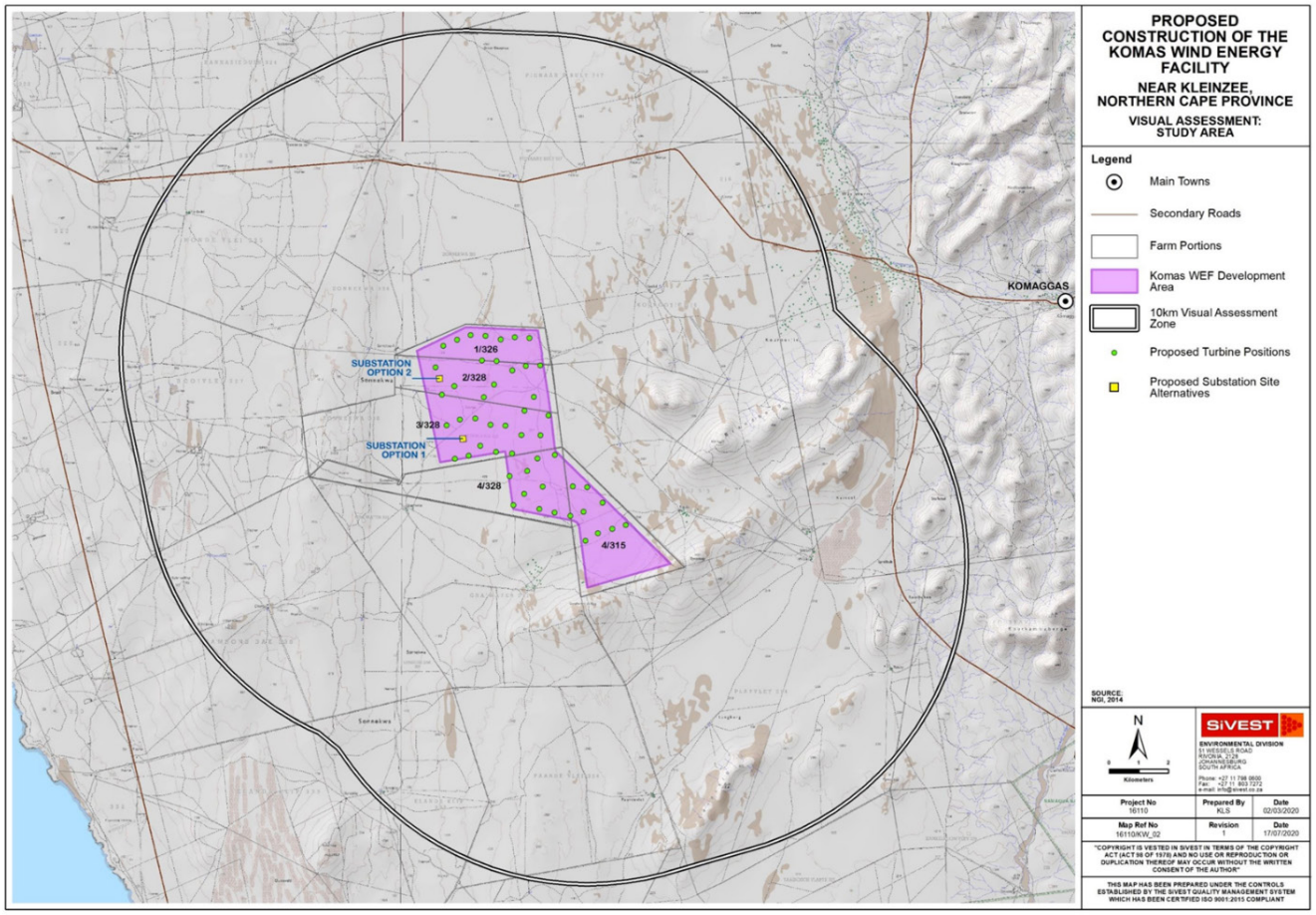

Figure B.2. Study area of the proposed Komas Wind Energy Facility (SiVEST, 2020)

B.2 Climate Conditions

The site has an extremely low average rainfall of 96 mm per annum (The World Bank Climate Change Knowledge Portal, 2016 in Lanz, 2020). The mean annual precipitation is less than 250 mm (Figure B.3). The average monthly temperature and rainfall distribution are shown in Figure B.4. The low rainfall is a very significant agricultural constraint that seriously limits the level of agricultural production (including grazing). There are no dams across the project area.

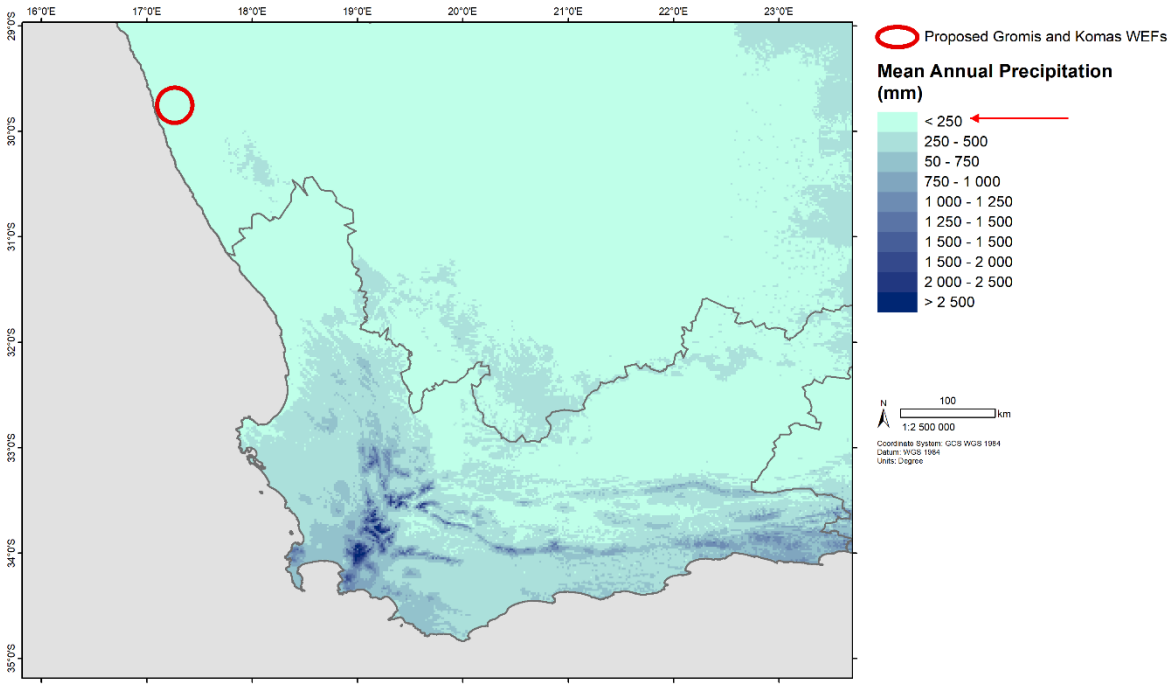

Figure B.3. Mean Annual Precipitation for the study area indicated in red.

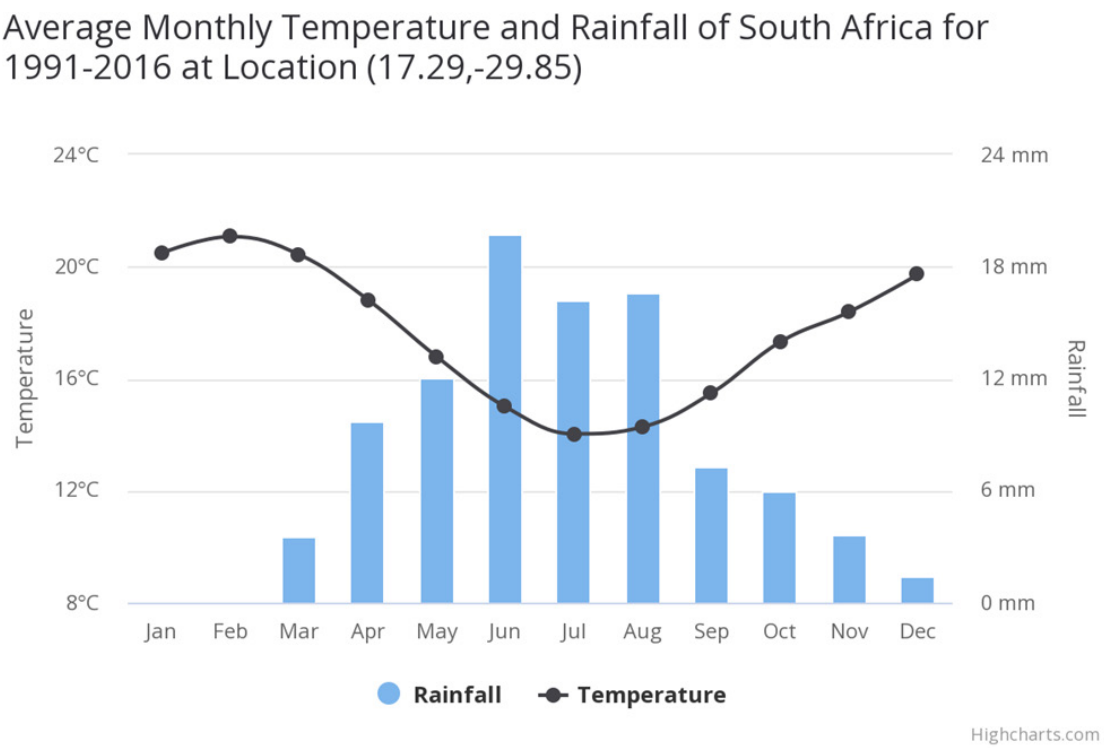

Figure B.4: Monthly average air temperature and rainfall distribution for the study area (The World Bank Climate Change Knowledge Portal, 2016 in Lanz, 2020).

The specialist studies included in Appendix C provide additional details regarding the climatic conditions on site.

B.3 Topography and Landscape

The proposed development is located on fairly level coastal plains at an approximate altitude between 170 and 240 m. It includes the slopes up one ridge to an altitude of 375 m. Slopes across the site are almost entirely less than 2%, with some steeper slopes on the side of the ridge. The geology of the coastal plains is aeolian material overlying Tertiary and Quaternary marine sediments (Lanz, 2020).

The VIA (Appendix C.5 of the BA Report), states that the study area for the proposed Komas WEF project is located on relatively flat to gently undulating terrain situated between the Komaggas Mountains in the east and the Atlantic Coastline in the west. The most prominent physical feature in the predominantly flat landscape of the study area is a low mountain range to the east and south of the Komas WEF development area. This range is characterised by relatively steep slopes and is visible across much of the study area (Figure B.5 and Figure B.6). The broader landscape of the study area is generally flat, with a few rocky hills occurring sporadically. The Terrestrial Biodiversity Impact Assessment (Appendix C.1 of this BA Report) notes that few elevated features are evident across the corridors.