



SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED CONSTRUCTION OF 132KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY, AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION, LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA


DRAFT BASIC ASSESSMENT REPORT (DBAR)

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SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED CONSTRUCTION OF 132KV POWERLINES BETWEEN THE AUTHOIRSED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY AND THE DWARSRUG WIND ENERGY FACILITY, AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE NAROSIES SUBSTATION

DRAFT BASIC ASSESSMENT REPORT (DBAR)

EXECUTIVE SUMMARY

Introduction and Project Description

South Africa Mainstream Renewable Power Developments (Pty) Ltd. (herein after referred to as “Mainstream”) has appointed SiVEST SA (Pty) Ltd (hereafter referred to as “SiVEST”) to undertake a Basic Assessment (BA) Process for the proposed construction of 132 kV overhead powerlines between the proposed (and authorised) 100MW Loeriesfontein 3 Photovoltaic (PV) Solar Energy Facility (SEF) (12/12/20/2321/2/AM4) and proposed (and authorised) 140MW Dwarsrug Wind Energy Facility (WEF) (14/12/16/3/3/2/690/AM4); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation (12/12/20/2049/3) located near Loeriesfontein in the Northern Cape Province of South Africa.

The proposed powerline from the Loeriesfontein 3 PV SEF to the Dwarsrug WEF is required to link the SEF to the WEF in order to create a hybrid renewable energy facility, which will ensure that electricity is constantly supplied to the national grid by at least one or both of the technologies (namely solar PV and wind). The proposed powerline from the Dwarsrug WEF to the approved Narosies substation is required to link above mentioned hybrid renewable energy facility to the National grid.

The hybrid renewable energy facility, along with the proposed added battery energy storage systems (BESS) (separate BA processes currently underway¹) will contribute to providing electricity for the National grid.

While both Loeriesfontein 3 PV and Dwarsrug WEF each have approved authorisations to tie into Helios main transmission substation (MTS), Independent Power Producers (IPPs) who were successful in the previous bid round are currently approved by Eskom to connect to Helios MTS. Eskom have indicated that there may be insufficient capacity to accommodate additional generation, and as such communicated (found in **Appendix 9**) to Mainstream that they tie the proposed hybrid renewable energy facility into the authorised Narosies collector station (12/12/20/2049/3) instead.

Based on previous correspondence from Eskom it has been advised that this hybrid energy facility may need to connect into the Narosies collector substation. Therefore, Mainstream now proposes to tie the proposed hybrid renewable energy facility into the authorised Narosies collector station (12/12/20/2049/3) to feed the National grid.

¹ (Loeriesfontein 3 BESS DEFF Reference number: 14/12/16/3/3/1/2263 and Dwarsrug BESS DEFF Reference number: 14/12/16/3/3/1/2262)

Two (2) powerline route alternatives to link the Loeriesfontein 3 PV SEF to the Dwarsrug WEF have been considered in this assessment (approx. 18.85 and 18.34km respectively), whilst a single powerline route (approx. 3.5km) has been considered to link the Dwarsrug WEF to the Narosies substation. The evaluation of all three route alignments provided for a 300m wide corridor of assessment (150m on either side of proposed powerlines).

The proposed construction and operation of this powerline project requires Environmental Authorisation (EA) from the Department of Environment, Forestry and Fisheries (DEFF), and as such is subject to a Basic Assessment (BA) process in terms of the National Environmental Management Act (NEMA): Environmental Impact Assessment (EIA) Regulations of 2014, as amended. SIVEST have been appointed by Mainstream as the as the independent Environmental Assessment Practitioner (EAP) for this project.

Needs and desirability

The EIA Regulations, 2014 (as amended) [Appendix 3 Section 3 (f)] requires that the need and desirability of a project (including viable alternatives) are considered and evaluated against the principles of sustainability. This requires investigation of the effect of the project on social, economic and ecological systems; and places emphasis on consideration of a project's justification not only in terms of financial viability (which is often implicit in a [private] proponent's intention to implement the project), but also in terms of the specific needs and interests of the community and the opportunity cost of development (DEA&DP, 2013).

The EAPs and specialists, through the interrogation of planning documents (**Section 2**) and, where these planning documents are not available - using best judgment, have considered the anticipated needs and interests of the broader community.

The IRP 2019 indicates that there is a short-term electricity supply gap of approximately 2 000 MW between 2019 and 2022. The proposed powerlines will improve energy security by ensuring security of energy supply to the grid from the Loeriesfontein 3 PV SEF and Dwarsrug WEF. In this regard the powerline from the Loeriesfontein 3 PV SEF to the Dwarsrug WEF is proposed to link these facilities in order to create a hybrid supply, which will ensure that electricity is constantly supplied to the National grid by at least one (1) or both technologies (namely solar PV and wind), at any given time. Two (2) possible alternative routes in this regard have been put forward by the Applicant. The powerline from the Dwarsrug WEF to the Narosies substation is required to transfer the aforementioned hybrid supply to the National grid. Only one (1) route has been considered for this powerline.

The proposed development can thus commit to feeding energy generated from clean, green energy (namely solar and wind) into the national grid. This allows the development to conform with the move towards a greener and cleaner energy generation mix in South Africa.

The proposed development also supports the objectives of the Risk Mitigation Independent Power Producer Procurement Program (RMIPPPP), which serves as an "emergency" power generation programme for accelerated assistance to the national grid amid electricity supply constraints. The Department of Mineral Resources and Energy (DMRE) issued a Request for Proposal (RFP) for the emergency procurement of 2000MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can also reduce the risk of load-shedding. Grid capacity is also available and no deep grid works are required, which is beneficial for the connection timelines of the RMIPPPP.

In addition, the Minister of Mineral Resources and Energy has recently welcomed the concurrence by the NERSA to the second Section 34 Ministerial Determination, which enables the Department to undertake procurement of additional electricity capacity in line with the IRP (2019). 6 800MW of capacity is determined

to be generated from renewable energy sources (PV and Wind), 513MW from storage and 3 000MW from gas². The proposed development will be able to contribute to this diverse electricity requirement and will thus actively contribute to the commitments made to increase generation capacity and ensure the rapid security of energy supply to society.

This hybrid renewable energy facility, along with the proposed added BESS (separate BA processes currently underway¹) will therefore contribute to providing electricity for the National grid.

While both Loeriesfontein 3 PV and Dwarsrug WEF each have approved authorisations to tie into Helios MTS, IPPs who were successful in the previous bid round are currently approved by Eskom to connect to Helios MTS. Eskom have indicated that there may be insufficient capacity to accommodate additional generation, and as such communicated (found in **Appendix 9**) to Mainstream that they tie the proposed hybrid renewable energy facility into the authorised Narosies collector station (12/12/20/2049/3) instead.

The need for power lines to connect the renewable energy facilities to each other and the national grid, stems from the fact that South Africa requires emergency power to reduce electricity supply constraints.

Based on previous correspondence from Eskom it has been advised that this hybrid energy facility may need to connect into the Narosies collector substation. Therefore, Mainstream now proposes to tie the proposed hybrid renewable energy facility into the authorised Narosies collector station (12/12/20/2049/3) to feed the National grid.

NEMA EIA Regulations

In terms of the Environmental Impact Assessment (EIA) Regulations (2014)³, as amended, promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 327 and 324) or a full Scoping and EIA (GN R 325) is required.

The following Listed Activities in Government Notice (GN) R 327 (Listing Notice 1) requiring a Basic Assessment (BA) Process are applicable to the proposed development and its alternatives:

Listed activities in terms of the NEMA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
11 (i)	<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.</i>	- The proposed development involves the construction of overhead powerlines which will be located outside an urban area. The proposed powerlines will have a capacity of 132 kV.
12 (ii) (c)	<i>The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—</i>	- Maintenance access tracks (that do not trigger Listing Notice 1 Activity 24) associated with the proposed Power lines will cross watercourses.

² In accordance with the ministerial determination as gazetted Government Gazette No. 43509 on the 7th of July 2020

³ Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [Government Notice (GN) R. 982, R. 983, R. 984 and R. 985 and amended on 07 April 2017 (promulgated in Government Gazette 40772 and GN R. 326, R. 327, R. 325 and R. 324 on 7 April 2017)]

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	<i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -</i>	
19	<i>The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.</i>	- The proposed powerlines will involve the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.
28 (ii)	<i>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;</i>	- The proposed development routes are currently zoned for agriculture, and the area to be developed will be larger than 1 ha.

Details of alternatives

Site / Route Alternatives

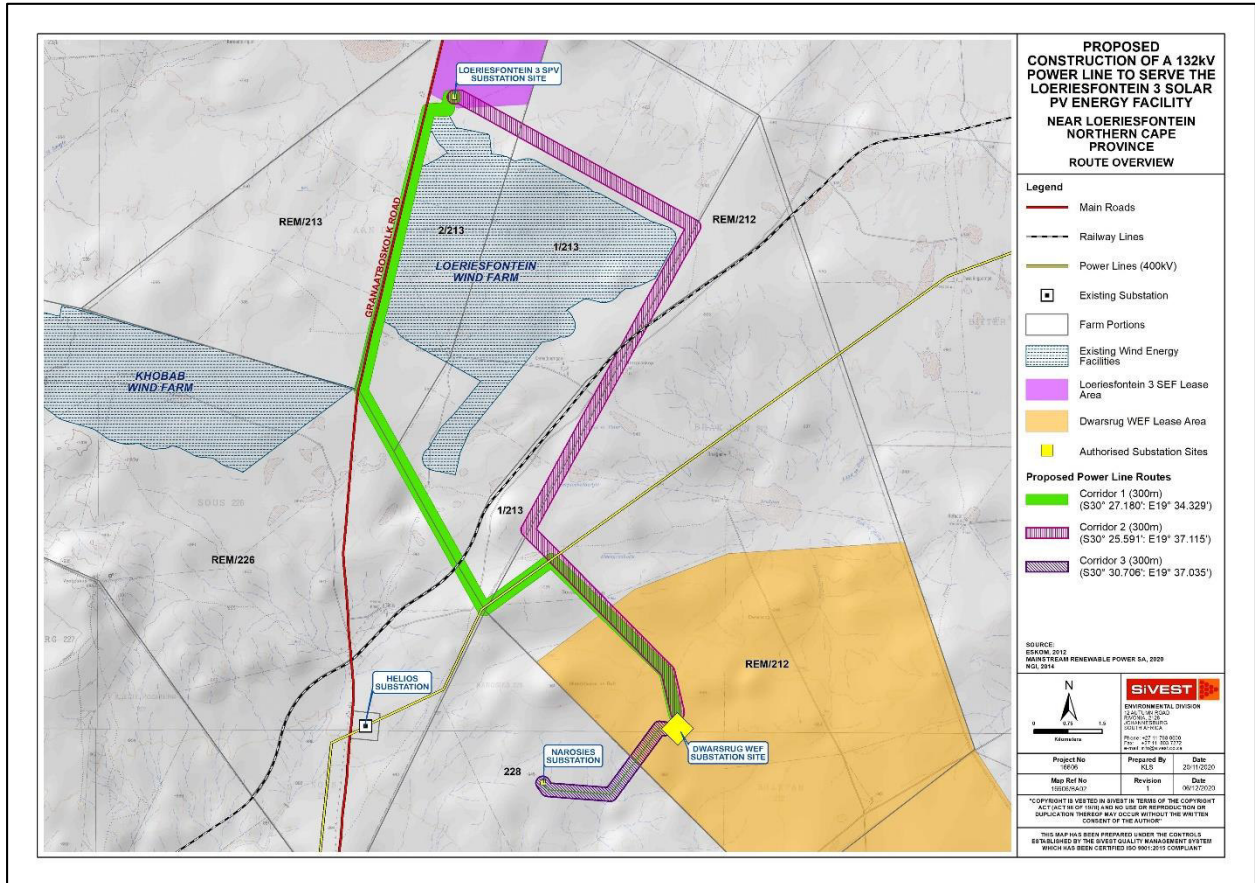
One (1) of the aims of the BA process was to identify alternative routes for detailed assessment. The identification and selection of alternative routes helped to focus investigations. The powerline corridors (including all alternatives) put forward in this BAR have all been informed by specialist investigations and associated environmental sensitivity analysis. No Fatal Flaws have been identified with the proposed routes and alternatives put forward in this BAR.

Two (2) route alternatives have been provided for the proposed powerline which is to link the Loeriesfontein 3 PV SEF to the Dwarsrug WEF in order to create a hybrid renewable energy facility. These alternative routes are depicted as Corridor 1 & 2 in the figure below and are detailed below:

- **Powerline Corridor Alternative 1 (Loeriesfontein 3 PV SEF to Dwarsrug WEF):** Approximately 18.847km in length and runs south / south-east from the authorised Loeriesfontein 3 PV SEF Substation Site along Portion 2 of the Farm Aan De Karee Doorn Pan No. 213, the Granaatsboskolk Road and Portion 1 of the Farm Aan De Karee Doorn Pan No. 213 until it ties into the authorised Dwarsrug WEF Substation Site located on Remainder of the Farm Brak Pan No. 212; and
- **Powerline Corridor Alternative 2 (Loeriesfontein 3 PV SEF to Dwarsrug WEF):** Approximately 18.340 km in length and runs south-east from the authorised Loeriesfontein 3 PV SEF Substation Site across Portion 2 of the Farm Aan De Karee Doorn Pan No. 213 and Portion 1 of the Farm Aan De Karee Doorn Pan No. 213 until it cuts south along Remainder of the Farm Brak Pan No. 212 until it ties into the authorised Dwarsrug WEF Substation Site located on the same property.

No alternative routes are however provided for the proposed powerline from the Dwarsrug WEF to the Narosies Substation (Corridor 3) which will ultimately allow for the connection of the hybrid facility to the National grid. This powerline corridor route is approximately 3.482km in length and runs south-west from the authorised Dwarsrug WEF Substation Site along Remainder of the Farm Brak Pan No. 212 and the Farm Narosies No. 228 until it cuts west on the Farm Narosies No. 228 and ties into the authorised Narosies Substation on the same property.

Assessment of the powerline corridors mentioned above provided for an assessment corridor of approximately 300m (i.e. 150m on either side of powerline). This was undertaken so as to allow for flexibility of the route within authorised corridors. A 300m wide assessment corridor (150m on either side of powerline) was therefore applied to each of the three (3) powerline routes. The proposed powerlines, if approved, will be positioned within the assessed corridors.



Powerline alternatives proposed to link Loeriesfontein 3 PV SEF to Dwarsrug WEF (Corridors 1 & 2), as well as the single power line proposed to link two (2) facilities to National grid from the Dwarsrug WEF (Corridor 3).

Activity Alternatives

No activity alternatives to link the Loeriesfontein 3 PV SEF to Dwarsrug WEF, and then connect this hybrid facility to the National grid are available to the Applicant. As such no activity alternatives, other than the no-go alternative, were considered further in the BA process.

Technology Alternatives

No technology alternatives will be considered for the proposed powerlines within this BAR. The type of technology to be used for the powerlines will largely depend on the terrain and other technological and economic factors. The type of powerline towers being considered at this stage include both lattice and monopole towers and it is assumed that these towers will be located approximately 200m to 250m apart. The towers will be up to 25m in height, depending on the terrain, but will ensure minimum overhead line clearances from buildings and surrounding infrastructure. The impacts on the environment of the different types of powerline tower types would be very similar during construction, operation and decommissioning. The choice of technology used will be determined by Eskom who will in turn be informed by specialist recommendations contained within this report, as the proposed powerlines will ultimately be handed over to Eskom.

No-go alternative

The 'no-go' alternative is the option of not constructing the powerline project, which would prevent the realisation of the hybrid facility and thus prevent electricity generated from renewable sources being fed into the national grid. This alternative would result in no additional environmental impact other than that assessed during the BA for the Renewable Energy (RE) facilities.

The 'no-go' option is a feasible option, however, this would prevent the hybrid facility from contributing to the environmental, social and economic benefits associated with the development of the renewable energy sector.

Public Participation Process undertaken

A newspaper advertisement announcing the commencement of the BA process, the availability of the BAR and inviting I&APs to register on the project database was placed in the "Noordwester" on 11 December 2020 (see **Appendix 7**).

In addition to the advertisement, site notices for the powerline project were placed along the entrance road to the application site (30° 21' 44.5" S; 019° 34' 40.3" E), as well as at the Helios Substation (30° 30' 6.82"S; 19° 33' 25.49"E) on 18 December 2020. These posters contained brief details of the proposed project and process and the contact details of the consultant (proof to be included in Final BAR).

A register of I&APs was compiled as per Section 42 of the EIA Regulations, 2014, as amended. This includes all relevant authorities, Government Departments, the Local Municipality, the District Municipality, relevant conservation bodies and non-governmental organisations (NGO's), as well as neighbouring landowners and the surrounding community. A copy of the I&AP Register is included as **Appendix 7** of this report.

Environmental Impact Assessment Methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the various project stages, as follows:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. The methodology used is detailed in **Section 9**.

Summary of impacts and conclusion

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
Avifauna Assessment	<p>The proposed Loeriesfontein PV 3 - Dwarsrug 132kV overhead line (OHL) will have several impacts on priority avifauna. The impacts can be summarised as follows:</p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the construction and decommissioning activities of the 132kV OHLs. Mortality of priority species due to electrocutions on the 132kV OHLs. Mortality of priority species due to collisions with the 132kV OHLs. <p><u>PREFERRED CORRIDOR OPTION FOR AVIFAUNA</u></p> <p>Both alternatives are routed through similar habitat and will therefore result in similar impacts. However, none of the other route alternatives were deemed to be fatally flawed.</p> <p><u>ENVIRONMENTAL SENSITIVITIES</u></p> <p>The entire study area is rated as High sensitivity due to the presence of collision-prone species. It would</p>	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the construction activities of the 132kV OHLs 	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 455 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the construction activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction 	<p>The proposed Loeriesfontein PV - Dwarsrug 132kV OHL, and the 132kV powerline to link these two (2) facilities to the National grid at the Narosies substation, are expected to have a medium impact on priority species. This impact could be reduced to low through the application of appropriate mitigation measures. No fatal flaws were discovered in the course of the investigations. Based on the outcome of the investigations into the impact of the proposed 132kV OHLs on avifauna, the authorisation of the OHLs is supported, provided the mitigation measures contained in this specialist report are strictly implemented.</p>
		<p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> Mortality of priority species due to electrocutions on the 132kV OHLs. Mortality of priority species due to collisions with the 132kV OHLs. 	<p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6B). The entire 132kV OHL should be marked with Bird flight diverters, on the full span length, on the earthwire (according to Eskom 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	therefore be advisable to mitigate the whole OHL with Bird Flight Diverters (BFDs) if possible.	<p><u>Decommissioning Phase:</u> Decommissioning activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. Large terrestrial species namely Ludwig's Bustard, and Karoo Korhaan could be affected by displacement due to disturbance. The biggest potential impact could be on the Martial Eagles that breed on the Aries – Helios 400kV line. The proposed Loeriesfontein – Dwarsrug 132kV OHL will pass underneath the Aries – Helios 400kV line very close to Tower 455, which contains one of the two nests that the birds are currently using.</p> <p>The priority species which are potentially vulnerable to this impact are listed in Table 2 of the Avifauna Impact Report (Appendix 6B), and below. Species with a high likelihood of regular occurrence in the study area are in bold:</p> <ul style="list-style-type: none"> ▪ Ludwig's Bustard ▪ Karoo Korhaan ▪ Martial Eagle 	<p>guidelines - five metres apart). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.</p> <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> • No off-road driving; • Maximum use of existing roads; • Measures to control noise; • Restricted access to the rest of the property; • The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 452 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the decommissioning activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the decommissioning period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction. 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion																					
		<p>This impact is assessed to be medium and can be reduced to low through mitigation.</p> <p>OVERALL SIGNIFICANCE RATING The respective significance ratings, and an average overall rating before and after mitigation is summarised below:</p> <table border="1"> <thead> <tr> <th>Impact</th> <th>Rating pre-mitigation</th> <th>Rating post-mitigation</th> </tr> </thead> <tbody> <tr> <td>Displacement due to disturbance (Construction)</td> <td>Medium (30)</td> <td>Low (14)</td> </tr> <tr> <td>Electrocution on the 132kV OHLs</td> <td>Low (22)</td> <td>Low (12)</td> </tr> <tr> <td>Collisions with 132kV OHLs</td> <td>Medium (26)</td> <td>Medium (24)</td> </tr> <tr> <td>Displacement due to disturbance (De-commissioning)</td> <td>Medium (30)</td> <td>Low (14)</td> </tr> <tr> <td>Cumulative impacts</td> <td>Medium (23)</td> <td>Low (16)</td> </tr> <tr> <td>Average:</td> <td>Medium (26)</td> <td>Low (16)</td> </tr> </tbody> </table>	Impact	Rating pre-mitigation	Rating post-mitigation	Displacement due to disturbance (Construction)	Medium (30)	Low (14)	Electrocution on the 132kV OHLs	Low (22)	Low (12)	Collisions with 132kV OHLs	Medium (26)	Medium (24)	Displacement due to disturbance (De-commissioning)	Medium (30)	Low (14)	Cumulative impacts	Medium (23)	Low (16)	Average:	Medium (26)	Low (16)	<p><u>Cumulative:</u></p> <ul style="list-style-type: none"> • No off-road driving; • Maximum use of existing roads; • Measures to control noise; • Restricted access to the rest of the property; • The avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to breeding eagles on existing HV lines during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction; • The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6B); • All the 132kV grid connections should be marked with BFDs for their entire lengths. 	
Impact	Rating pre-mitigation	Rating post-mitigation																							
Displacement due to disturbance (Construction)	Medium (30)	Low (14)																							
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Average:	Medium (26)	Low (16)																							
Agriculture Compliance Statement	The aridity of the area is a significant agricultural constraint that seriously limits the level of agricultural production (including grazing) which is possible across the site.	<p>Electrical grid infrastructure has negligible agricultural impact in this study area for two (2) reasons:</p> <ul style="list-style-type: none"> • Overhead transmission lines have no agricultural impact because all agricultural 	There are no additional mitigation measures required, over and above what has already been included in the Generic EMPr for overhead electricity transmission and distribution infrastructure as per Government Notice 435, which was	The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural																					

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	<p>Shallow, sandy soils on underlying rock or carbonate hardpan are a further agricultural limitation.</p> <p>As a result of these limitations, the study area is unsuitable for cultivation and agricultural land use is limited to low density grazing. The majority of land within the development area is classified as low agricultural sensitivity by the screening tool but includes areas of medium sensitivity.</p> <p>The only possible agricultural impact is minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance during construction and decommissioning.</p> <p>The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.</p>	<p>activities that are viable in this environment (grazing) can continue completely unhindered underneath transmission lines.</p> <ul style="list-style-type: none"> • The direct, permanent, physical footprint of the development that has any potential to interfere with agriculture, is restricted to pylon bases and a small substation that, in the context of the agricultural environment of low density grazing on farms which are typically thousands of hectares large, is entirely insignificant. • The only possible source of impact is minimal disturbance to the land during construction and decommissioning • The single agricultural impact is therefore minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance. • 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 excavations. • Soil degradation will reduce the ability of the soil to support vegetation growth. This is a direct, negative impact that applies to only two of the phases of the development (construction and decommissioning). • The cumulative agricultural impact of the proposed development can confidently be assessed as negligible. 	<p>published in Government Gazette 42323 on 22 March 2019.</p>	<p>production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.</p> <p>From an agricultural impact point of view, it is recommended that the development be approved.</p> <p>The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions.</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	From an agricultural impact point of view, it is recommended that the proposed development be approved.			
Botany Compliance Statement	<p>With regards to Option 2, the following was noted and influenced the recommendation to use Option 1:</p> <ul style="list-style-type: none"> This corridor will encroach into the least disturbed vegetation areas on the property – limited roads A whole new road access system is needed to get access to the corridor – no current roads from the turbine access roads to the proposed corridor The area to the northeast and east of the existing wind generator network is more undulating compared to the area next to the road (Loeriesfontein/Granaatboskolk) (Option 1) There are a number of small drainage lines along this corridor that will increase the erosion potential and added impacts on the vegetation – these systems drain to the Bitterputs Pan in the northeast. These pans form part of the important Bushmanland Vloere vegetation type (Mucina and Rutherford, 2006). 	<p><u>Construction and Operation Phase</u></p> <ul style="list-style-type: none"> Clearing of natural vegetation – vehicle traffic on the power line corridor – that will result in an increase in loss of vegetation cover With the sensitivity of the vegetation on the low hills south of the railway line, the status of “medium sensitivity” can be confirmed. Increase in storm water runoff from hardened surfaces (roads) that will lead to an increase in flow velocities resulting in erosion An increase of wind erosion on the exposed soils (e.g. access roads and power line corridor) Potential oil spills/leaks during construction Potential for waste material left on site 	<p><u>Construction</u></p> <ul style="list-style-type: none"> Ensure rehabilitation of cleared patches, manage any alien invasives Rehabilitate any tracks on slopes - monitor after rain events Rehabilitate impacts on drainage lines - constant monitoring after rain events Rehabilitate exposed corridor - ensure covering of large exposed areas Clean and rehabilitate immediately - vehicle inspections and maintenance Monitoring and cleaning - wind-blown materials + on site <p><u>Operation</u></p> <ul style="list-style-type: none"> Need careful monitoring of the corridor - rehabilitate as needed Monitoring and rehabilitation after rain events Cumulative impacts - need monitoring and rehabilitation Rehabilitation of bare soils Maintenance of all vehicles - regular inspections of sites and corridor Solid waste and wind-blown - regular inspections and cleaning 	From an ecological, botanical and habitat perspective it is recommended that Option 1 is the route that must be used for the new proposed 132kV power line.

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion						
	<ul style="list-style-type: none"> According to Todd (2014), the drainage lines associated with the study area are not well developed, which can be ascribed to the stony nature of the area and the low rainfall. <i>“The drainage lines are typically dominated by species such as Phaeoptilum spinosum, Rhigozum trichotomum and Osteospermum armatum along their banks, with Stipagrostis namaquensis typically dominating any relatively stable sediments or bed material. Due to the ecological role they play and their vulnerability to disturbance, drainage lines are considered sensitive and should be avoided as much as possible”.</i> 									
Terrestrial Ecology Compliance Statement	<p>Through the interrogation of various databases, imagery and the previous ecological assessment, it is clear that few sensitive features are present within or near the proposed footprint of the proposed powerlines. As such, it is hereby confirmed that the majority of the site should be considered to have Low Sensitivity. The exception is the small pan-like structures, most of which are designated as Ecological Support Areas (ESAs). Where possible, impacts on these should</p>	<p><u>The key impacts identified for the proposed powerline are:</u></p> <ul style="list-style-type: none"> Construction impacts on small pan-like structures, defined as ESAs 	<ul style="list-style-type: none"> Locate infrastructure outside sensitive zones. If impact unavoidable, rehabilitate disturbed areas. <p><u>Environmental Management Programme (EMPr) input:</u></p> <p>Rehabilitation actions for inclusion into the EMPr</p> <table border="1"> <thead> <tr> <th>Objective</th> <th>Action</th> <th>Timing</th> </tr> </thead> <tbody> <tr> <td>Manage alien invasive plants</td> <td>1. Rehabilitate any disturbed areas within</td> <td>With immediate effect</td> </tr> </tbody> </table>	Objective	Action	Timing	Manage alien invasive plants	1. Rehabilitate any disturbed areas within	With immediate effect	<p>The overall impact of the Loeriesfontein 3 PV - Dwarsrug powerline, on the terrestrial biodiversity and animal species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.</p>
Objective	Action	Timing								
Manage alien invasive plants	1. Rehabilitate any disturbed areas within	With immediate effect								

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion			
	<p>be avoided by locating powerline pylons appropriately.</p> <p>Through the site verification, background investigation and impact assessment, the following are confirmed by the specialist:</p> <ol style="list-style-type: none"> 1. The powerline servitudes are mostly low sensitivity in a terrestrial biodiversity and animal species context, with the exception of the ESAs (pans), which are high sensitivity. 2. The proposed alignment alternatives would have similar to one another due to the relative uniformity of the habitat. 3. Impacts have been identified with proposed mitigation measures. Should these measures be adhered to, the impacts of the proposed powerline would have a low significance. 4. Conditions have been provided that should be included in the Environmental Management Programme (EMPr). Where relevant, additional measures unrelated to terrestrial biodiversity systems should be 		<table border="1"> <tr> <td></td> <td>pans (ESAs).</td> <td></td> </tr> </table>		pans (ESAs).		
	pans (ESAs).						

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	extended from the original EMPr.			
Aquatic Assessment	Through the impact assessment, the risks identified during construction have the highest impact although it would still be considered to be of low risk. The construction and operation phase associated impacts of the access roads, WEF, PV modules, substation, maintenance building and power lines have already been approved by the respective authorities. Therefore, the addition of the power line to the existing proposed development will have a minimal impact as it falls within the original developable area. The location of the proposed power line has been strategically placed to cross the least watercourses and follow existing servitudes.	<u>Construction</u> <ul style="list-style-type: none"> • Change in impervious surface preventing infiltration • Increase in Storm Water • General spills / Leaks • Clearing of vegetation for Access roads and pylons 	<u>Construction</u> <ul style="list-style-type: none"> • The development must ensure areas around the pylons and construction access are revegetated. • The existing vegetation should not be removed in the corridor unless completely necessary. • The mitigation measures required relates to the development and implementation of an adequate storm water management plan to be designed by an appropriate engineer. • The engineer should account for both natural run-off (that which can be released into the natural landscape with no detrimental effect) and excess artificial run-off generated by the access roads and pylon base. • Storm water drains can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion. • The pylon footprint and access roads must stay outside of the 1:100 year flood extent. • All vehicles will need to be checked for leakage before and after entering the construction area. • Areas where fuels are either kept or transferred will need to be bunded so as to contain spillage. 	<p>The proposed 132kV powerlines locations have taken cognisance of alternative locations and “no go” areas and option 1 is deemed to be the best possible location to link Dwarsrug WEF to Loeriesfontein 3 PV. In this area, given the low water use requirement on-site and adherence to specialist recommendations, the site is of low risk of negative aquatic impacts during construction and operation.</p> <p>Option 3 132kV powerline location is deemed to be the best possible location to link Dwarsrug WEF to the Narosies Substation.</p> <p>The previously approved specialist reports and the subsequent environmental authorisation (EA) are still relevant and these studies covered the proposed powerline footprint.</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> • Cement mixing sites will also need to be strategically positioned and bunded to prevent spillage. • Ablution facilities must be provided to prevent workers urinating near or in the wetlands. • Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones. • The loss of vegetation is inevitable and necessary for the proposed development to take place. Hence, the impact of vegetation clearance will be definite. • Mitigation measures primarily will relate to the cumulative impacts associated with exposed open stretches of land. Run-off is to be mitigated by the use of structures that will reduce the rate and volume of run-off so as to prevent erosion and siltation impacts affecting nearby wetlands. 	<p>NatureStamp strongly confirms that the aquatic impacts associated with the powerline would be minimal and acceptable and hence the EA should be granted to include the powerline.</p>
Heritage Assessment	No heritage resources were identified during the site survey.	<u>Construction, Operation, Decommissioning and Cumulative</u> <ul style="list-style-type: none"> • Impact on archaeological and historical heritage resources 	<u>Construction, Operation, Decommissioning and Cumulative</u> <ul style="list-style-type: none"> • Include heritage chance finds procedure in EMP for project development • An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr. 	<p>The current study has confirmed that the impact of the OHL will be low. This finding and with the implementation of a chance finds procedure as part of the EMPr will mitigate possible impacts on unidentified heritage resources.</p> <p>The calculated impact as summarised in section 7 of</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
				<p>this report confirms the low negative impact rating pre-and post-mitigation.</p> <p>An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr.</p>
<p>Palaeontology Assessment</p>	<p>As the authorised Loeriesfontein 3 Photovoltaic Solar Energy Facility and the approved substation at the authorised Dwarsrug Wind Energy was originally assessed in a Palaeontological Impact Assessment (Groenewald, 2014) and as the proposed project falls in the same area the Palaeontological Significance of the three power lines and two route alternatives is low. There is also no preference between the two route alternatives as the geology of the routes are the same.</p>	<ul style="list-style-type: none"> Loss of fossil heritage 	<ul style="list-style-type: none"> Chance find protocol <p>If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that correct mitigation (recording and collection) can be carry out by a palaeontologist.</p>	<p>The overall impact is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels. allowing for the development to be authorized.</p> <p>It is thus considered that the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area.</p> <p>It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
				mitigation are required pending the discovery of newly discovered fossils.
Socio-Economic Assessment	<p>Most negative impacts will apply over the short-term and are confined to the construction phase of the project. All impacts are within acceptable ranges and there are no fatal flaws associated with the construction or operation of the project.</p> <p>The proposed development supports the objectives of the RMIPPPP, which serves as an “emergency” power generation programme for accelerated assistance to the national grid amid electricity supply constraints. The DMRE issued an RFP for the emergency procurement of 2000 MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can reduce the risk of load shedding.</p>	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Health and social wellbeing impact; <ul style="list-style-type: none"> ○ Annoyance, air quality and noise ○ Increase in crime ○ Increased risk of HIV infections ○ An influx of construction workers ○ Hazard exposure. • Quality of the living environment; <ul style="list-style-type: none"> ○ Disruption of daily living patterns. • Economic <ul style="list-style-type: none"> ○ Job creation and skills development ○ Socio-economic stimulation. 	<ul style="list-style-type: none"> • Health and social wellbeing impact; <ul style="list-style-type: none"> ○ Air Quality <ul style="list-style-type: none"> ▪ Ensure that dust suppression measures, such as damping down of unsealed roads where necessary are applied. ○ Noise <ul style="list-style-type: none"> ▪ Ensure that no construction activity occurs near residences between 18:30 and 06:30 during the week and between 08:30 and 16:30 over weekends. ○ Increase in crime <ul style="list-style-type: none"> ▪ Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. ▪ Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. ▪ Prevent loitering within the vicinity of the construction camp and construction sites. 	<p>Considering all social impacts associated with the project, it is evident that the positive elements outweigh the negative and that the project carries with it a significant social benefit. In addition, the project fits with international and governmental policy and legislation.</p> <p>Consequently, the construction of the proposed 132 kV Loeriesfontein to Dwarsrug Overhead Powerline is supported at the social level with no further assessment being required.</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> ○ Increased risk of HIV infections <ul style="list-style-type: none"> ▪ Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. ▪ Expose workers to a health and HIV/AIDS awareness educational program. ○ An influx of construction workers <ul style="list-style-type: none"> ▪ Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. ▪ Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy. ○ Hazard exposure. <ul style="list-style-type: none"> ▪ Ensure all construction equipment and vehicles are properly maintained at all times. ▪ Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<p>they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly.</p> <ul style="list-style-type: none"> ▪ Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. ▪ Make staff aware of the dangers of fire during regular toolbox talks. <ul style="list-style-type: none"> • Quality of the living environment; <ul style="list-style-type: none"> ○ Disruption of daily living patterns. <ul style="list-style-type: none"> ▪ Ensure that, at all times, people have access to their properties and social facilities. • Economic <ul style="list-style-type: none"> ○ Job creation and skills development <ul style="list-style-type: none"> ▪ Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> ▪ Women should be given equal employment opportunities and encouraged to apply for positions. ▪ A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction. ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase. 	
		<p><u>Operation</u></p> <ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. • Quality of the living environment; <ul style="list-style-type: none"> ○ Transformation of the sense of place • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. 	<ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. <ul style="list-style-type: none"> ▪ Ensure that where ever possible the power line is routed away from areas of high human and animal habitat. ▪ Establish a grievance mechanism and deal with grievances transparently. • Quality of the living environment <ul style="list-style-type: none"> ○ Transformation of the sense of place 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> ▪ Apply the mitigation measures suggested in the Visual Impact Assessment Report. ▪ A Grievance Mechanism should be initiated and all grievances should be dealt with transparently. ▪ The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed. • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ The power line will revert to Eskom and become an Eskom asset over the operational phase. Consequently, optimisation measures as they apply in respect to similar Eskom assets would also apply in this in this case. 	
Visual Assessment	The Visual Impact Assessment (VIA) identified seven (7) potentially sensitive receptors in the study area, i.e. within 5kms from the outer boundary of the combined power line assessment corridors, all of which are farmsteads. None of these receptors are considered to be Sensitive Receptors as they are	<u>Construction</u> <ul style="list-style-type: none"> • Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. • Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. 	<u>Construction</u> <ul style="list-style-type: none"> • Carefully plan to minimise the construction period and avoid construction delays. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner. 	From a visual perspective therefore, the proposed 132 kV overhead power lines between the proposed (and authorised) 100MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) and proposed (and

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	<p>not linked to leisure/nature-based tourism activities in the area. They are however regarded as potentially sensitive visual receptors as they are located within a mostly natural setting and the proposed development will likely alter natural vistas experienced from these dwellings.</p> <p>All of the identified receptors were assessed in terms of SiVEST's receptor impact rating matrix and this showed that five (5) potentially sensitive receptors will be subjected to moderate levels of visual impact as a result of the proposed power lines, while the remaining two (2) receptors will be subjected to low levels of visual impact. It was noted however, that all of these receptors are located on application sites for adjacent existing and renewable energy projects, including the existing Khobab and Loeriesfontein 2 WEFs, the proposed Kokerboom 3 WEF and the proposed Hantam Solar PV Energy Facility. As such the owners / occupants of these farmsteads are not expected to perceive the proposed power lines in a negative light.</p>	<ul style="list-style-type: none"> Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. Surface disturbance during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	<ul style="list-style-type: none"> Maintain a neat construction site by removing rubble and waste materials regularly. Make use of existing gravel access roads where possible. Limit the number of vehicles and trucks travelling to and from the construction site, where possible. Ensure that dust suppression techniques are implemented: <ul style="list-style-type: none"> on all access roads; in all areas where vegetation clearing has taken place; on all soil stockpiles. 	<p>authorised) 140MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation is deemed acceptable and the Environmental Authorisation (EA) should be granted. SiVEST is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.</p>
		<p><u>Operation</u></p> <ul style="list-style-type: none"> The proposed power lines could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. The decommissioning activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. The night time visual environment will be altered if any lighting is placed on pylon structure. 	<p><u>Operation</u></p> <ul style="list-style-type: none"> As far as possible, limit the number of maintenance vehicles using access roads. Where possible, avoid placing lights on pylon structures. Non-reflective surfaces should be utilised where possible. 	
		<p><u>Decommissioning</u></p> <ul style="list-style-type: none"> Vehicles and equipment required for decommissioning will alter the natural 	<p><u>Decommissioning</u></p> <ul style="list-style-type: none"> All infrastructure that is not required for post-decommissioning use should be removed. 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	<p>The overall impact rating revealed that the proposed development is expected to have a negative low visual impact rating during construction, operation and decommissioning phases with a number of mitigation measures available to prevent any additional visual impacts.</p>	<p>character of the study area and expose visual receptors to visual impacts.</p> <ul style="list-style-type: none"> • Decommissioning activities may be perceived as an unwelcome visual intrusion. • Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning activities may evoke negative sentiments from surrounding viewers. • Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. • Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. <p><u>Cumulative</u></p> <ul style="list-style-type: none"> • Additional renewable energy and associated grid connection infrastructure developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. • Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. • Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased 	<ul style="list-style-type: none"> • Carefully plan to minimize the decommissioning period and avoid delays. • Maintain a neat decommissioning site by removing rubble and waste materials regularly. • Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. • Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required. <p><u>Cumulative</u></p> <ul style="list-style-type: none"> • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner. • As far as possible, limit the number of maintenance vehicles using access roads. • Where possible, avoid placing lights on pylon structures. • Non-reflective surfaces should be utilised where possible. 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
		<p>impacts from dust emissions and dust plumes.</p> <ul style="list-style-type: none"> The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities and associated substations in the broader area. If the 132kV power lines is not developed in this area, there will be no change in the visual character or the sense of place. There will be no visual impacts on receptors or on the night-time visual environment. 		
<p>Geotechnical Assessment</p>	<p>Some geotechnical constraints have been identified, including the presence of shallow bedrock and loose / collapsible sands. These constraints may be mitigated via standard engineering design and construction measures. Shallow spread footings or drilled foundations are considered suitable to support the structures.</p> <p>No fatal flaws have been identified that would render the proposed powerlines unsuitable from a geological and geotechnical perspective.</p>	<ul style="list-style-type: none"> Disturbance/ displacement/ removal of soil and rock Soil Erosion 	<ul style="list-style-type: none"> Design access roads and pylon locations to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management Avoid development in preferential drainage paths Appropriate engineering design of road drainage and watercourse crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. regressing) Use designated access and laydown areas only to minimise disturbance to surrounding areas Maintain access roads including drainage features Monitor for erosion and remediate and rehabilitate timeously 	<p>Based on the impact significance ratings presented, the development of the proposed powerlines within Corridor 1, Corridor 2 and Corridor 3, from a geological and geotechnical perspective, will be “Negative Low impact”, provided that the recommended mitigation measures are implemented.</p> <p>From a geotechnical and geological perspective, no fatal flaws, sensitivities, or areas to be avoided have been identified within or close to the assessment area. It is therefore recommended that the</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> • Restore natural site topography • Landscape and rehabilitate access roads and disturbed areas timeously (e.g. regressing) 	proposed activity be authorised.

Environmental Impact Statement

This BAR has identified and assessed the potential biophysical and socio-economic impacts associated with the proposed powerline project and has, where necessary, identified mitigation measures to reduce impacts to acceptable levels. No fatal flaws associated with the project have been identified by the EAP or Specialists. A summary of the findings of the Impact Assessment process and identified mitigation measures is included in the table above.

The EAPs and specialists, through the interrogation of planning documents (**Section 2**) and, where these planning documents are not available - using best judgment, have considered the anticipated needs and interests of the broader community.

The proposed project includes an application for a powerline from the approved 100MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) to the approved 140MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4) to link the two (2) facilities in order to create a hybrid renewable energy facility. A further powerline is required to link this hybrid facility to the to the National grid at the approved Narosies substation. The linking of these two (2) facilities to the National grid supports the objectives of the RMIPPPP in terms of accelerated electrical supply into the National grid amid the country's current electricity supply constraints. Furthermore, the proposed development will facilitate South Africa's move to towards a greener and cleaner energy generation mix through feeding energy generated from already approved solar and wind facilities into the National grid. The need and desirability of the project, in the context of both the greater community, as well in the context of the proponent, have been clearly established within this assessment report.

The BA process for the proposed development has been conducted in accordance with the EIA Regulations of 2014, as amended, promulgated in terms of Chapter 5 of NEMA. A detailed public participation process was followed during the BA process which conformed to the public consultation requirements as stipulated in the EIA Regulations of 2014, as amended, as well as the recent circular by the DEFF (dated 05 June 2020, Government Gazette 43412) (refer to **Chapter 7**). In addition, all issues raised by I&APs and key stakeholders will be captured in the FBAR and where possible, mitigation measures provided in the EMPr (**Appendix 8**) to address these concerns.

In terms of Section 31 (n) of the NEMA, the EAP is required to provide a rationalised opinion as to whether the activity should or should not be authorised. In this section, a qualified opinion is ventured, and in this regard SiVEST believes that sufficient information is available for DEFF to make an informed decision on EA.

For ease of reference the findings of the specialist assessments and sensitivity mapping were used to compare the two (2) above-mentioned powerline alternatives linking the Loeriesfontein 3 PV SEF to the Dwarsrug WEF, and inform the EAPs recommendations as to the preferred routing of these proposed powerline alternatives (see **Section 12**).

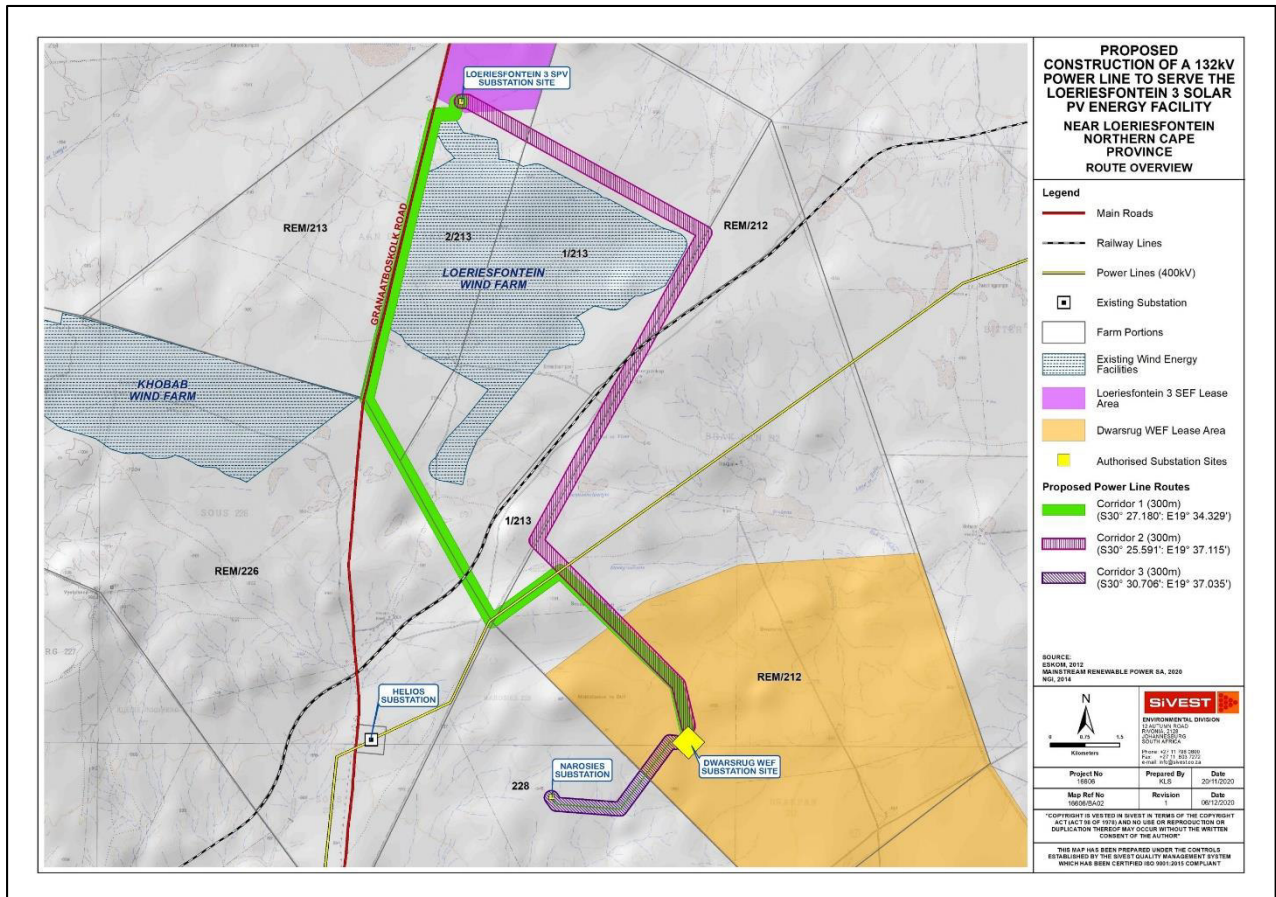
Based on the results, **Powerline Corridor Alternative 1 (Loeriesfontein 3 PV SEF to Dwarsrug WEF)** was deemed to be the slightly more preferred alternative from an environmental perspective. This is primarily due to the slightly elevated negative impacts associated with the botanical and aquatic features identified on **Corridor Alternative 2 (Loeriesfontein 3 PV SEF to Dwarsrug WEF)**. It is however noted that the area of disturbance associated with Corridor 2 is slightly less than Corridor 1 given that the latter is a marginally longer route. In summary it can be concluded that neither of the two (2) route alignment alternatives from Loeriesfontein 3 PV SEF to Dwarsrug WEF (Corridors 1 & 2) are fatally flawed, and both return low negative impact significance scores when mitigation is applied.

Additionally, EAP and Specialist assessment of the proposed Corridor 3 (**Powerline from Dwarsrug WEF to the Narosies Substation**) has also returned a low impact finding with mitigation applied, with no fatal

flaws being identified along this alignment. This route alignment is therefore also deemed to be acceptable from an environmental impact perspective.

The powerline corridors (including all alternatives) put forward in this BAR have all been informed by specialist investigations, assessment and associated environmental sensitivity analysis. No fatal flaws are associated with any of the proposed routes and alternatives put forward in this BAR.

The proposed routes recommended by the EAP for Environmental Authorisation have been included in Figure 9 below for reference purposes.



Layout recommended for Environmental Authorisation by the EAP (Based on the proviso that only one (1) of the two (2) Alternatives presented, namely Corridor 1 or 2, is constructed)

Based on the findings of the respective specialist studies, no fatal flaws or environmental issues have been identified which would prevent the proposed development from receiving authorisation. Based on the rating of the significance of impacts of the proposed powerline project undertaken by the respective specialists, it was confirmed that the impacts associated with the proposed development can be kept to a medium low significance provided that mitigation measures are implemented. In addition, the cumulative impacts associated with the proposed development can be kept low with mitigation applied, and no fatal flaws have been identified. The impacts associated with the proposed powerline project can therefore be reduced to acceptably low levels and the impacts associated with the project are therefore deemed to be within acceptable limits of change. All three (3) powerline corridors are thus deemed to be acceptable, and as such it is the EAP's reasoned opinion that the Applicant should be granted Environmental Authorisation for all of the above routes with the proviso that only one (1) of the two (2) Alternatives presented, namely Corridor 1 or 2, is constructed.

It is the opinion of the EAP that based on the findings of the BA, the proposed development should be granted a positive decision on Environmental Authorisation (EA) and be allowed to proceed to construction phase, provided the following conditions are adhered to:

- The final detailed alignments of the powerlines which are to be constructed within the approved corridors must be submitted to the DEFF for approval prior to the commencement of construction activities;
- All feasible and practical mitigation measures recommended by the various specialists must be incorporated into the Environmental Management Programme (EMPr) and implemented, where applicable by the Authorisation Holder; and
- Where applicable, independent monitoring must be undertaken to evaluate the success of the mitigation measures recommended by the various specialists and EAP. At a minimum monthly monitoring by an ECO must be undertaken during the construction phase of the project. The ECO must be required to submit monthly audit reports to the DEFF detailing the levels of compliance against the conditions of EA and EMPr during the construction phase of the project.

In light of the information above, it is the EAP's qualified opinion that sufficient information is available for DEFF to make an informed decision on EA.

GENERAL ACRONYMS & ABBREVIATIONS

The following list of terms and acronyms are used within this document:

BA	- Basic Assessment
BAR	- Basic Assessment Report
BESS	- Battery Energy Storage System
BFD(s)	- Bird Flight Diverter(s)
BID	- Background Information Document
CARA	- Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CBA	- Critical Biodiversity Area
DBAR	- Draft Basic Assessment Report
DEFF	- Department of Environment, Forestry and Fisheries
DM	- District Municipality
DMRE	- Department of Mineral Resources and Energy
DoE	- Department of Energy
DWS	- Department of Water and Sanitation
EAP	- Environmental Assessment Practitioner
ECA	- Environmental Conservation Act (ECA) (Act No. 73 of 1989)
ECO	- Environmental Control Officer
EHS	- Environmental, Health, and Safety
EIA	- Environmental Impact Assessment
EMPr	- Environmental Management Programme
EP	- Equator Principles
ERA	- The Electricity Regulation Act No. 4 of 2006
ESA	- Ecological Support Area
FBAR	- Final Basic Assessment Report
GA	- General Authorisation
GDP	- Gross Domestic Product
GHG	- Green House Gases
GIS	- Geographic Information System
GW	- Gigawatts
GWh	- Gigawatt Hours
Ha	- Hectares
HIA	- Heritage Impact Assessment
I&AP(s)	- Interested and/or Affected Party/Parties
IBA(s)	- Important Bird Area(s)
IDP	- Integrated Development Plan
IEP	- Integrated Energy Plan
IFC	- International Finance Corporation
IPP(s)	- Independent Power Producers
IRP	- Integrated Resource Plan
IUCN	- International Union for the Conservation of Nature and Natural Resources
kV	- Kilo Volt
LM	- Local Municipality
LED	- Local Economic Development
MSL	- Mean Sea Level
MW	- Megawatt
NEA	- The National Energy Act (Act No. 34 of 2008)
NEMA	- National Environmental Management Act (Act No. 107 of 1998) as amended
NEM:AQA	- National Environmental Management: Air Quality Act (Act No. of 2004) as amended
NEM:BA	- National Environmental Management: Biodiversity Act (Act No. 10 of 2004) as amended

NEM:PAA	- National Environmental Management: Protected Areas Act (Act No. 57 of 2003) as amended
NFA	- The National Forest Act (Act No. 84 of 1998) as amended
NFEPA	- National Freshwater Ecosystem Priority Areas
NHRA	- National Heritage Resources Act (Act No. 25 of 1999) as amended
NPAES	- National Protected Area Expansion Strategy
NRTA	- National Road Traffic Act (Act No. 93 of 1996) as amended
NWA	- National Water Act (Act No. 36 of 1998) as amended
OHSA	- Occupational Health and Safety Act (Act No. 85 of 1993) as amended
OoS	- Organs of State
PDP	- Provincial Development Plan
PES	- Present Ecological Status
PoS	- Plan of Study
PM	- Public Meeting
PPA	- Power Purchase Agreement
PPP	- Public Participation Process
PV	- Photovoltaic
RDP	- Rural Development Plan
REDZ	- Renewable Energy Development Zone
REIPPP	- Renewable Energy Independent Power Producer Procurement Programme
RE	- Renewable Energy
RFQ	- Request for Proposal
RMIPPPP	- Risk Mitigation Independent Power Producer Procurement Programme
SA	- South Africa
SABAP1/2	- Atlas of Southern African Birds 1/2
SACAA	- South African Civil Aviation Authority
SAHRA	- South African Heritage Resources Agency
SAHRIS	- South African Heritage Resources Information System
SALA	- Subdivision of Agricultural Land Act (Act No. 70 of 1970)
SANBI	- South African National Biodiversity Institute
SDF	- Spatial Development Framework
SEF	- Solar Energy Facility
SKA	- Square Kilometre Array
SWMP	- Storm Water Management Plan
VIA	- Visual Impact Assessment
VU	- Vulnerable
WEF	- Wind Energy Facility
WMA	- Water Management Area
WUL	- Water Use License
WULA	- Water Use License Application

GLOSSARY OF TERMS

Alluvial: Resulting from the action of rivers, whereby sedimentary deposits are laid down in river channels, floodplains, lakes, depressions etc.

Archaeological resources: This includes:

- i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- iii. wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Basic Assessment Report: An assessment report compiled in accordance with Appendix A of the NEMA: EIA Regulations of 2014, as amended, to relay the information gathered and assessments undertaken during the Environmental Impact Assessment phase of a project.

Battery Energy Storage System: A technology developed for storing electric charge by using specially developed batteries. These systems complement intermittent sources of energy such as wind, tidal and solar power to balance energy production and consumption.

Biodiversity: The diversity of genes, species and ecosystems, and the ecological and evolutionary processes that maintain that diversity.

Construction Phase: The stage of project development involving site preparation as well as all construction activities associated with the development of the project.

Cultural landscape: A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992).

Cultural Significance: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Cumulative Impact: In relation to an activity, cumulative impact means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Endemic: Restricted or exclusive to a particular geographic area and occurring nowhere else. Endemism refers to the occurrence of endemic species.

Environmental Assessment Practitioner: An independent individual with the appropriate qualifications and experience who is appointed by the Applicant to manage the Environmental Impact Assessment process.

Environmental Authorisation: An approval granted by the Competent Authority allowing the Applicant to undertake listed activities in terms of the NEMA: EIA Regulations 2014, as amended.

Environmental Impact Assessment: In relation to an application, means the process of collecting, organising, analysing, interpreting, assessing and communicating environmental and socio-economic information that is relevant to the consideration of the application.

Environmental Management Programme: A legally binding working document, which stipulates environmental and socio-economic mitigation measures which must be implemented by several responsible parties throughout the duration of the proposed project.

"Equator Principles": A financial industry benchmark for determining, assessing and managing social & environmental risk in project financing.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Habitat: The area of an environment occupied by a species or group of species, due to the particular set of environmental conditions that prevail there.

Heritage: That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage Resources: This means any place or object of cultural significance, such as the caves with archaeological deposits identified close to both development sites for this study.

Impact: A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.

Kilovolt (kV): a unit of electric potential equal to a thousand volts (a volt being the standard unit of electric potential. It is defined as the amount of electrical potential between two points on a conductor carrying a current of one ampere while one watt of power is dissipated between the two points).

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action. Design or management mitigation measures are those that are intended to minimise or enhance an impact, depending on the desired effect.

"No-Go" option: The "no-go" development alternative option assumes the site remains in its current state, i.e. there is no construction of a facility and associated infrastructure in the proposed project area.

Operational Phase: The project phase following the Construction Phase, during which the development will function or be used as per the design.

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Precipitation: Any form of water, such as rain, snow, sleet, or hail that falls to the earth's surface.

PV Development Area: Area for the potential erection of PV panels within the application site

Red Data Species: All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

Red List: A publication that provides information on the conservation and threat status of species, based on scientific conservation assessments.

Rehabilitation: Less than full restoration of an ecosystem to its pre-disturbance condition.

Restoration: To return a site to an approximation of its condition before alteration.

Riparian: The area of land adjacent to a river or stream that is, at least periodically, influenced by flooding.

Sense of place: The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

Specialist study: A study into a particular aspect of the project, undertaken by a suitably qualified expert in that discipline.

Species of Special / Conservation Concern: Species that have particular ecological, economic or cultural significance, including but not limited to threatened species.

Stakeholders: All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others.

Sustainable development: Sustainable development is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. NEMA defines sustainable development as the integration of social, economic and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations.

Threatened Ecosystems: An ecosystem that has been classified as Critically Endangered, Endangered or Vulnerable, based on analysis of ecosystem threat status. A threatened ecosystem has lost, or is losing, vital aspects of its structure, composition or function. The Biodiversity Act makes provision for the Minister or Environmental Affairs, or a provincial MEC of Environmental Affairs, to publish a list of threatened ecosystems.

Threatened Species: A species that has been classified as Critically Endangered, Endangered or Vulnerable, based on a conservation assessment using a standard set of criteria developed by the IUCN for determining the likelihood of a species becoming extinct. A threatened species faces a high risk of extinction in the near future.

Visual Assessment Zone: The visual assessment zone or study area is assumed to encompass a zone of 10km from the outer boundary of the proposed application site.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
GENERAL ACRONYMS & ABBREVIATIONS	XXIX
GLOSSARY OF TERMS	XXXIV
1. INTRODUCTION.....	1
1.1 PROJECT BACKGROUND.....	1
1.2 THE PURPOSE AND CONTENT OF THIS BASIC ASSESSMENT REPORT (BAR)	2
1.3 ASSUMPTIONS AND LIMITATIONS.....	4
1.4 SPECIALIST ASSUMPTIONS AND LIMITATIONS.....	5
1.5 BASIC ASSESSMENT REPORT (BAR) STRUCTURE.....	10
2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES.....	10
2.1 KEY LEGAL AND ADMINISTRATIVE REQUIREMENTS RELATING TO THE PROPOSED DEVELOPMENT	11
2.1.1 Constitution of South Africa	11
2.1.2 National Environmental Management Act (NEMA) (Act No. 107 of 1998) – NEMA EIA Requirements....	11
2.1.3 NEMA EIA Regulations, 2014 (as amended).....	12
2.1.4 National Heritage Resources Act (NHRA) (Act No. 25 of 1999)	12
2.1.5 National Water Act (NWA) (Act No. 36 of 1998, as amended)	16
2.1.6 National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004, as amended).....	17
2.1.7 National Environmental Management: Protected Areas Act (NEM: PAA) (Act No. 57 of 2003, as amended).....	18
2.1.8 Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)	19
2.1.9 Subdivision of Agricultural Land Act (SALA) (Act No. 70 of 1970, as amended)	19
2.1.10 National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)	20
2.1.11 Civil Aviation Act (CAA) (Act No. 13 of 2009)	20
2.1.12 Northern Cape Nature Conservation Act (Act No. 9 of 2009)	20
2.1.13 Additional Relevant Legislation	21
2.2 KEY DEVELOPMENT STRATEGIES AND GUIDELINES	21
2.2.1 Spatial Planning and Land Use Management Act 16 Of 2013 (SPLUMA).....	22
2.2.2 Integrated Development Plan (IDP) (2019/2020).....	22
2.2.3 Renewable Energy Independent Power Producer Procurement Program (REIPPPP).....	24
2.2.4 Department of Energy (DoE) White Paper on Renewable Energy, 2003	24
2.2.5 The Northern Cape Provincial Spatial Development Framework (SDF)	25
2.2.6 Convention on Biodiversity (CBD)	25
2.2.7 Heritage	25
3. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	26
4. LOCATION OF THE ACTIVITY.....	26
5. PROJECT DETAILS.....	31
5.1 NEED AND DESIRABILITY	31
5.2 APPLICANTS NEED AND MOTIVATION FOR THE PROPOSED PROJECT	31
5.3 GENERAL DESCRIPTION OF THE PROJECT AREA AND SURROUNDING LAND USES	32
5.4 PROJECT ALTERNATIVES CONSIDERED	33
5.4.1 Site / Route Alternatives	33
5.4.2 Activity Alternatives	34
5.4.3 Technology Alternatives	34
5.4.4 No-go alternative	34
5.5 APPLICABLE LISTED ACTIVITIES.....	35

6.	DESCRIPTION OF THE BASELINE ENVIRONMENT	36
6.1	CLIMATE	36
6.2	TOPOGRAPHY.....	36
6.3	VEGETATION	36
6.4	GEOLOGY	36
6.5	CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES	36
6.6	CURRENT LAND USE	37
6.7	SPECIALIST STUDIES	37
6.7.1	Avifauna Impact Assessment	37
6.7.2	Agricultural Compliance Statement	39
6.7.3	Desktop Geotechnical Impact Assessment	39
6.7.4	Botany Compliance Statement	40
6.7.5	Terrestrial Ecology Compliance Statement	42
6.7.6	Heritage Impact Assessment.....	43
6.7.7	Paleontological Desktop Assessment.....	43
6.7.8	Visual Impact Assessment	44
6.7.9	Desktop Social Impact Assessment	45
6.7.10	Aquatic Compliance Statement.....	46
7.	PUBLIC PARTICIPATION.....	46
7.1	COMPLIANCE WITH REGULATIONS AND SUBSEQUENT CIRCULARS	47
7.2	NEWSPAPER ADVERTISEMENT AND SITE NOTICES	48
7.3	WRITTEN NOTIFICATION TO AUTHORITIES AND LANDOWNERS	49
7.3.1	Interested and Affected Parties (I&APs)	49
7.3.2	Landowner Consent and Notification	49
7.3.3	Notification of BAR for Public Comment	52
7.3.4	Review of the Draft Basic Assessment Report (DBAR) by Organs of State (OoS) / Key Stakeholders.....	52
8.	ENVIRONMENTAL MONITORING AND AUDITING	59
8.1.	PLANNING AND DESIGN PHASE	59
8.2.	CONSTRUCTION PHASE	60
8.3.	OPERATION PHASE.....	60
8.4.	DECOMMISSIONING PHASE	60
9.	IMPACT ASSESSMENT AND MITIGATION MEASURES	62
9.1.	IMPACT ASSESSMENT METHODOLOGY	62
8.1.1	Determination of Significance of Impacts	63
8.1.2	Impact Rating System	63
8.1.3	Rating System Used to Classify Impacts	63
9.2.	IMPACTS IDENTIFIED	66
9.3.	IMPACT ASSESSMENT	79
9.1.1.	Terrestrial Ecology Impacts (Compliance Statement).....	79
9.1.2.	Botany Impacts (Compliance Statement)	81
9.1.3.	Avifauna Impacts	89
9.1.4.	Agricultural Impacts (Compliance Statement).....	96
9.1.5.	Geotechnical Impacts	96
9.1.6.	Heritage Impacts.....	103
9.1.7.	Paleontological Impacts.....	106
9.1.8.	Social Impacts	108
9.1.9.	Visual Impacts	115
9.1.10.	Aquatic Impacts (Compliance Statement).....	122
9.4.	CUMULATIVE ASSESSMENT	129
10.	ASSESSMENT IN TERMS OF EQUATOR PRINCIPLES	132
10.1.	ASSESSMENT RESULTS	134

11. ENVIRONMENTAL IMPACT STATEMENT	136
12. CONCLUSIONS AND RECOMMENDATIONS OF THE EAP	149
13. CONSTRUCTION TIMEFRAMES	151
14. UNDERTAKING	151
15. REFERENCES.....	152

LIST OF TABLES

TABLE 1: CONTENT OF A BA REPORT (NEMA: EIA REGULATIONS OF 2014, AS AMENDED)	3
TABLE 2: LISTED ACTIVITIES IN TERMS OF THE NEMA REGULATIONS	12
TABLE 3: DETAILS OF THE EAP	26
TABLE 4: PROPERTIES / FARMS AFFECTED BY THE PROPOSED POWERLINE CORRIDORS	27
TABLE 5: LISTED ACTIVITIES APPLIED FOR IN TERMS OF THE NEMA: EIA REGULATIONS OF 2014, AS AMENDED.....	35
TABLE 6: DETAILS REGARDING THE LANDOWNERS / OCCUPIERS (AFFECTED AND ADJACENT) WHO HAVE BEEN CONTACTED AND/OR NOTIFIED WITH REGARDS TO THE BA	50
TABLE 7: RATING OF IMPACTS CRITERIA	63
TABLE 8: IMPACTS IDENTIFIED BY THE EAP AND SPECIALISTS AND ASSOCIATED MITIGATION MEASURES ...	67
TABLE 9: RENEWABLE ENERGY DEVELOPMENTS IDENTIFIED WITHIN A 35KM RADIUS OF THE PROPOSED POWERLINE APPLICATION SITES.....	130
TABLE 10: COMPLIANCE LEVEL OF PROPOSED DEVELOPMENT IN TERMS OF EPS AND RELATED PERFORMANCE STANDARDS.....	134
TABLE 11: A SUMMARY OF THE FINDINGS FOR EACH IDENTIFIED ENVIRONMENTAL IMPACT EVALUATED IN THE CONTEXT OF THE PROPOSED DEVELOPMENT (BOTH BIOPHYSICAL AND SOCIAL)	138
TABLE 12: A SUMMARY OF THE FINDINGS FOR EACH IDENTIFIED ENVIRONMENTAL IMPACT EVALUATED IN THE CONTEXT OF THE PROPOSED DEVELOPMENT (BOTH BIOPHYSICAL AND SOCIAL)	146

LIST OF FIGURES

FIGURE 1: DEFF SCREENING TOOL OUTCOME INDICATING A MEDIUM TO HIGH ARCHAEOLOGICAL AND CULTURAL HERITAGE SIGNIFICANCE	15
FIGURE 2: REGIONAL LOCALITY MAP	29
FIGURE 3: LOCALITY MAP	30
FIGURE 4: POWERLINE ALTERNATIVES PROPOSED TO LINK LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF (CORRIDORS 1 & 2), AS WELL AS THE SINGLE POWER LINE PROPOSED TO LINK TWO (2) FACILITIES TO NATIONAL GRID FROM THE DWARSRUG WEF (CORRIDOR 3).....	34
FIGURE 5: SCHEMATIC ILLUSTRATION OF PPP TOOLS	48
FIGURE 6: ORGANOGRAM INDICATING THE ORGANISATIONAL STRUCTURE	62
FIGURE 7: CUMULATIVE IMPACT ORGANOGRAM.....	129
FIGURE 8: MAP SHOWING OTHER PROPOSED RENEWABLE ENERGY DEVELOPMENTS WITHIN 35KM OF THE PROPOSED POWERLINES.....	131
FIGURE 9: LAYOUT RECOMMENDED FOR ENVIRONMENTAL AUTHORISATION BY THE EAP (BASED ON THE PROVISIO THAT ONLY ONE (1) OF THE TWO (2) ALTERNATIVES PRESENTED, NAMELY CORRIDOR 1 OR 2, IS CONSTRUCTED).....	151

APPENDICES

APPENDIX 1: IFC HANDBOOK

APPENDIX 2: EXPERTISE OF EAP AND PROJECT TEAM

APPENDIX 3: DOL FORMS AND EAP AFFIRMATION

APPENDIX 4: AUTHORITY CONSULTATION

APPENDIX 5: MAPS

APPENDIX 6: SPECIALIST STUDIES

APPENDIX 6A: AGRICULTURAL AND SOILS COMPLIANCE STATEMENT

APPENDIX 6B: AVIFAUNA IMPACT ASSESSMENT

APPENDIX 6C: HERITAGE IMPACT ASSESSMENT (INCL. PALAEOLOGY)

APPENDIX 6D: SOCIO-ECONOMIC IMPACT ASSESSMENT;

APPENDIX 6E: AQUATIC IMPACT ASSESSMENT

APPENDIX 6F: TERRESTRIAL ECOLOGY (INCLUDING BOTANY) COMPLIANCE STATEMENT

APPENDIX 6G: VISUAL IMPACT ASSESSMENT

APPENDIX 6H: DESKTOP GEOTECHNICAL IMPACT ASSESSMENT

APPENDIX 7: PUBLIC PARTICIPATION

APPENDIX 8: DRAFT EMPR

APPENDIX 9: ADDITIONAL INFORMATION

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED CONSTRUCTION OF 132KV POWERLINES BETWEEN THE AUTHOIRSED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY AND THE DWARSRUG WIND ENERGY FACILITY, AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE NAROSIES SUBSTATION

DRAFT BASIC ASSESSMENT REPORT (DBAR)

1. INTRODUCTION

1.1 PROJECT BACKGROUND

South Africa Mainstream Renewable Power Developments (Pty) Ltd. (herein after referred to as “Mainstream”) has appointed SiVEST SA (Pty) Ltd (hereafter referred to as “SiVEST”) to undertake a Basic Assessment (BA) Process for the proposed construction of 132 kV overhead powerlines between the proposed (and authorised) 100MW Loeriesfontein 3 Photovoltaic (PV) Solar Energy Facility (SEF) ([12/12/20/2321/2/AM4](#)) and proposed (and authorised) 140MW Dwarsrug Wind Energy Facility (WEF) ([14/12/16/3/3/2/690/AM4](#)); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation ([12/12/20/2049/3](#)) located near Loeriesfontein in the Northern Cape Province of South Africa.

The proposed powerline from the Loeriesfontein 3 PV SEF to the Dwarsrug WEF is required to link the SEF to the WEF in order to create a hybrid renewable energy facility, which will ensure that electricity is constantly supplied to the national grid by at least one or both of the technologies (namely solar PV and wind). The proposed powerline from the Dwarsrug WEF to the approved Narosies substation is required to link above mentioned hybrid renewable energy facility to the National grid.

The hybrid renewable energy facility, along with the proposed added battery energy storage systems (BESS) (separate BA processes currently underway⁴) will contribute to providing electricity for the National grid.

While both Loeriesfontein 3 PV and Dwarsrug WEF each have approved authorisations to tie into Helios main transmission substation (MTS), Independent Power Producers (IPPs) who were successful in the previous bid round are currently approved by Eskom to connect to Helios man transmission substation (MTS). Eskom have indicated that there may be insufficient capacity to accommodate additional generation, and as such communicated (found in **Appendix 9**) to Mainstream that they tie the proposed hybrid renewable energy facility into the authorised Narosies collector station ([12/12/20/2049/3](#)) instead.

Based on previous correspondence from Eskom it has been advised that this hybrid energy facility may need to connect into the Narosies collector substation. Therefore, Mainstream now proposes to tie the proposed hybrid renewable energy facility into the authorised Narosies collector station ([12/12/20/2049/3](#)) to feed the National grid.

⁴ (Loeriesfontein 3 BESS DEFF Reference number: [14/12/16/3/3/1/2263](#) and Dwarsrug BESS DEFF Reference number: [14/12/16/3/3/1/2262](#))

Two (2) powerline route alternatives to link the Loeriesfontein 3 PV SEF to the Dwarsrug WEF have been considered in this assessment (approx. 18.85 and 18.34km respectively), whilst a single powerline route (approx. 3.5km) has been considered to link the Dwarsrug WEF to the Narosies substation. The evaluation of all three route alignments provided for a 300m wide corridor of assessment (150m on either side of proposed powerlines).

The proposed construction and operation of this powerline project requires Environmental Authorisation (EA) from the Department of Environment, Forestry and Fisheries (DEFF), and as such is subject to a Basic Assessment (BA) process in terms of the National Environmental Management Act (NEMA): Environmental Impact Assessment (EIA) Regulations of 2014, as amended. SIVEST have been appointed by Mainstream as the as the independent Environmental Assessment Practitioner (EAP) for this project.

1.2 THE PURPOSE AND CONTENT OF THIS BASIC ASSESSMENT REPORT (BAR)

In terms of the Environmental Impact Assessment (EIA) Regulations (2014)⁵, as amended, promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 983 and 985) or a full Scoping and EIA (GN R 984) process is required to be undertaken by the Applicant. The proposed project triggers Listed Activities which require a Basic Assessment (BA) process to be undertaken in terms of the NEMA: EIA Regulations of 2014, as amended, and this report has been compiled in fulfilment of this requirement.

The Basic Assessment Report (BAR) documents the steps undertaken to assess the significance of impacts and determine measures to mitigate the negative impacts and enhance the benefits (or positive impacts) of the proposed project. This report presents the findings of the BA and a description of the proposed public participation process that forms part of the legislated process.

The BAR includes an Environmental Management Programme (EMPr) (**Appendix 8**) which documents the management and monitoring requirements that need to be implemented during the Design, Construction, Operational and Decommissioning Phases of the project to ensure that identified negative impacts are appropriately mitigated, and positive impacts enhanced.

The overall objectives of this BAR are to:

- Inform the members of the public and key stakeholders of the proposed project and the BA process which is being followed;
- Obtain comments on the application from Interested and Affected Parties (I&APs) and key stakeholders to ensure that all issues, concerns and queries are fully documented and addressed where necessary;
- Assess in detail the potential environmental and socio-economic impacts of the proposed project;
- Identify and document mitigation measures to address any negative impacts and enhance any positive impacts associated with the proposed project; and
- Produce a final BAR that will assist the Competent Authority (Department of Environment, Forestry and Fisheries) in making an informed decision on Environmental Authorisation for the proposed project.

This BAR has been drafted in accordance with the NEMA: EIA Regulations of 2014, as amended, and adheres to the requirements contained in Appendix 1 of GN R 983 (as amended). TABLE 1 below highlights the relevant requirements and notes where in the BAR these requirements have been met.

⁵ Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [Government Notice (GN) R. 982, R. 983, R. 984 and R. 985 and amended on 07 April 2017 (promulgated in Government Gazette 40772 and GN R. 326, R. 327, R. 325 and R. 324 on 7 April 2017)]

TABLE 1: Content of a BA Report (NEMA: EIA Regulations of 2014, as amended)

2014 EIA Regulations, as amended.	Requirements for Basic Assessment Reports	Location in this Basic Assessment Report
Appendix 1, Section 3 (a)	Details of – (i) The EAP who prepared the report; and the expertise of the EAP; and (ii) The expertise of the EAP, including a curriculum vitae.	Section 3 & Appendix 2
Appendix 1, Section 3 (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, coordinates of the boundary of the property or properties	Section 4
Appendix 1, Section 3 (c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Section 4 & Appendix 5
Appendix 1, Section 3 (d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered; (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 5
Appendix 1, Section 3 (e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 2
Appendix 1, Section 3 (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.	Section 2, 4 and 5
Appendix 1, Section 3 (h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including- (i) Details of all alternatives considered; (ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed, or mitigated. (vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects; (viii) The possible mitigation measures that could be applied and level of residual risk; (ix) The outcome of the site selection matrix; (x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and; (xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 5 Section 7 Section 7 Section 5 Section 9 Section 9 Section 9 Section 5 Section 5 Section 5 and 11
Appendix 1, Section 3 (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	Section 9

2014 EIA Regulations, as amended.	Requirements for Basic Assessment Reports	Location in this Basic Assessment Report
	(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.	
Appendix 1, Section 3 (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.	Section 9
Appendix 1, Section 3 (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.	Section 6, 9 and 11
Appendix 1, Section 3 (l)	An environmental impact statement which contains- (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Section 11 Appendix 5
Appendix 1, Section 3 (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Section 9
Appendix 1, Section 3 (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.	Section 11 & 12
Appendix 1, Section 3 (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 1
Appendix 1, Section 3 (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.	Section 11 & 12
Appendix 1, Section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	Section 13
Appendix 1, Section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; (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.	Section 14
Appendix 1, Section 3 (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	-
Appendix 1, Section 3 (t)	Where applicable, any specific information required by the Competent Authority.	-
Appendix 1, Section 3 (u)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	-

1.3 ASSUMPTIONS AND LIMITATIONS

The compilation of this report has been based several assumptions and is subject to certain limitations which are documented as follows:

- It is assumed that all information provided to the EAP by the applicant was correct and accurate at the time of assessment;

- It is not always possible to involve all I&APs individually, however, every effort has been made to involve as many interested parties as possible. It is also assumed that individuals representing various associations or organisations will / have conveyed the necessary information to these associations / organisations;
- It is assumed that the information provided by the various specialists is unbiased and accurate;
- It is not possible to determine the actual degree of the impact that the proposed development will have on the immediate environment without some level of uncertainty. Actual impacts can only be determined following the commencement of construction and/or operation; and
- SiVEST undertook every effort to obtain the information (including specialist studies, BA / EIA / Scoping and EMPr Reports) for the surrounding developments. However, many of the documents are not currently publicly available. All information that could be obtained for the surrounding planned renewable energy developments was taken into account as part of the cumulative impact assessment for this project.

1.4 SPECIALIST ASSUMPTIONS AND LIMITATIONS

1.4.1 *Avifauna Specialist*

The avifaunal study assumed that the sources of information used in the report were reliable. In this regard, the following was noted by the specialist:

- A total of 59 SABAP2 full protocol lists had been completed for the broader area where the proposed project is located (i.e. bird listing surveys lasting a minimum of two hours each). In addition, 59 *ad hoc* protocol lists (i.e. bird listing surveys lasting less than two hours but still giving useful data) were also recorded. The SABAP2 data was therefore regarded as an adequate indicator of the avifauna which could occur at the proposed development area, and it was further supplemented by data collected during the operational monitoring conducted at the Loeriesfontein 2 WEF.
- The focus of the study was primarily on the potential impacts of the proposed OHLs on priority species. Priority species were defined as species which could potentially be impacted by power line collisions or electrocutions, based on specific morphological and/or behavioural characteristics⁶. Priority species were further subdivided into raptors, waterbirds, terrestrial birds and corvids.
- The assessment of impacts is based on the baseline environment as it existed at the time of the operational monitoring at the Loeriesfontein 2 WEF.
- Cumulative impacts include all proposed and existing renewable energy projects within a 35km radius around the proposed development areas.
- Conclusions drawn in this study are based on experience of the specialist on the species found on site and similar species in different parts of South Africa. However, bird behaviour can never be entirely reduced to formulas that will be valid under all circumstances.
- The broader area was defined as the area encompassed by the six (6) pentads where the project is located. The study area was defined as the area covered by a 2km buffer around the proposed alignment options.

1.4.2 *Agricultural Specialist*

The following assumptions and limitations were recorded by the Agricultural specialist:

⁶ Other species were also considered in the case of potential displacement due to disturbance associated with the construction of the OHLs.

- The study makes the assumption that water for irrigation is not available in the study area. This is based on the assumption that a long history of farming experience in an area will result in the exploitation of viable water sources if they exist, and none have been exploited in the study area.
- There are no other specific assumptions, uncertainties or gaps in knowledge or data that affect the findings of this study.

1.4.3 *Geotechnical Specialist*

The following assumptions and limitations were recorded by the Geotechnical specialist:

- The services performed by GaGE Consulting (Pty) Ltd were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession practising under similar conditions in the locality of the project. The interpretation of the site conditions is based on available information, experience in the general project area and professional judgement and is considered to provide sufficient confidence to meet the objectives of this specialist study. The nature of geotechnical engineering is such that conditions at variance with those described may be encountered on site. Engineering recommendations provided in this report are preliminary and must be confirmed through further intrusive investigations.
- Third party information has been utilised in good faith.
- A site visit was not undertaken.

1.4.4 *Terrestrial Ecologist*

The following assumptions and limitations were recorded by the Terrestrial Ecologist:

- In order to apply generalised and often rigid scientific methods or techniques to natural, dynamic environments, a number of assumptions are made. Furthermore, a number of limitations exist when assessing such complex ecological systems. The following assumptions and constraints may have affected the assessment –
 - An extensive site visit has already been undertaken by SiVEST (Todd, 2014), but an additional site visit was undertaken by a botanical specialist to confirm any habitat constraints that were not included in the original survey.
 - The impacts for the site are specific to the proposed corridors (Options 1 and 2) for the powerline.
 - The databases used may not, at times, be complete or up to date, as is the nature of such databases.
 - This statement assumes that the work undertaken by SiVEST (2014) is unbiased and the methods adopted appropriately followed.

1.4.5 *Botanist*

The following assumptions and limitations were recorded by the Botanist:

- In order to apply generalised and often rigid scientific methods or techniques to natural, dynamic environments, a number of assumptions are made. Furthermore, a number of limitations exist when assessing such complex ecological systems. The following constraints may have affected this assessment:

- Although an extensive site visit has already been undertaken by SiVEST, an additional site visit was done to confirm any possible habitat constraints that was not included in the original survey.
- The impacts for the site are specific to the proposed corridors (Option 1 and 2) for the power line.
- The databases used may not, at times, be recent as is the nature of these databases.
- This statement assumes that the work undertaken by SiVEST (2014) is unbiased and the methods adopted appropriately followed.

1.4.6 Heritage Specialist

The following assumptions and limitations were recorded by the Heritage Impact Assessment specialist:

- Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.
- Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

1.4.7 Paleontological Specialist

The following assumptions and limitations were recorded by the Paleontological specialist:

- When conducting a Paleontological Impact Assessment (PIA) several factors can affect the accuracy of the assessment. The focal point of geological maps is the geology of the area and the sheet explanations were not meant to focus on palaeontological heritage. Many inaccessible regions of South Africa have not been reviewed by palaeontologists and data is generally based on aerial photographs. Locality and geological information of museums and universities databases have not been kept up to date or data collected in the past have not always been accurately documented.
- Comparable Assemblage Zones in other areas are used to provide information on the existence of fossils in an area which has not yet been documented. When similar Assemblage Zones and geological formations for Desktop studies are used it is generally assumed that exposed fossil heritage is present within the footprint. A field-assessment is thus necessary to improve the accuracy of the desktop assessment.

1.4.8 Social Specialist

The following assumptions and limitations were recorded by the Social Impact Assessment specialist:

- It is assumed that the technical information provided by the project proponent, South Africa Mainstream Renewable Power Developments (Pty) Ltd and the environmental consultants, SiVEST SA (Pty) Ltd, was credible and accurate at the time of compiling the report. It is also assumed that the data provided by the various specialists as used in this report are credible and accurate.

- The demographic data used in this report was sourced from Statistics South Africa and is based on data gathered during Census 2011 and Community Survey, 2016. This data is somewhat outdated but where possible is supplemented with the latest Stats SA's survey data such as the Mid-year population estimates and the Quarterly Labour Force Survey. The limitation of this is that this survey data is restricted to a provincial level and does not extend to a municipal level.
- No site visit was undertaken as the region was sparsely populated and where necessary relevant information could be obtained from the environmental consultants. Apart from this, the study was undertaken during the State of National Disaster declared in South Africa as a result of the COVID-19 pandemic. Accordingly, the need for social distancing and limiting unnecessary interpersonal contact and travel was respected throughout this study.

1.4.9 Visual Specialist

The following assumptions and limitations were recorded by the Visual Impact Assessment specialist:

- Power lines are very large structures by nature and could impact on receptors that are located relatively far away, particularly in areas of very flat terrain. Given the nature of the receiving environment and the height of the various components of the proposed development, the study area or visual assessment zone is assumed to encompass a zone of 5 km from the outer boundary of the combined power line assessment corridors. This 5 km limit on the visual assessment zone relates to the importance of distance when assessing visual impacts. Although the proposed development may still be visible beyond 5 km, the degree of visual impact would diminish considerably and as such the need to assess the impact on potential receptor locations beyond this distance would not be warranted.
- As previously stated, information pertaining to visual receptors is largely drawn from visual assessments conducted in the general vicinity of the proposed development. Details of these studies are provided in Section 1.5 of the VIA Report (**Appendix 6G**). Receptor identification for all of these studies involved a combination of desktop assessment as well as field-based observations. Initially Google Earth imagery was used to identify potential receptors within the study area and where possible, these receptor locations were verified and assessed during site visits undertaken in December 2016 and also in September 2014. Current Google Earth imagery was examined to verify and / or update the receptor identification.
- Due to the extent of the respective study areas for previous VIA projects and access limitations, it was not possible to visit or verify every potentially sensitive visual receptor location. As such, several broad assumptions have been made in terms of the likely sensitivity of the receptors to the proposed development. It should be noted that not all receptor locations would necessarily perceive the proposed development in a negative way. This is usually dependent on the use of the facility, the economic dependency of the occupants on the scenic quality of views from the facility and on people's perceptions of the value of "Green Energy". Sensitive receptor locations typically include sites such as tourism facilities and scenic locations within natural settings which are likely to be adversely affected by the visual intrusion of the proposed development. Thus, the presence of a receptor in an area potentially affected by the proposed development does not necessarily mean that any visual impact will be experienced.
- The potential visual impact at each visual receptor location was assessed using a matrix developed for this purpose. The matrix is based on three main parameters relating to visual impact and, although relatively simplistic, it provides a reasonably accurate indicative assessment of the degree of visual impact likely to be experienced at each receptor location as a result of the proposed development. It is however important to note the limitations of quantitatively assessing a largely subjective or qualitative type of impact and as such the matrix should be seen merely as a representation of the likely visual impact at a receptor location.

- In light of the fact that it was not possible to visit every potentially sensitive visual receptor location, the receptor impact rating was undertaken primarily via desktop means. Accordingly, all the receptors identified were regarded as being potentially sensitive to the visual impacts associated with the proposed power lines and were assessed as part of the VIA.
- For the purposes of the VIA, all analysis is based on a worst-case scenario where power line tower heights are assumed to be 25m.
- Due to the varying scales and sources of information; maps may have minor inaccuracies. Terrain data for the study area derived from the National Geo-Spatial Information (NGI)'s 25m DEM is fairly coarse and somewhat inconsistent and as such, localised topographic variations in the landscape may not be reflected on the Digital Elevation Model (DEM).
- No viewsheds were generated for this visual study, as the topography within the study area is relatively flat and no detailed contours were available. Within this context, minor topographical features, vegetative screening, or man-made structures would be the most important factors influencing the degree of visibility and these would not be reflected in the viewsheds.
- No feedback regarding the visual environment has been received from the public participation process to date. Any feedback from the public during the review period of the Draft Basic Assessment Report (DBAR) will however be incorporated into further drafts of this report, if relevant.
- This study includes an assessment of the potential cumulative impacts of other renewable energy developments on the existing landscape character and on the identified sensitive receptors. This assessment is based on the information available at the time of writing the report and where information has not been available, broad assumptions have been made as to the likely impacts of these developments.
- SiVEST made every effort to obtain information for the surrounding planned renewable energy developments (including specialist studies, assessment reports and Environmental Management Programmes). However, some of the documents are not currently publicly available for download. The available information was factored into the cumulative impact assessment (Section 8.4 of VIA Report - **Appendix 6G**).
- No visualisation modelling was undertaken for the proposed development as this is not normally required for linear infrastructure. This can however be provided should the Public Participation process identify the need for this exercise.
- It should be noted that the site visits for previous VIAs in the area were undertaken during the late winter and also mid-summer. During winter months, the visual impact of the proposed development may be greater as the surrounding vegetation is expected to provide less potential screening than in the late summer months. The study area is however typically characterised by low levels of rainfall all year round and therefore the season is not expected to affect the significance of the visual impact of the proposed development.
- Clear weather conditions tend to prevail throughout most of the year in this area, and in these clear conditions, power lines and associated infrastructure would present a greater contrast with the surrounding landscape than they would on a cloudy overcast day. Clear weather conditions were experienced during the different site visits and these factors were taken into consideration when undertaking this VIA.

1.4.10 *Aquatic Specialist*

The following assumptions and limitations were recorded by the Aquatic specialist:

- In order to apply generalised and often rigid scientific methods or techniques to natural, dynamic environments, a number of assumptions are made. Furthermore, a number of limitations exist when assessing such complex ecological systems. The following constraints may have affected the assessment:

- As an extensive site visit has already been undertaken by SiVEST, an additional site visit was not required.
- The impacts for the site are specific to the 132 kV power line.
- The databases used may not, at times, be recent as is the nature of these databases.
- This statement assumes that the work undertaken by SiVEST (2012 & 2015) is unbiased and the methods adopted appropriately followed.

1.5 BASIC ASSESSMENT REPORT (BAR) STRUCTURE

This BAR is structured as follows:

- **Chapter 1** Provides an introduction and background to the proposed project and outlines the purpose of this document and the assumptions and limitations applicable to the study;
- **Chapter 2** Provides a brief summary and interpretation of the relevant legislation as well as pertinent strategic planning documents and outlines the approach to the environmental process;
- **Chapter 3** Details of the EAP's staff who have contributed to the compilation of this BAR
- **Chapter 4** Details the project location;
- **Chapter 5** Describes the location and current status of the site and provides a brief summary of the surrounding land uses as well as background to, motivation, and description of, the proposed project;
- **Chapter 6** Describes the biophysical and socio-economic characteristics of the affected environment against which potential project impacts are assessed;
- **Chapter 7** Details the stakeholder engagement approach and summarises stakeholder comments that informed the impact assessment;
- **Chapter 8** Provides a description of the environmental monitoring and auditing process to be undertaken for the proposed development;
- **Chapter 9** Identifies potential impacts associated with the proposed development and assesses the potential impacts of the project utilising SiVEST's proven impact assessment methodology. The chapter further identifies these impacts per specialist study and discusses potential cumulative impacts per environmental issue (i.e. per specialist study). In addition, a rating of each environmental issue before and after the implementation of mitigation measures is also presented;
- **Chapter 10** provides an assessment of the report in terms of the World Bank Standards and Equator Principles. This chapter presents a checklist that ensures that the report has been compiled according to the requirements of the World Bank Standards and Equator Principles;
- **Chapter 11** Provides an Environmental Impact Statement (EIS), describes the need and desirability of the project, and summarises the recommendations of the BAR.
- **Chapter 12** Undertaking
- **Chapter 13** References

The BAR has been prepared in accordance with Section 19 of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

The subsections below provide a list of all the applicable legislation, policies and/or guidelines that are relevant to the application.

2.1 KEY LEGAL AND ADMINISTRATIVE REQUIREMENTS RELATING TO THE PROPOSED DEVELOPMENT

2.1.1 Constitution of South Africa

The Constitution of South Africa (No. 108 of 1996) provides environmental rights and includes implications for environmental management. Section 24 of the Constitution 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:*
 - *Prevent pollution and ecological degradation;*
 - *Promote conservation; and*
 - *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.'*

The Constitution is the overarching legislation for South Africa. Although it provides for certain rights and obligations, the NEMA has been promulgated in order to manage the various spheres of both the social and natural environment.

2.1.2 National Environmental Management Act (NEMA) (Act No. 107 of 1998) – NEMA EIA Requirements

The National Environmental Management Act (NEMA) (Act No. 107 of 1998) was promulgated in 1998 but has since been amended on several occasions from this date. This Act replaces parts of the Environment Conservation Act (ECA) (Act No. 73 of 1989) with exception to certain parts pertaining to Integrated Environmental Management.

The Act intends to provide for:

- Co-operative environmental governance by establishing principles for decision-making on matters affecting the environment;
- institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state;
- to provide for the prohibition, restriction or control of activities which are likely to have a detrimental effect on the environment; and
- to provide for matters connected therewith.

The NEMA is the overarching legislation which governs the EIA process and environmental management in South Africa. Sections 24 and 44 of the NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA. Activities that may significantly affect the environment must be considered, investigated and assessed prior to implementation.

2.1.3 NEMA EIA Regulations, 2014 (as amended)

In terms of the Environmental Impact Assessment (EIA) Regulations (2014)⁷, as amended, promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 327 and 324) or a full Scoping and EIA (GN R 325) is required.

The following Listed Activities in Government Notice (GN) R 327 (Listing Notice 1) requiring a Basic Assessment (BA) Process are applicable to the proposed development and its alternatives:

Table 2: Listed activities in terms of the NEMA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
11 (i)	<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.</i>	- The proposed development involves the construction of overhead powerlines which will be located outside an urban area. The proposed powerlines will have a capacity of 132 kV.
12 (ii) (c)	<i>The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i>	- Maintenance access tracks (that do not trigger Listing Notice 1 Activity 24) associated with the proposed Power lines will cross watercourses.
19	<i>The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.</i>	- The proposed powerlines will involve the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.
28 (ii)	<i>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;</i>	- The proposed development routes are currently zoned for agriculture, and the area to be developed will be larger than 1 ha.

2.1.4 National Heritage Resources Act (NHRA) (Act No. 25 of 1999)

This Act requires investigation to determine the impact of heritage resources when developments exceed the thresholds listed in section 38(1) of the act:

- (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site—
 - (i) exceeding 5000m² in extent; or
 - (ii) involving three (3) or more existing erven or subdivisions thereof; or

⁷ Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [Government Notice (GN) R. 982, R. 983, R. 984 and R. 985 and amended on 07 April 2017 (promulgated in Government Gazette 40772 and GN R. 326, R. 327, R. 325 and R. 324 on 7 April 2017)]

- (iii) involving three (3) or more erven or divisions thereof which have been consolidated within the past five (5) years; or
- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10000m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

The proposed development would involve; (a) the construction of linear infrastructure (namely powerlines) exceeding 300m in length, (c) the development of overhead powerlines that will change the character of three (3) or more existing erven and (d) the rezoning of a site that will exceed 1ha.

The law ensures community participation in the protection of national heritage resources and will involve all three (3) levels of government in the management of the country's national heritage. The South African Heritage Resources Agency (SAHRA) will establish and maintain a national policy, strategy plans and standards for heritage resources management and will monitor the system as a whole.

The NHRA has applicability, as the study forms part of an overall Heritage Impact Assessment (HIA) in terms of the provisions of Section 34, 35, 36 and 38 of the NHRA and forms part of a heritage scoping study that serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape, as well as the need to address such issues during the impact assessment phase of the HIA process.

2.1.4.1 Section 35 – Archaeology, Palaeontology and Meteorites

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, Palaeontological Impact Assessments (PIAs) and Archaeological Impact Assessments (AIAs) are required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

2.1.4.2 Section 36 – Burial Grounds & Graves

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permitting requirements for burial grounds and graves older than 60 years (prehistoric) and historic burials to the South African Heritage Resources Agency:

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves.
- b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- d) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the

applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant

2.1.4.3 Section 38 HIA as a Specialist Study within the EIA in Terms of Section 38(8)

A NHRA Section 38 (Heritage Impact Assessments) application to SAHRA is required when the proposed development triggers one or more of the following activities:

Permitting requirements for demolition of built environment features:

- a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- b) the construction of a bridge or similar structure exceeding 50 m in length;
- c) any development or other activity which will change the character of a site,
 - i. exceeding 5 000 m² in extent; or
 - ii. involving three or more existing erven or subdivisions thereof; or
 - iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- d) the re-zoning of a site exceeding 10 000 m² in extent; or
- e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

In this instance, the heritage assessment for the property is to be undertaken as a component of the BA for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

This is an HIA submitted to the relevant authority in terms of Section 38(8) of the National Heritage Resources Act. The commenting authority is the SAHRA. The authorising government agency is the DEFF.

An HIA report is required to identify, and assess archaeological resources as defined by the Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected
- The assessment of the significance of such resources
- The assessment of the impact of the development on the heritage resources
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits
- Consideration of alternatives if heritage resources are adversely impacted by the proposed development
- Consideration of alternatives
- Plans for mitigation in the future

2.1.4.4 Notice 648 of the Government Gazette 45421

Although minimum standard for archaeological and palaeontological assessments⁸ were published by SAHRA, Government Notice (GN) 648 requires sensitivity verification for a site selected on the national web

⁸ South African Heritage Resources Agency. 2007. Minimum Standards: Archaeological and Paleontological Components of Impact Assessment Reports. May 2007

based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The screening tool indicated a medium archaeological and cultural heritage significance.

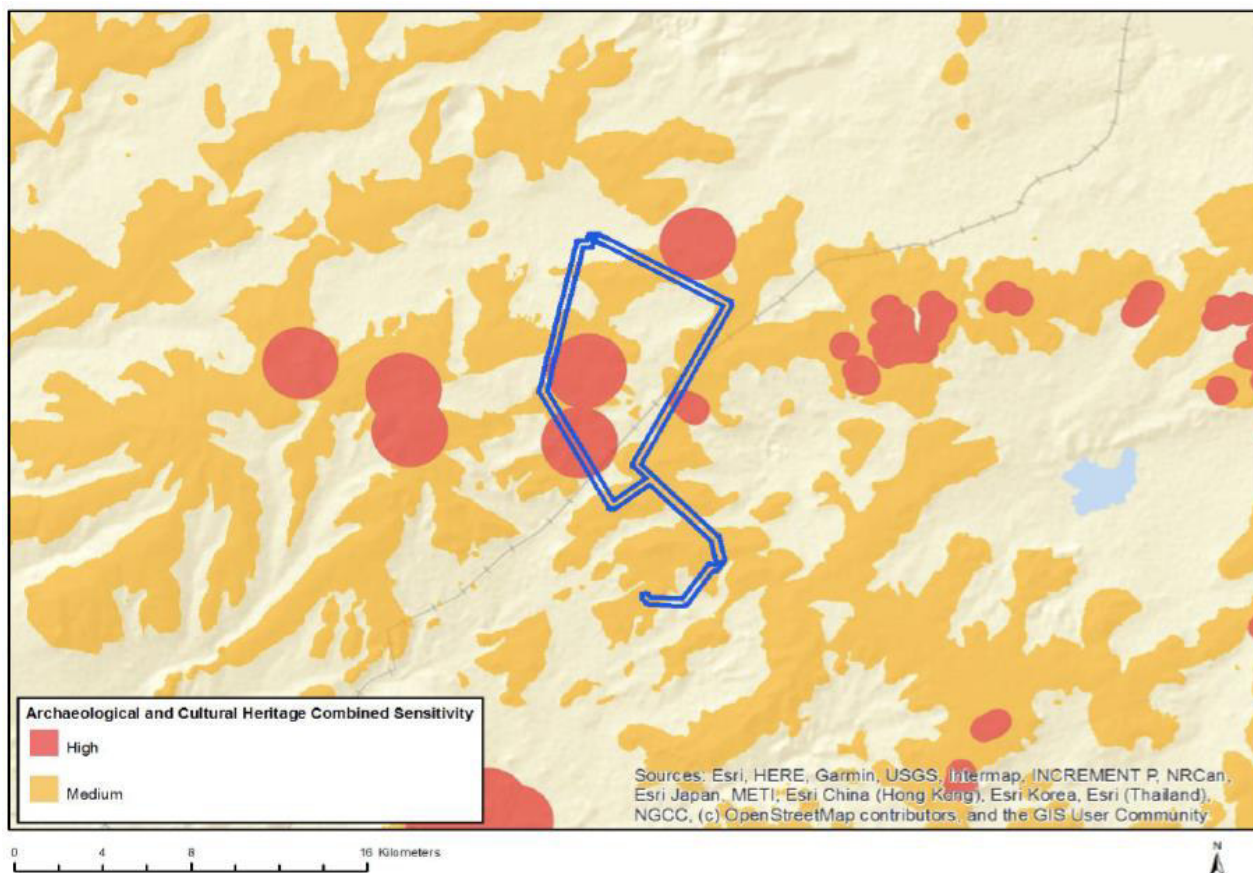


FIGURE 1: DEFF Screening tool outcome indicating a medium to high Archaeological and Cultural Heritage significance

A Heritage Impact Assessment (**Appendix 6C**) has been conducted to explore how the proposed development may impact on heritage resources as protected by the Act. Ground truthing exercise was undertaken in November 2020 and the results have been incorporated into this BAR, as well as the HIA.

In addition, SAHRA are being consulted throughout the BA process in order to obtain comments on the proposed development from a heritage perspective. With regards to the Northern Cape Provincial Heritage Resources Authority (NCPHRA), it was advised by the SAHRA that the NCPHRA does not have the authority to provide comments on section 38 applications. It was advised that the NCPHRA must only be consulted for comments if a structure as defined and protected by section 34 is impacted. All section 38(1) and 38(8) cases for the Northern Cape are processed by the SAHRA via the South African Heritage Resources Information System (SAHRIS). The correspondence from the SAHRA confirming this has been attached as **Appendix 9F**. The NCPHRA will however also be included in the public participation process. All comments received from SAHRA and the NCPHRA throughout the BA process will be provided in **Appendix 7**.

In terms of Palaeontology, the following was noted from a legislative perspective:

Cultural Heritage includes all heritage resources and is protected by the NHRA (Act 25 of 1999). Heritage resources as defined in Section 3 of the Act comprise “*all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens*”.

Palaeontological heritage is exceptional and non-renewable and is protected by the NHRA. Palaeontological resources and may not be unearthed, broken moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.

A PIA (**Appendix 6C**) was also conducted to explore how the proposed development may impact on palaeontological resources as protected by the Act. The PIA forms part of the HIA (**Appendix 6C**) and adheres to the conditions of the Act. In addition, as mentioned, SAHRA and the NCPHRA are being consulted throughout the BA process in order to obtain comments on the proposed development from a palaeontological perspective. All comments received from SAHRA and the NCPHRA throughout the BA process will be provided in **Appendix 7**.

2.1.5 National Water Act (NWA) (Act No. 36 of 1998, as amended)

The National Water Act (NWA) (Act No. 36 of 1998), as amended, was promulgated on the 20th of August 1998. This Act was created in order to ensure the protection and sustainable use of water resources (including wetlands) in South Africa. This Act is important in that it provides a framework to protect water resources against over-exploitation and to ensure that there is water for socio-economic and economic development, human needs and to meet the needs of the aquatic environment. The Act also recognises that water belongs to the whole nation for the benefit of all people.

It is important to note that water resources (including wetlands) are protected under the Act. Under the NWA, a 'water resource' includes a watercourse, surface water, estuary, or aquifer. Specifically, a watercourse is defined as (*inter alia*):

- A river or spring;
- A natural channel in which water flows regularly or intermittently; and
- A wetland, lake or dam into which, or from which, water flows.

One (1) of the main aims of the Act is the protection of water resources. 'Protection' in relation to a water resource entails:

- Maintenance of the quality of the water resource to the extent that the water use may be used in a sustainable way;
- Prevention of degradation of the water resource; and
- The rehabilitation of the water resource.

In the context of the proposed development and any potential impact on water resources, the definition of pollution and pollution prevention contained within the Act is relevant. 'Pollution', as described by the Act, is the direct or indirect alteration of the physical, chemical or biological properties of a water resource, so as to make it (*inter alia*):

- less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- harmful or potentially harmful to the welfare of human beings, to any aquatic or non-aquatic organisms, or to the resource quality.

This definition of pollution is quite wide-ranging, and it applies to all types of water resources. The inclusion of physical properties of a water resource within the definition of pollution entails that any physical alterations to a water body (for example, the excavation of a wetland or changes to the morphology of a water body) can be considered to be pollution. Activities which cause alteration of the biological properties of a watercourse (i.e. the fauna and flora contained within that watercourse) are also considered pollution.

In terms of section 19 of the Act, owners / managers / people occupying land on which any activity or process undertaken which causes / or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. These measures may include measures to (*inter alia*):

- measures to cease, modify, or control any act or process causing the pollution;
- comply with any prescribed waste standard or management practice;
- contain or prevent the movement of pollutants;
- remedy the effects of the pollution; and
- remedy the effects of any disturbance to the bed and banks of a watercourse.

From a licensing perspective, according to the NWA, the following are considered 'water uses' and will require a water use license application (WULA):

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

In light of the above, there are a number of activities within the NWA that are relevant to the potential impacts on rivers, streams and wetlands that may be associated with the proposed development. An Aquatic Compliance Statement (**Appendix 6E**) has however been compiled to explore how the proposed development may impact on identified water resources as protected by the Act.

2.1.6 National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004, as amended)

The overarching aim of the National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004), within the framework of the NEMA, is to provide for:

- The management and conservation of biological diversity within South Africa, and of the components of such biological diversity;
- The use of indigenous biological resources in a sustainable manner; and
- The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.

In terms of this Act, the developer has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations);

- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity; and
- Limit further loss of biodiversity and conserve endangered ecosystems.

The South African National Biodiversity Institute (SANBI) was established in terms of the NEM:BA, its purpose being (*inter alia*) to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems.

The NEM:BA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a prohibition on carrying out a '*restricted activity*' involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7 of the Act. According to Section 57 of the Act, '*Restricted activities involving listed threatened or protected species*':

- A person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7.

Such activities include any that are '*of a nature that may negatively impact on the survival of a listed threatened or protected species*'. Lists of critically endangered, endangered, vulnerable and protected species have been published and a permit system for listed species has been established.

It should be noted that Terrestrial Ecology and Botany Compliance Statements (**Appendix 6F**) have been undertaken to explore how the proposed development may impact on biodiversity (which includes terrestrial ecology and botany) as protected by the Act.

2.1.7 National Environmental Management: Protected Areas Act (NEM: PAA) (Act No. 57 of 2003, as amended)

The overarching aim of the National Environmental Management: Protected Areas Act (NEM: PAA) (Act No. 57 of 2003, as amended), within the framework of NEMA, is to:

- Provide for the declaration and management of protected areas;
- provide for co-operative governance in the declaration and management of protected areas;
- affect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- provide for a representative network of protected areas on state land, private land and communal land;
- promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- promote participation of local communities in the management of protected areas, where appropriate; and
- provide for the continued existence of South African National Parks.

The proposed development falls **outside** of any formally protected areas and outside of the areas earmarked as part of the National Protected Areas Expansion Strategy (NPAES).

2.1.8 Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)

The Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) controls the utilisation of natural agricultural resources in South Africa. The Act promotes the conservation of soil, water sources and vegetation as well as the combating weeds and invader plants.

The primary objective of the Act is to conserve natural agricultural resources by:

- Maintaining the production potential of land;
- combating and preventing erosion and weakening or destruction of the water resources;
- protecting vegetation; and
- combating weeds and invaders plants.

Rehabilitation after disturbance to agricultural land is managed by this Act. The CARA is relevant to the proposed development as the construction of powerlines may impact on agricultural resources and vegetation on the affected sites. The Act prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this. As such, measures will need to be taken to protect agricultural resources and prevent weeds and exotic plants from invading the affected sites as a result of the proposed development.

An Agricultural and Soils Compliance Statement (**Appendix 6A**) has been compiled to explore how the proposed development may impact on the agricultural production potential of the proposed site. According to this assessment, no application is required in terms of the CARA.

2.1.9 Subdivision of Agricultural Land Act (SALA) (Act No. 70 of 1970, as amended)

The Subdivision of Agricultural Land Act (SALA) (Act No. 70 of 1970, as amended) controls the subdivision of all agricultural land in South Africa; prohibiting certain actions pertaining to agricultural land. Under the Act, the owner of agricultural land is required to obtain consent from the Minister of Agriculture in order to subdivide agricultural land. This Act thus requires that an application for the powerline development be approved by the Department of Agriculture, Forestry and Fisheries (DAFF). Despite the name of the Act, it does not apply only to subdivision, and its purpose is to ensure productive use of agriculturally zoned land. Therefore, even if land is not being subdivided or leased, the SALA approval is required to develop agriculturally zoned land for non-agricultural purposes.

The purpose of the Act is to prevent uneconomic farming units from being created and degradation of prime agricultural land. To achieve this purpose, the Act also regulates leasing and selling of agricultural land as well as registration of servitudes.

Powerlines require the registration of a servitude for each farm portion crossed. In terms of the SALA, the registration of a power line servitude requires written consent of the Minister if the following two (2) conditions apply:

- If the servitude width exceeds 15 metres; and
- if Eskom is not the applicant for the servitude.

If one (1) or both of these conditions do not apply, then no agricultural consent is required. Eskom is currently exempt from agricultural consent for powerline servitudes, however this application is being made by a private entity.

The Act is of relevance to the proposed development as any portion of land within the study area that is zoned for agricultural purposes that will need to be leased for a period exceeding ten (10) years, will be regulated by this Act. The Act 70 of 1970 consent is separate from the EIA and needs to be applied for and obtained after the EIA.

2.1.10 National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)

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

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

2.1.11 Civil Aviation Act (CAA) (Act No. 13 of 2009)

The Civil Aviation Act (CAA) (Act No. 13 of 2009) controls and regulates aviation within South Africa. It provides for the establishment of a South African Civil Aviation Authority (SACAA) and independent Aviation Safety Investigation Board in compliance with Annexure 13 of the Chicago Convention. It gives effect to various conventions related to aircraft offences, civil aviation safety and security, and provides for additional measures directed at more effective control of the safety and security of aircrafts, airports and matters connected thereto.

Although the Act is not directly relevant to the proposed development, it should be considered as the establishment of the of electricity distribution infrastructure (such as powerlines) may impact on aviation and air traffic safety if located directly within aircraft flight paths.

Air Traffic and Navigation Services Company Limited (ATNS) and the SACAA are being consulted throughout the BA process and the required approvals will be obtained, if necessary.

2.1.12 Northern Cape Nature Conservation Act (Act No. 9 of 2009)

The Northern Cape Nature Conservation Act (Act No. 9 of 2009) and the Nature and Environmental Conservation Ordinance 19 of 1974 are of relevance to the Northern Cape Province. These are developed to protect both animal and plant species within the province. These may be species which are under threat or which are already considered to be endangered. The provincial environmental authorities are responsible for the issuing of permits in terms of this legislation.

Northern Cape Nature Conservation Act (Act No. 9 of 2009) provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:

- Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off a property;
- Aquatic habitats may not be destroyed or damaged; and

- The owner of the land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species.

The Act provides lists of protected species for the Province. According to Northern Cape Nature Conservation officials, a permit is required for the removal of any species on this list.

Terrestrial Ecology and Botany Compliance Statements (**Appendix 6F**) have however been conducted to explore how the proposed development may impact on biodiversity (including terrestrial ecology and botany) as protected by the Act. In addition, the relevant provincial environmental authority (namely the Northern Cape Department of Environment and Nature Conservation – NC DENC) as well as the DEFF’s Biodiversity Conservation Department are being consulted throughout the BA process.

2.1.13 Additional Relevant Legislation

The following additional legislation also of relevance:

- Occupational Health and Safety Act (OHSA) (Act No. 85 of 1993);
- Road Safety Act (Act No. 93 of 1996);
- National Road Traffic Regulations Act (Act No. 22 of 2000);
- National Environmental Management: Air Quality Act (NEM:AQA) (Act No. 39 of 2004);
- National Environmental Management: Waste Act (NEM:WA) (Act No. 59 of 2008, as amended);
- Development Facilitation (Act No. 67 of 1995);
- The Hazardous Substances Act (Act No. 15 of 1973);
- Water Services Act (Act No. 108 of 1998);
- Electricity Regulation Act (ERA) (Act No. 4 of 2006, as amended);
- Municipal Systems Act (Act No. 32 of 2000);
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended); and
- Northern Cape Planning and Development Act (Act No. 7 of 1998).

2.2 KEY DEVELOPMENT STRATEGIES AND GUIDELINES

This section discusses a number of key formal planning policies relevant to the project. The policies and plans briefly discussed in the subsequent sections below include the following regional and local development and spatial plans relevant to the project area:

- Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA);
- The Integrated Development Plans (IDP);
- Renewable Energy Independent Power Producer Procurement Program (REIPPPP);
- Department of Energy (DoE) White Paper on Renewable Energy, 2003;
- The Northern Cape Provincial Spatial Development Framework (SDF);
- Convention on Biodiversity (CBD);
- National Environmental Management Act (NEMA) (Act No. 107 of 1998);
- National Heritage Resources Act (NHRA) (Act No. 25 of 1999); and
- Mineral and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002).

2.2.1 Spatial Planning and Land Use Management Act 16 Of 2013 (SPLUMA)

SPLUMA provides broad principles for provincial laws that regulate planning. SPLUMA also provides clarity on how planning law interacts with other laws and policies.

SPLUMA delegates the responsibility for land use and zoning applications to the municipality. Land use, zoning and spatial planning is therefore driven at a municipal level by the IDP and SDF which, according to SPLUMA, must be aligned with the provincial IDP and SDF.

The municipal SPLUMA by-laws prescribe the mechanisms for land use applications and appeals. A property is compliant with SPLUMA if:

- There are approved building plans;
- the use of the property is in accordance with the municipal zoning; and
- there are no encroachments over the building lines and property boundaries.

2.2.2 Integrated Development Plan (IDP) (2019/2020)

An Integrated Development Plan (IDP) is defined in the Local Government: Municipal Systems Act (Act No. 32 of 2000), as an inclusive and strategic plan that:

- Links, integrates and co-ordinates plans and takes into account proposals for the development of the municipality;
- aligns the resources and capacity of the municipality with the implementation of the plan;
- forms the policy framework on which annual budgets must be based; and
- is compatible with national and provincial development plans and planning requirements binding on the municipality in terms of legislation.

Considering the nature and location of the proposed development, there is a clear fit with international, national, provincial and local, at both district and municipal levels, policy and legislation. The IDP for the Namakwa District Municipality is aligned with the National Development Plan, which has identified various central development challenges.

In September 2015 the world's governments signed a historic agreement to eradicate poverty, improve the living standards and well-being of all people, promote peace and more inclusive societies and reverse the trend of environmental degradation. The 2030 Agenda for Sustainable Development commits to promoting development in a balanced way—economically, socially and environmentally—in all countries of the world, leaving no one behind and paying special attention to those people who are poorest or most excluded. It contains 17 Sustainable Development Goals with associated targets to assess progress.

The 17 goals, ranging from alleviating poverty and reducing inequality through job creation and economic growth, as well as ensuring access to affordable, reliable, sustainable and modern energy for all, are in many ways interrelated and cross-cutting in nature. The role of Namakwa DM in the electricity distribution industry, including consideration of renewable energy, reticulation, and municipal debt and tariff structures will be critical.

In his 2020 State of the Nation Address, President Cyril Ramaphosa announced government are taking the following measures to rapidly and significantly increase generation capacity outside of Eskom:

- A Section 34 Ministerial Determination will be issued shortly to give effect to the Integrated Resource Plan 2019, enabling the development of additional grid capacity from renewable energy, natural gas, hydro power, battery storage and coal.
- We will initiate the procurement of emergency power from projects that can deliver electricity into the grid within 3 to 12 months from approval.
- The National Energy Regulator will continue to register small scale distributed generation for own use of under 1 MW, for which no licence is required.
- The National Energy Regulator will ensure that all applications by commercial and industrial users to produce electricity for own use above 1MW are processed within the prescribed 120 days. It should be noted that there is now no limit to installed capacity above 1MW.
- We will open bid window 5 of the renewable energy IPP and work with producers to accelerate the completion of window 4 projects.
- We will negotiate supplementary power purchase agreements to acquire additional capacity from existing wind and solar plants.
- We will also put in place measures to enable municipalities in good financial standing to procure their own power from independent power producers.

The proposed powerline project is located within the Hantam Local Municipality and Namakwa District Municipality. Since the proposed development aims at feeding the electricity generated by proposed nearby renewable energy developments into the national grid, it supports the objectives of the affected municipalities as well as the IDP. On a municipal level, wide support is evident across the affected municipalities. It should also be noted that as part of one (1) of the IDP's objectives, namely Objective 5: Environmental sustainability and resilience, at least 20 000MW of renewable energy should be contracted by 2030. In addition, it is noted that the municipality has favourable conditions for renewable energy generation, a factor which gives it a possible competitive advantage from an economic perspective. The economy is also characterised by the potential of renewable energy resource generation. In terms of possible opportunities within the municipality, it has been identified that there is a possibility to allow investment in renewable energy resource generation.

Upon reviewing the spatial planning component, the Namakwa District Municipality as well as the Hantam Local Municipality spatial development frameworks do not suggest any potential conflicts between the planned spatial development visions and the proposed powerline project. In addition, the site where the proposed development will be constructed is not located near any settlement or significant tourist attraction that might be sensitive to the environmental effects of the proposed development. Although the proposed development is located within relatively close proximity to small patches of agricultural land, it is not expected to affect these areas significantly and the current agricultural activities can thus continue.

After considering the reviewed documentation, the proposed development is in alignment with national, provincial and local objectives, plans and strategies relating to socio-economic development of the areas under analysis. There were no fatal flaws or contraventions identified as all spheres of government prioritise the development of RE projects, which include associated grid connection infrastructure such as powerlines. The proposed development fits well with the plans to diversify the provincial, district and local economies through investment in RE projects and associated grid connection infrastructure (such as powerlines).

It can be suggested that the proposed development does not conflict with any of the identified developmental priorities of the local governments in question but is also in alignment with the identified means to stimulate the local economy. Policy decisions taken in the next decade will largely determine the dimension of the impact of climate change. Local government is in the front line of implementation and service delivery, and thus needs to pursue adequate mitigation and adaptation strategies which should include participation from the public sector, the private sector and NGOs. Therefore, it is evident that the proposed development is aligned with the goals of the municipal IDPs in the study area.

2.2.3 Renewable Energy Independent Power Producer Procurement Program (REIPPPP)

The objective of this section is to provide an overview of the processes in the country and within Eskom relating to Independent Power Producers (IPPs). It is important that certain enabling policies, rules and regulations are in place to provide certainty and transparency in the introduction of IPPs.

National Process

In August 2009, the DoE gazetted the Electricity Regulations on New Generation Capacity under the ERA. The New Generation Regulations establish rules and guidelines that are applicable to the undertaking of an IPP Bid Programme and the procurement of an IPP for new generation capacity. They also facilitate the fair treatment and non-discrimination between IPPs and the buyer of the energy.

In terms of the New Generation Regulations, the IRP developed by the DoE sets out the new generation capacity requirement per technology, taking energy efficiency and the demand-side management projects into account. This required, new generation capacity must be met through the technologies and projects listed in the IRP and all IPP procurement programmes will be executed in accordance with the specified capacities and technologies listed in the IRP.

A decision that additional capacity be provided by an IPP must be made with the concurrence of the Minister of Finance. Once such a decision is made, a procurement process needs to be embarked upon to procure that capacity in a fair, equitable and transparent process.

The New Generation Regulations set out the procurement process. The stages within a bid programme are prescribed as follows:

- i. Request for Qualifications;
- ii. Request for Proposals; and
- iii. Negotiation with the preferred bidder(s).

A successful bidder will be awarded a Power Purchase Agreement (PPA) subject to signature by the Regulator, namely Eskom.

It should also be noted that the Minister of Mineral Resources and Energy has recently welcomed the concurrence by the NERSA to the second Section 34 Ministerial Determination issued in February 2020. This is another milestone that gives effect to commitments made by President Cyril Ramaphosa in his 2020 State of the Nation Address (SONA) to increase generation capacity and ensure security of energy supply to society rapidly and significantly. The Section 34 Determination enables the Department to undertake procurement of additional electricity capacity in line with the Integrated Resource Plan (IRP 2019). This will open-up various Bid Windows (BW), including BW 5 of renewable energy. 6 800MW of capacity is determined to be generated from renewable energy sources (PV and Wind), 513MW from storage, 3 000MW from gas and 1 500MW from coal. This will enable the development of an additional 11 813MW of power in total from the year 2022. This is in addition to the 2 000MW already being procured under the Risk Mitigation Independent Power Producer Procurement Program (RMIPPPP) (as per media statement released 10 September 2020⁹).

2.2.4 Department of Energy (DoE) White Paper on Renewable Energy, 2003

The DoE gazetted its White Paper on Renewable Energy in 2003 and introduced it as a '*policy that envisages a range of measures to bring about integration of renewable energies into the mainstream energy economy.*'

⁹ Issued by Department of Mineral Resources and Energy (DMRE): mediadesk@energy.gov.za; media@dmre.gov.za

At that time, the national target was fixed at 10 000GWh (0.8Mtoe) renewable energy contribution to final energy consumption by 2013. The White Paper proposed that this would be produced mainly from biomass, wind, solar and small-scale hydropower. It went on to recommend that this renewable energy should be utilised for power generation and non-electric technologies such as solar water heating and biofuels. Since the White Paper was gazetted, South Africa's primary and secondary energy requirements have remained heavily fossil-fuel dependent, both in terms of indigenous coal production and use, as well as the use of imported oil resources. Alongside this, the projected electricity demand of the country has led the National utility Eskom, to embark upon an intensive build programme to secure South Africa's longer-term energy needs, together with an adequate reserve margin.

2.2.5 The Northern Cape Provincial Spatial Development Framework (SDF)

Energy is one (1) of the primary objectives addressed in the SDF. Their energy objectives include promoting the development of renewable energy supply schemes. Large-scale renewable energy supply schemes are strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports while minimising detrimental environmental impacts. The development of the energy sector holds huge benefit for the Northern Cape which would have significant multipliers in the local economy. It is important that innovative planning be undertaken to provide the necessary infrastructure and associated amenities to accommodate the industry in an efficient manner. Therefore, in order to ensure the sustainability of the current and future economic sectors and to maximise synergies, it is imperative that industrial development be undertaken in a manner that promotes the principles of environmental integrity, human wellbeing and economic efficiency.

2.2.6 Convention on Biodiversity (CBD)

South Africa became a signatory to the United Nations Convention on Biological Diversity (CBD) in 1993, which was ratified in 1995. The CBD requires signatory states to implement objectives of the Convention, which are the conservation of biodiversity; the sustainable use of biological resources and the fair and equitable sharing of benefits arising from the use of genetic resources. According to Article 14(a) of the CBD, each Contracting Party, as far as possible and as appropriate, must introduce appropriate procedures, such as environmental impact assessments of its proposed projects that are likely to have significant adverse effects on biological diversity, to avoid or minimize these effects and, where appropriate, to allow for public participation in such procedures.

2.2.7 Heritage

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- National Environmental Management Act (NEMA) (Act No. 107 of 1998);
- National Heritage Resources Act (NHRA) (Act No. 25 of 1999); and
- Mineral and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002).

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources:

- National Environmental Management Act (NEMA) (Act No. 107 of 1998)
 - Basic Environmental Assessment (BEA) – Section (23)(2)(d);
 - Environmental Scoping Report (ESR) –Section (29)(1)(d);
 - Environmental Impact Assessment (EIA) – Section (32)(2)(d); and

- Environmental Management Plan (EMP) – Section (34)(b).
- National Heritage Resources Act (NHRA) (Act No. 25 of 1999)
 - Protection of Heritage Resources – Sections 34 to 36; and
 - Heritage Resources Management – Section 38.
- Mineral and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - Section 39(3).

The NHRA stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, ‘no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...’ The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources specifically impacted on by development as stipulated in Section 38 of the NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority.

3. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Details of the EAP’s staff who have contributed to the compilation of this BAR are detailed in TABLE 3 below and their Curriculum Vitae (CV) are attached in **Appendix 2**.

TABLE 3: Details of the EAP

Name & Role	Qualifications & Professional affiliations	Experience at environmental assessments	Contact details
Mr J. Richardson Environmental Scientist & Assessment Practitioner	B.Sc. Hons Environmental Management, IAIAAsa	13 years	SiVEST (Pty) Ltd Tel: (033) 347 1600 Email: johnr@sivest.co.za
Mrs L Scott-Shaw Environmental Scientist & Assessment Practitioner	B.Sc. (Hons) Ecological Science, IAIAAsa	7.5 years	SiVEST (Pty) Ltd Tel: (033) 347 1600 Email: liandras@sivest.co.za
Mr S Jacobs Environmental Scientist & Assessment Practitioner	B.Sc. (Hons) Environmental Sciences	5 years	SiVEST (Pty) Ltd Tel: (033) 347 1600 Email: stephanj@sivest.co.za

4. LOCATION OF THE ACTIVITY

The proposed powerlines are located within Ward 5 of the Hantam Local Municipality, Namakwa District Municipality, in the Northern Cape Province of South Africa. The nearest town (namely Loeriesfontein) is located approximately 60km to the south of the site. Properties / farm portions affected by the proposed powerlines are presented in TABLE 4.

TABLE 4: Properties / farms affected by the proposed powerline corridors

DISTRICT MUNICIPALITY	LOCAL MUNICIPALITY & WARD
NAMAKWA DISTRICT MUNICIPALITY	HANTAM LOCAL MUNICIPALITY, WARD 5
PROPERTY DESCRIPTION	21-DIGIT SURVEYOR GENERAL (SG) CODE
REMAINDER OF THE FARM BRAK PAN NO 212	C0150000000021200000
<i>PORTION 1 OF THE FARM BRAK PAN NO 212*</i> <i>*Railway Reserve</i>	C0150000000021200001
REMAINDER OF THE FARM AAN DE KAREE DOORN PAN NO 213	C0150000000021300000
PORTION 1 OF THE FARM AAN DE KAREE DOORN PAN NO 213	C0150000000021300001
PORTION 2 OF THE FARM AAN DE KAREE DOORN PAN NO 213	C0150000000021300002
<i>PORTION 3 OF THE FARM AAN DE KAREE DOORN PAN NO 213*</i> <i>*Railway Reserve</i>	C0150000000021300003
REMAINDER OF THE FARM SOUS NO 226	C0150000000022600000
<i>PORTION 3 OF THE FARM SOUS NO 226*</i> <i>*Railway Reserve</i>	C0150000000022600003
THE FARM NAROSIES NO 228	C0150000000022800000

Centre line coordinates of the alignments and route alternative for the proposed powerlines are provided below. Locality maps are provided in FIGURE 2 & FIGURE 3 for reference purposes.

- (i) **LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF (ALTERNATIVE / CORRIDOR 1) (18.85 KM)**
 - a. Start Point: S30° 22' 30.979"; E19° 34' 48.082"
 - b. Middle Point: S30° 27' 10.795"; E19° 34' 19.731"
 - c. End Point: S30° 29' 58.734"; E19° 37' 54.087"

- (ii) **LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF (ALTERNATIVE / CORRIDOR 2) (18.34 KM)**
 - a. Start Point: S30° 22' 30.979", E19° 34' 48.082"
 - b. Middle Point: S30° 25' 35.465", E19° 37' 6.921"
 - c. End Point: S30° 29' 58.734", E19° 37' 54.087"

- (iii) **DWARSRUG WEF TO THE APPROVED NAROSIES SUBSTATION (3.50 KM)**
 - a. Start Point: S30° 29' 58.734"; E19° 37' 54.087"
 - b. Middle Point: S30° 30' 42.332"; E19° 37' 2.084"
 - c. End Point: S30° 30' 37.194"; E19° 36' 3.754"

GENERAL PICTURES OF THE SITE AND RECEIVING ENVIRONMENT



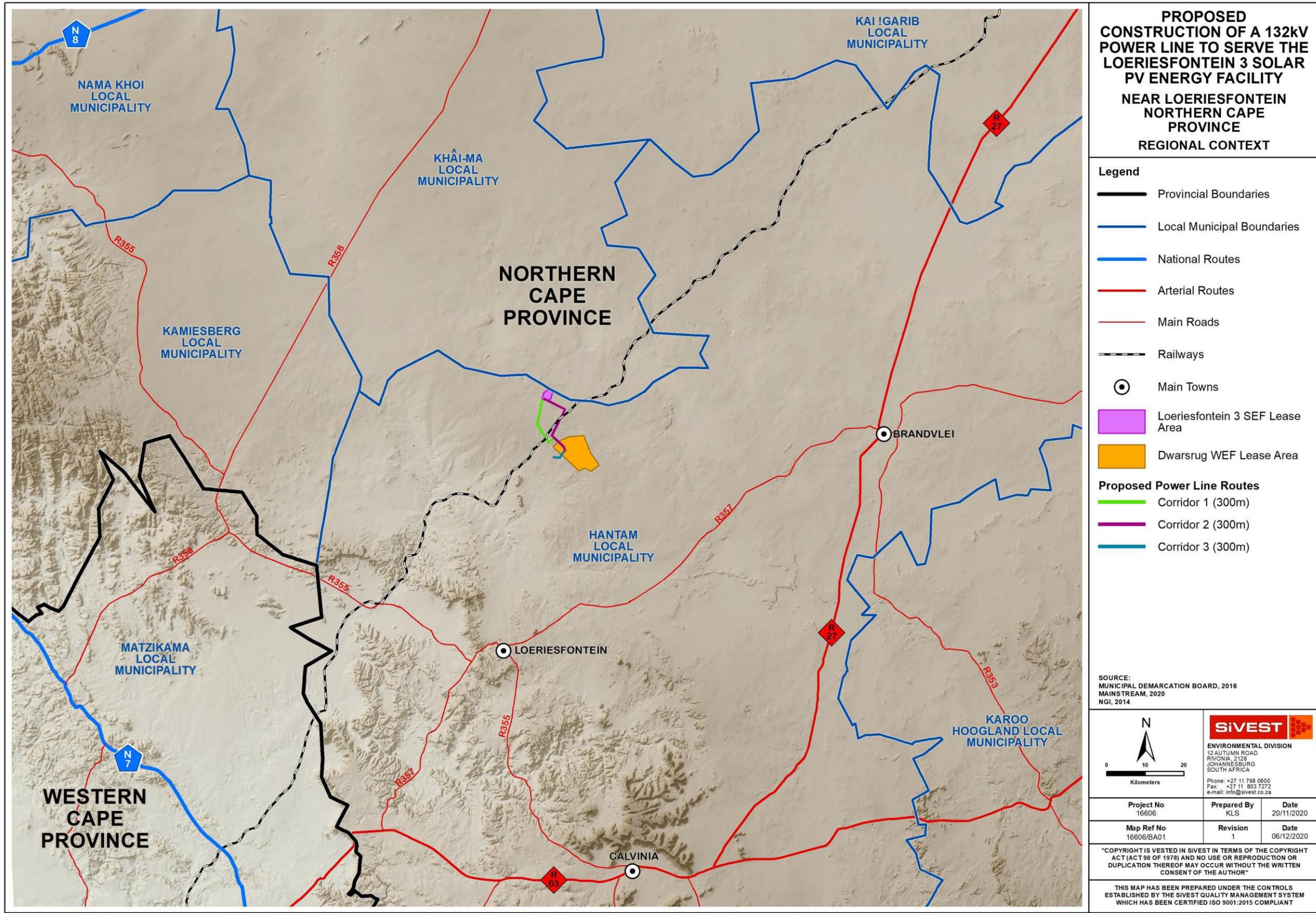


FIGURE 2: Regional Locality Map

South African Mainstream Renewable Power Developments (Pty) Ltd

Project No.: 16606
Description: Proposed construction of 132KV powerlines -Basic Assessment Report
Revision No.: 1.0

Date: 07 January 2021

Prepared By: **SiVEST**

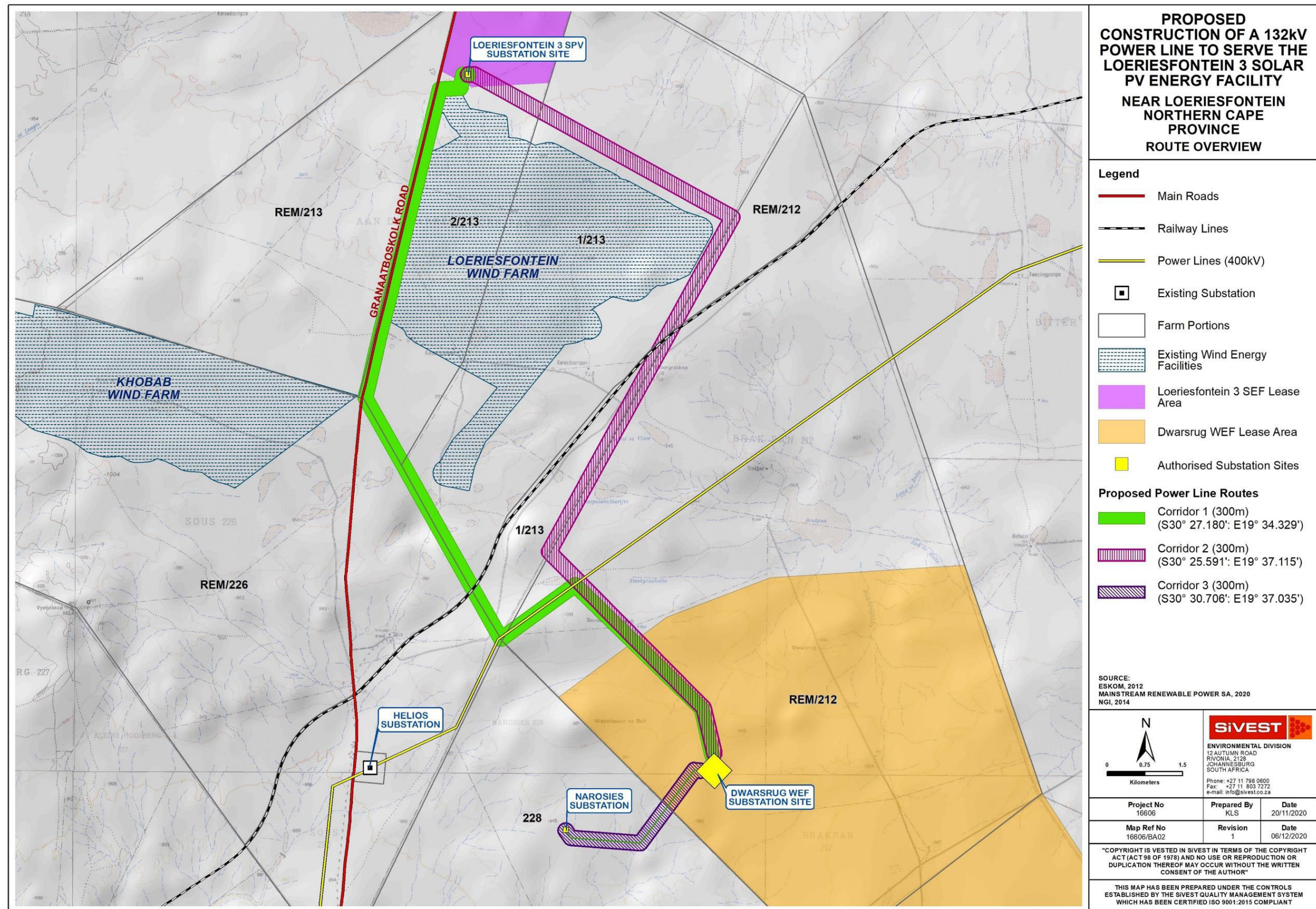


FIGURE 3: Locality Map

5. PROJECT DETAILS

5.1 NEED AND DESIRABILITY

The EIA Regulations, 2014 (as amended) [Appendix 3 Section 3 (f)] requires that the need and desirability of a project (including viable alternatives) are considered and evaluated against the principles of sustainability. This requires investigation of the effect of the project on social, economic and ecological systems; and places emphasis on consideration of a project's justification not only in terms of financial viability (which is often implicit in a [private] proponent's intention to implement the project), but also in terms of the specific needs and interests of the community and the opportunity cost of development (DEA&DP, 2013).

It is an important requirement in this BA Process to review the need and desirability of the proposed development. The IRP 2019 indicates that there is a short-term electricity supply gap of approximately 2 000 MW between 2019 and 2022. The proposed powerlines will improve energy security by ensuring security of energy supply to the grid from the Loeriesfontein 3 PV SEF and Dwarsrug WEF. In this regard the powerline from the Loeriesfontein 3 PV SEF to the Dwarsrug WEF is proposed to link these facilities in order to create a hybrid supply, which will ensure that electricity is constantly supplied to the National grid by at least one (1) or both technologies (namely solar PV and wind), at any given time. Two (2) possible alternative routes in this regard have been put forward by the Applicant. The powerline from the Dwarsrug WEF to the Narosies substation is required to transfer the aforementioned hybrid supply to the National grid. Only one route has been considered for this powerline.

The proposed development can thus commit to feeding energy generated from clean, green energy (namely solar and wind) into the national grid. This allows the development to conform with the move towards a greener and cleaner energy generation mix in South Africa.

The proposed development also supports the objectives of the Risk Mitigation Independent Power Producer Procurement Program (RMIPPPP), which serves as an "emergency" power generation programme for accelerated assistance to the national grid amid electricity supply constraints. The Department of Mineral Resources and Energy (DMRE) issued a Request for Proposal (RFP) for the emergency procurement of 2000MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can also reduce the risk of load-shedding. Grid capacity is also available and no deep grid works are required, which are beneficial for the connection timelines of the RMIPPPP.

In addition, the Minister of Mineral Resources and Energy has recently welcomed the concurrence by the NERSA to the second Section 34 Ministerial Determination, which enables the Department to undertake procurement of additional electricity capacity in line with the IRP (2019). 6 800MW of capacity is determined to be generated from renewable energy sources (PV and Wind), 513MW from storage and 3 000MW from gas¹⁰. The proposed development will be able to contribute to this diverse electricity requirement and will thus actively contribute to the commitments made to increase generation capacity and ensure security of energy supply to society rapidly and significantly.

5.2 APPLICANTS NEED AND MOTIVATION FOR THE PROPOSED PROJECT

Mainstream is proposing the construction of 132kV overhead powerlines to join the authorised 100MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) to the authorised 140MW Dwarsrug WEF

¹⁰ In accordance with the ministerial determination as gazetted Government Gazette No. 43509 on the 7th of July 2020

(14/12/16/3/3/2/690/AM4) in order to create a hybrid renewable energy facility. This hybrid renewable energy facility, along with the proposed added battery energy storage systems (BESS) (separate BA processes currently underway¹¹) will contribute to providing electricity for the National grid.

While both Loeriesfontein 3 PV and Dwarsrug WEF each have approved authorisations to tie into Helios MTS, IPPs who were successful in the previous bid round are currently approved by Eskom to connect to Helios MTS. Eskom have indicated that there may be insufficient capacity to accommodate additional generation, and as such communicated (found in **Appendix 9**) to Mainstream that they tie the proposed hybrid renewable energy facility into the authorised Narosies collector station (12/12/20/2049/3) instead.

The need for power lines to connect the renewable energy facilities to each other and the national grid, stems from the fact that South Africa requires emergency power to reduce electricity supply constraints.

In addition, as mentioned above, the DMRE issued a RFP for the emergency procurement of 2000MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can also reduce the risk of load-shedding. Grid capacity is also available and no deep grid works are required, which are beneficial for the connection timelines of the RMIPPPP.

5.3 GENERAL DESCRIPTION OF THE PROJECT AREA AND SURROUNDING LAND USES

The study area is characterised by a flat to gently undulating landscape with gentle slopes (typical of much of the Karoo). In the wider area, the Klein and Groot Rooiberg and Leeuberg koppies form an area of localised hilly topography to the south and south-west of the site. Immediately north of the site the presence of a number of large pans signal that the topography is very flat and thus very poorly drained. Within the proposed site, the topography is characterised by relatively flat terrain that slopes down gradually toward a pan in the central parts of the site. Several low hills and ridges are scattered throughout the site.

The proposed application site is covered by Bushmanland Basin Shrubland and Bushmanland Vloere in the lower lying pans. The Bushmanland Basin Shrubland is characterised by dwarf shrubland dominated by a mixture of low sturdy and spiny shrubs. The Bushmanland Vloere occurs in pans and broad rivers and is characterised by loosely patterned scrub where the centre is usually devoid of vegetation entirely. The aridity of the area has restricted the vegetation to low shrubs around 30-40 cm in height, distributed uniformly across the landscape, except in areas of disturbance where patches of bare earth occur. In certain areas, man has had an impact on the natural vegetation, especially around farmsteads, where over many years' tall exotic trees and other typical garden vegetation have been established.

The land use in the wider study area is classified natural or undeveloped as sheep farming dominates the area and the sheep graze on natural vegetation. Activities related to gypsum mining occur along the railway which makes up a part of the site. The nature of the arid climate entails that stocking densities for the sheep are low which has resulted in the properties being relatively large across the area. Therefore, the area is very sparsely populated, and thus little human-related infrastructure exists. Some infrastructure exists in the vicinity of the site in the form of gravel access roads, a railway that runs along a part of the eastern boundary of the site (the railway linking Sishen with Saldanha Bay), and associated railway works warehousing and offices. An electricity transmission substation (Helios Substation) exists to the south of the site, as well as power lines that run to and from this. A very tall microwave tower (communication tower) is also located on the site of the proposed PV plant. The surrounding area is largely uninhabited and the closest built up area is the small town of Loeriesfontein approximately 60km to the south of the site.

¹¹ (Loeriesfontein 3 BESS DEFF Reference number: 14/12/16/3/3/1/2263 and Dwarsrug BESS DEFF Reference number: 14/12/16/3/3/1/2262)

5.4 PROJECT ALTERNATIVES CONSIDERED

As per GNR 982 (as amended), Appendix 1(2)(b), alternatives for the proposed development are to be identified and considered. Chapter 1 of the EIA Regulations provides an interpretation of the word “alternatives”, which is to mean “*in relation to a proposed activity, different means of meeting the general purpose and requirements of the activity, which may include alternatives to the –*

- a) *Property on which or location where the activity is proposed to be undertaken;*
- b) *Type of activity to be undertaken;*
- c) *Design or layout of the activity;*
- d) *Technology to be in the activity; or*
- e) *Operational aspects of the activity; and*
- f) *The option of not implementing the activity.”*

Not all categories of alternatives are applicable to this specific project and the alternatives which have been considered in this BAR are highlighted below.

5.4.1 Site / Route Alternatives

One (1) of the aims of the BA process was to identify alternative routes for detailed assessment. The identification and selection of alternative routes helped to focus investigations. The powerline corridors (including all alternatives) put forward in this BAR have all been informed by specialist investigations and associated environmental sensitivity analysis. No Fatal Flaws have been identified with the proposed routes and alternatives put forward in this BAR.

Two (2) route alternatives have been provided for the proposed powerline which is to link the Loeriesfontein 3 PV SEF to the Dwarsrug WEF in order to create a hybrid renewable energy facility. These alternative routes are depicted as Corridor 1 & 2 in FIGURE 4 and are detailed below:

- **Powerline Corridor Alternative 1 (Loeriesfontein 3 PV SEF to Dwarsrug WEF):** Approximately 18.847km in length and runs south / south-east from the authorised Loeriesfontein 3 PV SEF Substation Site along Portion 2 of the Farm Aan De Karee Doorn Pan No. 213, the Granaatsboskolk Road and Portion 1 of the Farm Aan De Karee Doorn Pan No. 213 until it ties into the authorised Dwarsrug WEF Substation Site located on Remainder of the Farm Brak Pan No. 212; and
- **Powerline Corridor Alternative 2 (Loeriesfontein 3 PV SEF to Dwarsrug WEF):** Approximately 18.340 km in length and runs south-east from the authorised Loeriesfontein 3 PV SEF Substation Site across Portion 2 of the Farm Aan De Karee Doorn Pan No. 213 and Portion 1 of the Farm Aan De Karee Doorn Pan No. 213 until it cuts south along Remainder of the Farm Brak Pan No. 212 until it ties into the authorised Dwarsrug WEF Substation Site located on the same property.

No alternative routes are however provided for the proposed powerline from the Dwarsrug WEF to the Narosies Substation (Corridor 3) which will ultimately allow for the connection of the hybrid facility to the National grid. This powerline corridor route is approximately 3.482km in length and runs south-west from the authorised Dwarsrug WEF Substation Site along Remainder of the Farm Brak Pan No. 212 and the Farm Narosies No. 228 until it cuts west on the Farm Narosies No. 228 and ties into the authorised Narosies Substation on the same property.

Assessment of the powerline corridors mentioned above provided for an assessment corridor of approximately 300m (i.e. 150m on either side of powerline). This was undertaken so as to allow for flexibility of the route within authorised corridors. A 300m wide assessment corridor (150m on either side of powerline) was therefore applied to each of the three (3) powerline routes. The proposed powerlines, if approved, will be positioned within the assessed corridors.

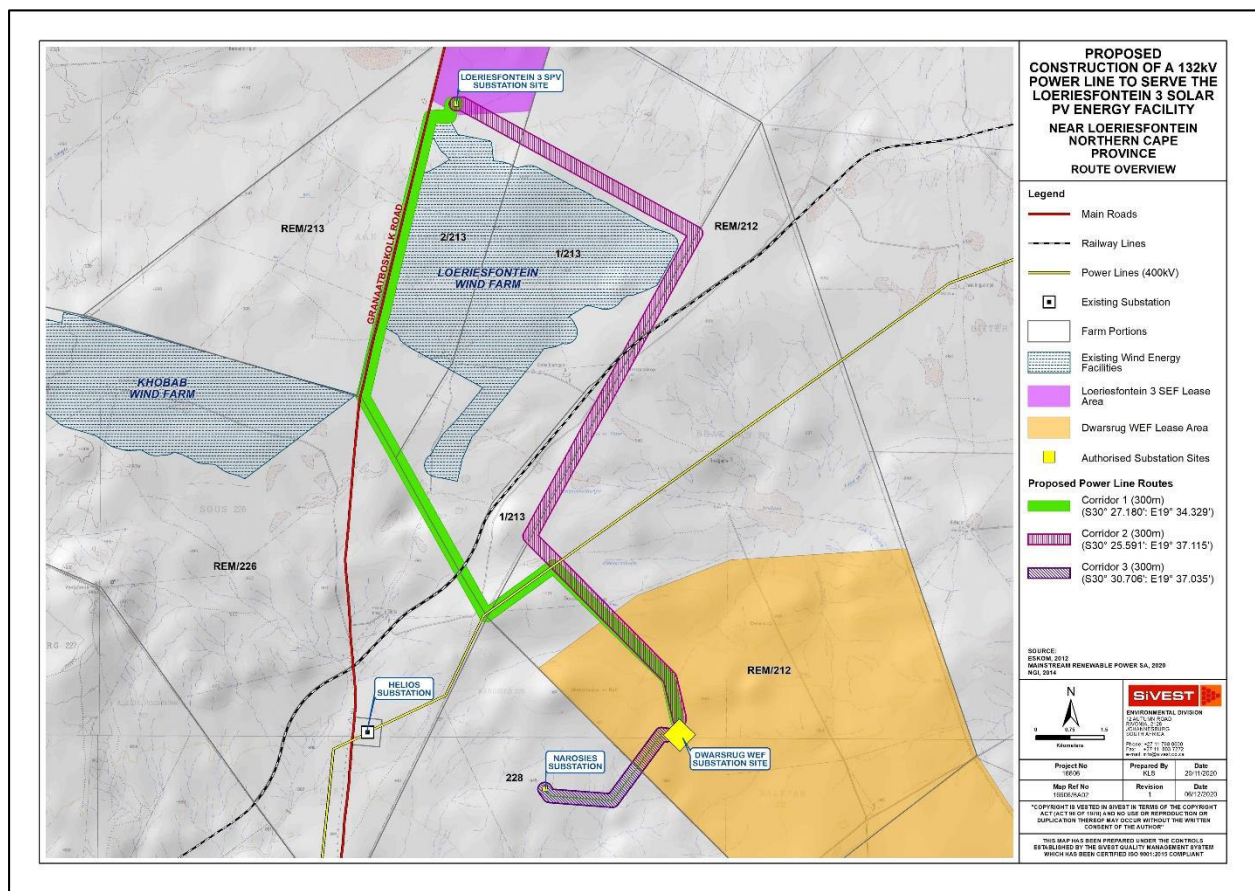


FIGURE 4: Powerline alternatives proposed to link Loeriesfontein 3 PV SEF to Dwarsrug WEF (Corridors 1 & 2), as well as the single power line proposed to link two (2) facilities to National grid from the Dwarsrug WEF (Corridor 3).

5.4.2 Activity Alternatives

No activity alternatives to link the Loeriesfontein 3 PV SEF to Dwarsrug WEF, and then connect this hybrid facility to the National grid are available to the Applicant. As such no activity alternatives, other than the no-go alternative, were considered further in the BA process.

5.4.3 Technology Alternatives

No technology alternatives will be considered for the proposed powerlines within this BAR. The type of technology to be used for the powerlines will largely depend on the terrain and other technological and economic factors. The type of powerline towers being considered at this stage include both lattice and monopole towers and it is assumed that these towers will be located approximately 200m to 250m apart. The towers will be up to 25m in height, depending on the terrain, but will ensure minimum overhead line clearances from buildings and surrounding infrastructure. The impacts on the environment of the different types of powerline tower types would be very similar during construction, operation and decommissioning. The choice of technology used will be determined by Eskom who will in turn be informed by specialist recommendations contained within this report, as the proposed powerlines will ultimately be handed over to Eskom.

5.4.4 No-go alternative

The 'no-go' alternative is the option of not constructing the powerline project, which would prevent the realisation of the hybrid facility and thus prevent electricity generated from renewable sources being fed into

the national grid. This alternative would result in no additional environmental impact other than that assessed during the BA for the Renewable Energy (RE) facilities.

The 'no-go' option is a feasible option, however, this would prevent the hybrid facility from contributing to the environmental, social and economic benefits associated with the development of the renewable energy sector.

5.5 APPLICABLE LISTED ACTIVITIES

In terms of the Environmental Impact Assessment (EIA) Regulations (2014), dated 4 December 2014 (as amended), promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 983 and 985) or a full Scoping and EIA (GN R 984) is required (as amended).

The following Listed Activities contained within in Government Notice (GN) Regulation 983 (Listing Notice 1, as amended) of the NEMA: EIA Regulations of 2014, as amended, requiring a Basic Assessment (BA) process are applicable to this project, and thus have been applied for in this application:

TABLE 5: Listed activities applied for in terms of the NEMA: EIA Regulations of 2014, as amended.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
11 (i)	<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.</i>	- The proposed development involves the construction of overhead powerlines which will be located outside an urban area. The proposed powerlines will have a capacity of 132 kV.
12 (ii) (c)	<i>The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i>	- Maintenance access tracks (that do not trigger Listing Notice 1 Activity 24) associated with the proposed Power lines will cross watercourses.
19	<i>The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.</i>	- The proposed powerlines will involve the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.
28 (ii)	<i>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;</i>	- The proposed development routes are currently zoned for agriculture, and the area to be developed will be larger than 1 ha.

6. DESCRIPTION OF THE BASELINE ENVIRONMENT

6.1 CLIMATE

The study area has an arid Mediterranean type climate with winter rainfall regime i.e. most of the rainfall is confined to early autumn and winter. Mean Annual Precipitation (MAP) is approximately 179 mm per year and without some form of supplementary irrigation natural rainfall is insufficient to produce sustainable harvests. This is reflected in the lack of dry land crop production within the study area. Average daily temperatures range from 30°C in summer to 17°C in winter. Average night time temperatures drop to around 2.4°C during winter.

6.2 TOPOGRAPHY

The topography across much of the study area is characterised by a flat to gently undulating landscape, typical of much of the Karoo. In the wider area, the Klein and Groot Rooiberg koppies form an area of localised hilly topography to the south and south-west of the study area. Immediately north of the site, the presence of a number of large pans indicate that the topography is very flat and thus very poorly drained.

6.3 VEGETATION

According to Mucina and Rutherford (2012), the dominant vegetation class across the study area is Bushmanland Basin Shrubland which is characterised by dwarf shrubland dominated by a mixture of low sturdy and spiny shrubs. The aridity of the area has restricted the vegetation to low shrubs around 30-40 cm in height, distributed uniformly across the landscape, except in areas of disturbance where patches of bare earth occur (Mucina & Rutherford, 2006). Western Bushmanland Klipveld occurs on the north-western boundary of the study area, while Bokkeveld Sandstone Fynbos is present on the south-western boundary. Bushmanland Vloere occurs in and around the salt pans in the eastern and northern sectors of the study area and is largely characterised by dwarf shrubs with some loose thicket evident in some areas.

6.4 GEOLOGY

Based on the desktop study, the assessment corridor areas may be divided into four (4) **Ground Units (GU)**, **I**, **II**, **III** and **IV**, where similar geotechnical conditions are anticipated. **GU I** is defined by shallow occurring bedrock covered by thin, loose transported material and varying degrees of cemented calcrete. **GU II** can be characterised by talus deposits on relatively steep slopes that is linked to **GU III** that defines the high lying outcropping bedrock of which is seemingly shale material. **GU IV** is confined to low lying areas that are underlain by relatively thicker alluvial deposits, identifiable by erosion paths, rills, pans and continuous drainage features.

6.5 CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES

The general area is underlain by Karoo dolerite and Dolerite rubble with the most south westerly and northern margins of the BESS touching the Tierberg Formation (Ecca Group, Karoo Supergroup). The most westerly end of the powerline falls in the Whitehill Formation of the Ecca Group (Karoo Supergroup). The Karoo dolerite and dolerite rubble has a zero palaeontological sensitivity as it is igneous in origin while that of the Tierberg Formation is moderate. The Whitehill Formation has a very high palaeontological sensitivity.

6.6 CURRENT LAND USE

The affected properties are located in a cattle / sheep farming agricultural region. The affected sites have never been cultivated and have only ever been used for grazing.

6.7 SPECIALIST STUDIES

6.7.1 Avifauna Impact Assessment

The Avifaunal Impact Assessment has been conducted by Chris van Rooyen and Albert Fronemann of Chris van Rooyen Consulting and is included in **Appendix 6**. Satellite imagery was used to view the broader area on a landscape level and to help identify bird habitat on the ground. Information collected during the 24 months of operational monitoring at the Loeriesfontein 2 WEF from June 2018 to March 2020 was used to supplement the Atlas of Southern African Birds 2 (SABAP2) data.

The avifauna specialist study assessed the proposed development of powerlines. The key findings of the avifaunal assessment include the following:

- The proposed Loeriesfontein PV 3 - Dwarsrug 132kV OHL will have several impacts on priority avifauna. The impacts can be summarised as follows:
 - **Displacement of priority species due to disturbance associated with the construction and decommissioning activities of the 132kV OHLs.**
 - Construction activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. Large terrestrial species namely Ludwig's Bustard, and Karoo Korhaan could be affected by displacement due to disturbance. The biggest potential impact will be on the pair of Martial Eagles that breed on the Aries – Helios 400kV line. The proposed Loeriesfontein – Dwarsrug 132kV OHL will pass underneath the Aries – Helios 400kV line very close to Tower 455, which contains one of the two nests that the birds are using. A potential mitigation measure is the timing of the construction activities to avoid disturbance during a critical phase of the breeding cycle, should this specific nest be utilised at the time, although it is likely that the birds will not use this specific nest if there is a lot of activity near the nesting tower, but rather the alternative nest on Tower 452, which is 2.4km away from the proposed alignment.
 - The priority species which are potentially vulnerable to this impact are listed in Table 2 of the Avifauna Impact Assessment Report (**Appendix 6B**), and below. Species with a high likelihood of regular occurrence in the study area are in bold:
 - Ludwig's Bustard
 - Karoo Korhaan
 - Martial Eagle
 - This impact is assessed to be medium and can be reduced to low through mitigation.
 - **Mortality of priority species due to electrocutions on the 132kV OHLs.**
 - Clearance between phases on the same side of the DT 7611 pole structure is approximately 2.2m, and the clearance on strain structures is 1.8m. This clearance should be sufficient to reduce the risk of phase – phase electrocutions of most birds on the towers to negligible. The length of the stand-off insulators is approximately 1.6m. If a very large species attempts to perch on the stand-off insulators, they are potentially able to touch both the conductor and the earthed pole simultaneously potentially resulting in a phase – earth electrocution. This is particularly likely when

more than one bird attempts to sit on the same pole, which is an unlikely occurrence, except occasionally with vultures. Vultures are not likely to regularly occur within the study area, and due to the presence of other perch-friendly transmission lines in the broader area, the chances of the birds perching on the steel monopoles of the new line are relatively low. However, it cannot be entirely ruled out, because Lappet-faced Vulture has been recorded. It would be preferable if a 100% vulture friendly structure is used. To eliminate the risk of vulture electrocutions, the 7649 steel monopole structure is recommended with suspended insulators and diagonal supporting cross arms, which would make perching uncomfortable while ensuring that birds are clear of the live phases. Please refer to the Avifaunal report for a diagram of the specialist recommended 7649 steel monopole structure (**Appendix 6B**).

- This impact is assessed to be low and can be further reduced through mitigation.
- **Mortality of priority species due to collisions with the 132kV OHLs**
 - Collisions are the biggest threat posed by transmission lines to birds in southern Africa (Van Rooyen 2004). Most heavily impacted upon are bustards, storks, cranes and various species of waterbirds, and to a lesser extent, vultures. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with transmission lines (Van Rooyen 2004, Anderson 2001). In this instance, the OHLs will pose the biggest risk to large terrestrial species (bustards and korhaans), followed by waterbirds and vultures. The priority species which are potentially vulnerable to this impact are listed in Table 2 of the Avifauna Impact Assessment Report (**Appendix 6B**), and below. Species with a high likelihood of regular occurrence in the study area are in bold:
 - Lappet-faced Vulture
 - Black-headed Heron
 - Kori Bustard
 - African Black Duck
 - Lesser Flamingo
 - Spur-winged Goose
 - South African Shelduck
 - Ludwig's Bustard
 - Karoo Korhaan
 - This impact is assessed to be medium and can be reduced through mitigation, but it will remain at medium level after mitigation.
- **Decommissioning:**
 - Decommissioning activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. Large terrestrial species namely Ludwig's Bustard, and Karoo Korhaan could be affected by displacement due to disturbance. The biggest potential impact could be on the Martial Eagles that breed on the Aries – Helios 400kV line. The proposed Loeriesfontein – Dwarsrug 132kV OHL will pass underneath the Aries – Helios 400kV line very close to Tower 455, which contains one of the two nests that the birds are currently using.
 - The priority species which are potentially vulnerable to this impact are listed in Table 2 of the Avifauna Impact Assessment Report (**Appendix 6B**), and below. Species with a high likelihood of regular occurrence in the study area are in bold:
 - Ludwig's Bustard
 - Karoo Korhaan
 - Martial Eagle

- This impact is assessed to be medium and can be reduced to low through mitigation.
- Both alternatives are routed through similar habitat and will therefore result in similar impacts. However, none of the other route alternatives were deemed to be fatally flawed.
- The entire study area is rated as High sensitivity due to the presence of collision-prone species. It would therefore be advisable to mitigate the whole OHL with Bird Flight Diverters (BFDs) if possible.
- The proposed Loeriesfontein PV - Dwarsrug 132kV OHL, and the 132 kV powerline to link these two (2) facilities to the National grid at the Narosies substation, are expected to have a medium impact on priority species. This impact could be reduced to low through the application of appropriate mitigation measures. No fatal flaws were discovered in the course of the investigations. Based on the outcome of the investigations into the impact of the proposed 132kV OHLs on avifauna, the authorization of the OHLs is supported, provided the mitigation measures contained in this specialist report are strictly implemented.

6.7.2 Agricultural Compliance Statement

The Agricultural and Soils Compliance statement¹² was conducted by Johann Lanz (**SACNASP registration: 400268/12**) and is included as **Appendix 6**. It should be noted that the document adheres to the process and content requirements of the gazetted agricultural protocol. As per the requirement, the assessment was based on a desktop analysis of existing soil and agricultural potential data for the site.

The desktop agricultural specialist study assessed the proposed development of powerlines. The key findings of the agricultural assessment include the following:

- The aridity of the area is a significant agricultural constraint that seriously limits the level of agricultural production (including grazing) which is possible across the site.
- Shallow, sandy soils on underlying rock or carbonate hardpan are a further agricultural limitation.
- As a result of these limitations, the study area is unsuitable for cultivation and agricultural land use is limited to low density grazing. The majority of land within the development area is classified as low agricultural sensitivity by the screening tool but includes areas of medium sensitivity.
- The only possible agricultural impact is minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance during construction and decommissioning.
- The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.
- From an agricultural impact point of view, it is recommended that the proposed development be approved.

6.7.3 Desktop Geotechnical Impact Assessment

The Desktop Geotechnical Impact Assessment was conducted by Duan Swart of GaGE Consulting (Pty) Ltd. A site visit was not undertaken and the assessment was subsequently done at a desktop level, using available information (see Section 1.4 of Desktop Geotechnical Impact Assessment Report). The full Desktop Geotechnical Impact Assessment Report is included in **Appendix 6**.

¹² Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more, gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

The desktop geological and geotechnical specialist study assessed the proposed development of powerlines. Key findings include the following:

- The majority of the corridors are located on flat to slightly inclined terrain sloping at a ratio less than 1:50 (less than 2%). Localised areas along the proposed grid connections intersect terrain that slopes between gradients 1:50 and 1:20 (2% to 5%). Drainage is expected to occur in various direction towards endoreic basins and rivers in the area. There are a few continuous and distinct drainage features on the site, although signs of concentrated overland surface flow and occasional rills are noted to exist throughout the study area. It is expected that localised undulations and erosional features occur. The nature of the drainage features could not be confirmed in the desk study. The site falls within a hot desert climate (BWk) according to the Köppen-Geiger climate classification.
- The assessment corridor areas may be divided into four (4No.) Ground Units (GU), I, II, III and IV where similar geotechnical conditions are anticipated. GU I is defined by shallow occurring bedrock covered by thin, loose transported material and varying degrees of cemented calcrete. GU II can be characterised by talus deposits on relatively steep slopes that is linked to GU III that defines the high lying outcropping bedrock of which is seemingly shale material. GU IV is confined to low lying areas that are underlain by relatively thicker alluvial deposits, identifiable by erosion paths, rills, pans and continuous drainage features.
- No faults, lineaments or other geological features are illustrated on the geological map or are visible from aerial photography.
- Based on the impact significance ratings, the development of the proposed powerlines within Corridor 1, Corridor 2 and Corridor 3, from a geological and geotechnical perspective, will be “Negative Low impact”, provided that the recommended mitigation measures are implemented. Corridor 1 is considered marginally more suitable for development from a geotechnical perspective than Corridor 2, due to the generally flatter topography, however other factors are likely to be more critical in determining the final layout. Therefore, no preference between Corridor 1 and Corridor 2 is provided.
- From a geotechnical and geological perspective, no fatal flaws, sensitivities, or areas to be avoided have been identified within or close to the assessment area. It is therefore recommended that the proposed activity be authorised.

6.7.4 Botany Compliance Statement

The Botany Compliance Statement was compiled by Dr Wynand Vlok from BioAssets Biological Assessments and is included as **Appendix 6**. The regional context and desktop analysis were used as the point of departure. A detailed area site visit was undertaken by SIVEST in 2014 (Todd, 2014), prior to the approval of the PV SEF. Much of this information was used to confirm the sensitivity of this site. The verification assessment of these systems considered a number of databases where relevant (see Section 2 of Botany Compliance Statement – **Appendix 6**).

The botany specialist study assessed the proposed development of powerlines. Key findings include the following:

- It was clear during the field survey that the recent drought period (more than three years without substantial rain) that the vegetation associated with the study area is in a poor state (very dry and not possible to identify some species). The fact that sufficient rain has not fallen over the last few years further contribute to a low diversity of species present (e.g. geophytic herbs and shrubs) and have no vegetative parts above ground that can be identified. Therefore, one must rely on the detailed vegetation study (Todd, 2014) that was completed for the larger project as the basis of the vegetation on site.

- With this climatic conditions in mind, the walk down focused more on the habitat associated with the three (3) options (FIGURE 4) that was proposed for the new power line. In general, the vegetation cover for the three proposed options were similar (sparse and very dry) with numerous patches devoid of any vegetation. The few exceptions were the more dense vegetation along the drainage lines. In addition, the low hills to the east of the site (Option 2) and the area south of the Sishen / Saldanha railway line are considered to be sensitive (Option 1 and 2 link Dwarsrug WEF to Loeriesfontein 3 PV – Option 3, to link Dwarsrug WEF to the Narosies power line).
- It is therefore reasonable to confirm the “Medium Sensitivity” of the plant community as identified in the screening report. The fact that the proposed activity is a linear activity, raises the question of the time needed for the vegetation to return to its current state after construction. One must assume that in an area with the low rainfall at this site, it will be extremely difficult to assume the corridor under the power line will re-grow to the current state. Although the area is impacted by the severe drought conditions of the last few years, higher than average rain will be needed to achieve this goal. It is fair to assume that with the implementation of all mitigation and remedial measures, the corridor can return to the current state within three to five years after of completion of the construction phase.
- During the walk down (3 and 4 December 2020) the aim was to evaluate the two (2) proposed options for the new 132kV power line. From an ecological, botanical and habitat perspective it is recommended that Option 1 is the route that must be used for the new proposed 132kV power line. This is based on the following:
 - The area is associated with the current activities and disturbances of the project (newly constructed wind generator infrastructure):
 - It is near the Loeriesfontein / Granaatboskolk road and in an area where the vegetation shows the most signs of modification due to the construction of the wind generators
 - There are a few very small drainage lines noted, but the slope is not severe (some erosion was noted during the walk down – associated with the recent construction activities and urgent rehabilitation must be carried out
 - There is better access from the wind farm property (access roads) to the proposed corridor (shorter distances)
 - The section south of the Sishen / Saldanha railway line is in a fair to good condition
 - It is recommended to limit traffic during construction
 - Access must be planned in conjunction with landowners to limit damage – e.g. use the exiting road associated with the power line (Helios/Aries substation) as access. This will be the shortest route with limited additional damage to the environment
 - A single access road must be used
 - No clearing of the corridor under the new power line must be done – the current vegetation poses no threat to conductors and stringing can be done without a need to remove any vegetation (it will facilitate a quicker re-grow response)
- With regards to Option 2 the following was noted and influenced the recommendation to use Option 1:
 - This corridor will encroach into the least disturbed vegetation areas on the property – limited roads
 - A whole new road access system is needed to get access to the corridor – no current roads from the turbine access roads to the proposed corridor
 - The area to the northeast and east of the existing wind generator network is more undulating compared to the area next to the road (Loeriesfontein / Granaatboskolk) (Option 1)

- There are a number of small drainage lines along this corridor that will increase the erosion potential and added impacts on the vegetation – these systems drain to the Bitterputs Pan in the northeast. These pans form part of the important Bushmanland Vloere vegetation type (Mucina and Rutherford, 2006).
- According to Todd (2014) the drainage lines associated with the study area are not well developed, which can be ascribed to the stony nature of the area and the low rainfall. *“The drainage lines are typically dominated by species such as Phaeoptilum spinosum, Rhigozum trichotomum and Osteospermum armatum along their banks, with Stipagrostis namaquensis typically dominating any relatively stable sediments or bed material. Due the ecological role they play and their vulnerability to disturbance, drainage lines are considered sensitive and should be avoided as much as possible”.*
- When looking at Option 3, the short distance (3km) associated with the sensitive low hills is therefore less impact of the habitat and its associated vegetation.
 - The shorter corridor will have low impacts associated with wind and water erosion.

6.7.5 Terrestrial Ecology Compliance Statement

The Terrestrial Ecology Compliance Statement¹³ was compiled by Dr David Hoare (David Hoare Consulting) and is included as **Appendix 6**. The regional context and desktop analysis were used as the point of departure. A detailed site visit was undertaken by SiVEST in 2014 (Todd, 2014), prior to the approval of the 100MW Loeriesfontein 3 PV SEF project. Much of this information was used to confirm the sensitivity of this site. The verification assessment of these systems considered a number of databases, where relevant (see Section 1 of Terrestrial Ecology Compliance Statement – **Appendix 6**).

The Terrestrial Ecology specialist study assessed the proposed development of powerlines. Key findings include the following:

- The site sensitivity as identified by the National Web-Based Environmental Screening Tool Shows that the terrestrial biodiversity theme is very high sensitivity and the animal species theme is of high sensitivity. The sensitivity for the terrestrial theme is due to it being a quaternary catchment, a critical biodiversity area level 2, and it being an ecological support area. The sensitivity for the animal species theme is due to the presence of three threatened bird species, which are assessed in a separate specialist study. No other animal species are flagged in the screening tool, indicating that, other than birds, the animal species theme has "low" sensitivity.
- The site verification aims to confirm or dispute the High Sensitivity identified by the screening tool for the Animal Species theme and the Very High Sensitivity for the Terrestrial Biodiversity Theme. This is done through a desktop investigation using more recent databases and aerial/remote imaging. It also includes information from a brief walk-down survey undertaken by the botanical specialist.
- Through the interrogation of various databases, imagery and the previous ecological assessment, it is clear that few sensitive features are present within or near the proposed footprint of the proposed powerlines. As such, it is hereby confirmed that the majority of the site should be considered to have Low Sensitivity. The exception is the small pan-like structures, most of which are designated as Ecological Support Areas (ESAs). Where possible, impacts on these should be avoided by locating powerline pylons appropriately.
- The key impacts identified for the proposed powerline are:
 - Construction impacts on small pan-like structures, defined as ESAs.
- Through the site verification, background investigation and impact assessment, the following are confirmed by the specialist:

¹³ Protocol for the assessment and reporting of environmental impacts on Terrestrial biodiversity gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

- The powerline servitudes are mostly low sensitivity in a terrestrial biodiversity and animal species context, with the exception of the ESAs (pans), which are high sensitivity.
- The proposed alignment alternatives would be similar to one another due to the relative uniformity of the habitat.
- Impacts have been identified with proposed mitigation measures. Should these measures be adhered to, the impacts of the proposed powerline would have a low significance.
- Conditions have been provided that should be included in the EMPr. Where relevant, additional measures unrelated to terrestrial biodiversity systems should be extended from the original EMPr.
- The overall impact of the Loeriesfontein 3 PV to Dwarsrug WEF powerline, and Dwarsrug to Narosies substation powerline, on the terrestrial biodiversity and animal species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.

6.7.6 Heritage Impact Assessment

The Heritage Impact Assessment (HIA) was conducted by Wouter Fourie of PGS Heritage. The full HIA Report is included in **Appendix 6**. The background information to the field survey relies greatly on the Heritage Background Research. A physical survey was conducted predominantly by foot within the proposed areas by a qualified archaeologist, which aimed at locating and documenting sites falling within and adjacent to the proposed development footprint. A site visit was conducted by an archaeologist from PGS on 26 and 27 November 2020 and the alignment alternatives were assessed.

The Heritage specialist study assessed the proposed development of powerlines. Key findings include the following:

- The fieldwork conducted for the evaluation of the possible impact of the new OHL alignments as part has revealed no heritage resources.
- The current study has confirmed that the impact of the OHL will be low. This finding and with the implementation of a chance finds procedure as part of the EMPr will mitigate possible impacts on unidentified heritage resources.
- The calculated impact of this report confirms the low negative impact rating pre-and post-mitigation.
- An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr.

6.7.7 Paleontological Desktop Assessment

The Desktop Palaeontological Impact Assessment (PIA) was conducted by Elize Butler of Banzai Environmental. A desktop study was undertaken to evaluate the risk to palaeontological heritage in the proposed development. This includes all trace fossils and fossils. All available information was consulted to compile a desktop study. It should be noted that the PIA was undertaken as a standalone assessment, however, it also forms part of the HIA. The full PIA Report is included in **Appendix 6**.

The desktop Palaeontological specialist study assessed the proposed development of powerlines. Key findings include the following:

- The proposed powerline development is underlain by Karoo dolerite and Dolerite rubble, the Tierberg Formation, the Whitehill Formation and Prince Albert Formation of the Ecca Group, Karoo Supergroup. The Ecca Group consist of 16 formations of which the Prince Albert and Whitehill formations is the most extensive. The sediments in this area are covered by a layer of alluvium.

According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Karoo dolerite and dolerite rubble is zero as it is igneous in origin while that of the Whitehill Formation is Very High, the Tierberg Formation has a High Palaeontological Sensitivity while the Prince Albert has a moderate Palaeontological Sensitivity. Quaternary Alluvium has a low Palaeontological sensitivity overall, but locally high. (Almond and Pether, 2009; Almond *et al.*, 2013).

- Usually impacts on palaeontological heritage only occur during the construction phase of the development. As the authorised Loeriesfontein 3 PV SEF and the approved substation at the authorised Dwarsrug Wind Energy was originally assessed in a Palaeontological Impact Assessment and as the proposed project falls in the same area the Palaeontological Significance of the power lines and alternatives is low. It is thus considered that the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.
- If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that correct mitigation (recording and collection) can be carry out by a palaeontologist.

6.7.8 Visual Impact Assessment

The Visual Assessment (VIA) was conducted by Kerry Schwartz of SiVEST. The full VIA Report is included in **Appendix 6**. The proposed powerlines are located within an area that has already assessed for several different VIAs undertaken in respect of renewable energy and associated power line development. Details of these studies are provided in Section 1.5 of the VIA Report (**Appendix 6**). Accordingly, the VIA has been based on a desktop-level assessment supported by information drawn from other relevant VIAs.

It should be noted that the VIA has not been externally reviewed as the specialist is regarded as independent, has no vested interest in the project and receives fair and normal remuneration for the work. Based on recent correspondence with the DEFF, it was confirmed that this would be acceptable, provided all specialists sign a Declaration of Independence (DoI). A signed DoI from the specialist who undertook the VIA is provided in **Appendix 3**. Proof of confirmation in this regard from the DEFF is provided in **Appendix 9**.

The visual impact assessment specialist assessed the proposed development of powerlines. Key findings include the following:

- 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 visual sensitivity. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that would potentially be impacted by a proposed development.
- The area is not typically valued for its tourism significance and no formal protected areas or recognised tourism routes were identified in the area. In addition, there is limited human habitation resulting in relatively few potentially sensitive receptors across the entire extent of the study area.
- The Visual Impact Assessment (VIA) identified seven (7) potentially sensitive receptors in the study area, i.e. within 5kms from the outer boundary of the combined power line assessment corridors, all of which are farmsteads. None of these receptors are considered to be Sensitive Receptors as they are not linked to leisure/nature-based tourism activities in the area. They are however regarded as

potentially sensitive visual receptors as they are located within a mostly natural setting and the proposed development will likely alter natural vistas experienced from these dwellings.

- All of the identified receptors were assessed in terms of SiVEST's receptor impact rating matrix and this showed that five (5) potentially sensitive receptors will be subjected to moderate levels of visual impact as a result of the proposed power lines, while the remaining two (2) receptors will be subjected to low levels of visual impact. It was noted however, that all of these receptors are located on application sites for adjacent existing and renewable energy projects, including the existing Khobab and Loeriesfontein 2 WEFs, the proposed Kokerboom 3 WEF and the proposed Hantam Solar PV Energy Facility. As such the owners / occupants of these farmsteads are not expected to perceive the proposed power lines in a negative light
- The overall impact rating revealed that the proposed development is expected to have a negative low visual impact rating during construction, operation and decommissioning phases with a number of mitigation measures available to prevent any additional visual impacts.
- No fatal flaws were identified for any of the proposed power line corridors and all three corridors were found to be favourable.

6.7.9 Desktop Social Impact Assessment

The Desktop Social Impact Assessment was conducted by Dr Neville Bews & Associates. The full Social Impact Assessment Report is included in **Appendix 6**. The Social Impact Assessment was undertaken via desktop means and data was gathered using a number of techniques (see Section 1.4 in Desktop Social Impact Report – **Appendix 6**).

The desktop Social specialist study assessed the proposed development of powerlines. Key findings include the following:

- The objective of the proposed development is to link the authorised 100 MW Loeriesfontein 3 PV SEF to the authorised 140 MW Dwarsrug WEF in order to create a hybrid energy facility. The hybrid energy facility will ensure that electricity is constantly supplied to the national grid by at least one or both technologies (namely solar PV and wind) at any given time. Separate BA processes to add battery energy storage systems (BESS) to both renewable energy facilities (Loeriesfontein 3 BESS DEFF Reference number: 14/12/16/3/3/1/2263 and Dwarsrug BESS DEFF Reference number: 14/12/16/3/3/1/2262) are currently underway. The BESS will contribute to the hybrid renewable energy facility by storing and providing electricity for the national grid.
- Once commissioned, the powerline will be absorbed, operated and maintained by Eskom; thus, resulting in the power line becoming an Eskom asset and eliminating any risk attached to privately owned transmission grid infrastructure. In this regard, Eskom indicates a commitment “to developing the electricity supply industry by facilitating the integration of independent power producers (IPPs) into the national grid and buying electricity from IPPs for national distribution”.
- Regarding the negative impacts associated with the project, it is evident that most apply over the short-term and are confined to the construction phase of the project. Of these impacts, all are within acceptable ranges and there are no fatal flaws associated with the construction or operation of the project. Although over the operational phase, the project will be visible and is likely to alter the sense of place of the area, this should be limited to the extent that it is placed amongst existing electricity infrastructure.
- In accordance with international and governmental requirements, the project will shift the country away from a high reliance on fossil fuels towards a far greener and cleaner energy generation mix. The proposed development also supports the objectives of the RMIPPPP, which serves as an “emergency” power generation programme for accelerated assistance to the national grid amid electricity supply constraints. The DMRE issued an RFP for the emergency procurement of 2000 MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy

from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can reduce the risk of load shedding. Grid capacity is also available and no deep grid works are required, which are beneficial for the connection timelines of the RMIPPPP.

- The Minister of Mineral Resources and Energy also recently welcomed the concurrence by the NERSA to the second Section 34 Ministerial Determination, which enables the Department to undertake procurement of additional electricity capacity in line with the IRP (2019). 6 800 MW of capacity is determined to be generated from renewable energy sources (PV and Wind), 513 MW from storage and 3 000 MW from gas. The proposed development will be able to contribute to this diverse electricity requirement and will thus actively contribute to the commitments made to increase generation capacity and ensure the security of energy supply to society rapidly and significantly.
- Considering all social impacts associated with the project, it is evident that the positive elements outweigh the negative and that the project carries with it a significant social benefit. In addition, the project fits with international and governmental policy and legislation. Consequently, the construction of the proposed 132 kV Loeriesfontein to Dwarsrug Overhead Powerline is supported at the social level with no further assessment being required.

6.7.10 Aquatic Compliance Statement

The Aquatic Compliance Statement was compiled by Bruce Scott-Shaw of NatureStamp and is included as **Appendix 6**. The regional context and desktop analysis were used as the point of departure. A detailed site visit was undertaken by SiVEST in 2012 and 2015, prior to the approval of the SEF and WEF. Much of this information was used to confirm the sensitivity of this site. The verification assessment of these systems considered a number of databases where relevant (see Section 2 of Aquatic Compliance Statement – **Appendix 6**).

The aquatic specialist study assessed the proposed development of powerlines. Key findings include the following:

- The assessment undertaken for the additional 132kV powerlines (preferred option 1 to link Dwarsrug WEF to Loeriesfontein 3 PV and option 3 to link Dwarsrug WEF Narosies substation) resulted in low significance impacts for the site.
- The impacts would be very low if pylons and access roads are kept outside of identified watercourse areas for option 1 and option 3. There were no suitable alternatives for option 3 and this was considered to be the best location for this site.
- No additional No-Go areas were identified as a result of this assessment.
- Through the impact assessment, the risks identified during construction have the highest impact although it would still be considered to be low.
- The construction and operation phase associated impacts of the access roads, turbines, crane pads / laydown areas, PV arrays, substation, maintenance building and power lines have already been approved by the respective authorities.
- Therefore, the addition of the 132kV powerline (Corridors 1 (or 2) and 3) to the approved development will have a minimal impact.
- The location of the proposed powerlines has been strategically placed to be situated away from watercourses.
- Corridors 1 and 3 were considered to be the best routes from an aquatic perspective.

7. PUBLIC PARTICIPATION

Public participation is the cornerstone of any BA process. The principles of NEMA as well as the EIA Regulations, 2014 (as amended), govern the BA process, including public participation. These include

provision of sufficient and transparent information on an on-going basis to Interested and/or Affected Parties (I&APs) and key stakeholders, such as Organs of State (OoS) / authorities, to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth.

To fulfil the necessary public participation required as part of the BA Process, the following methods of stakeholder engagement were undertaken by the EAP, as outlined below.

7.1 COMPLIANCE WITH REGULATIONS AND SUBSEQUENT CIRCULARS

In light of the country wide restriction enforced in terms of Government Gazette 43096 which has resulted in the entire country being placed in a national state of disaster and limits on the movement and gatherings of people in an effort to curb the spread CoVID-19, the public participation process has been amended and adjusted in light of these restrictions. In response, SiVEST has formulated a unique Public Participation process which is as closely related to the requirements of Regulations 39 to 44 of the EIA Regulations, 2014, as amended, (GNR 982) as possible¹⁴.

As a result, alternative means of undertaking the required stakeholder engagement were designed and implemented by SiVEST to ensure that all I&APs were afforded reasonable opportunity to engage meaningfully. As such, SiVEST proposed the following amendments to the public participation process, described in more detail below. This Public Participation Plan was submitted to DEFF and was approved on the 15th December 2020 (**Appendix 9**).

Figure 5 below provides an overview of the tools that were available to I&APs and stakeholders to access project information and interact with the public participation team to obtain project information and resolve any queries that may arise.

¹⁴ General Notice issued by the DEFF on 24 March 2020, as well as Government Notice No. 650 issued by the DEFF on 05 June 2020

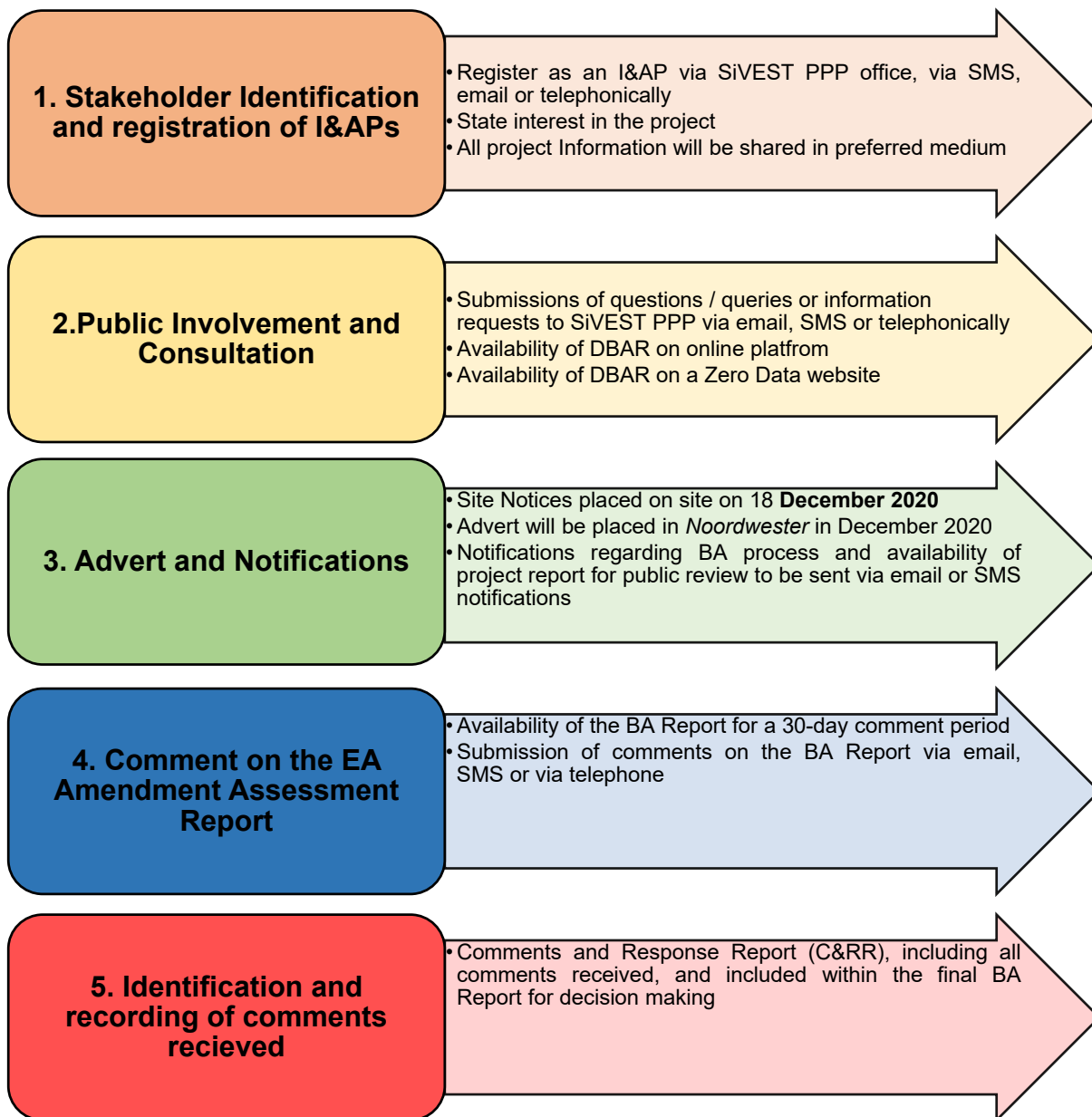


Figure 5: Schematic illustration of PPP tools

7.2 NEWSPAPER ADVERTISEMENT AND SITE NOTICES

A newspaper advertisement announcing the commencement of the BA process, the availability of the BAR and inviting I&APs to register on the project database was placed in the “*Noordwester*” on 11 December 2020 (see **Appendix 7**).

In addition to the advertisement, site notices for the powerline project were placed along the entrance road to the application site (30° 21' 44.5" S; 019° 34' 40.3" E), as well as at the Helios Substation (30° 30' 6.82"S; 19° 33' 25.49"E) on 18 December 2020. These posters contained brief details of the proposed project and process and the contact details of the consultant (**Appendix 7**).

7.3 WRITTEN NOTIFICATION TO AUTHORITIES AND LANDOWNERS

7.3.1 Interested and Affected Parties (I&APs)

A register of I&APs was compiled as per Section 42 of the EIA Regulations, 2014, as amended. This includes all relevant authorities, Government Departments, the Local Municipality, the District Municipality, relevant conservation bodies and non-governmental organisations (NGO's), as well as neighbouring landowners and the surrounding community. A copy of the I&AP Register is included as **Appendix 7** of this report.

7.3.2 Landowner Consent and Notification

Regulation 39 (1) of the EIA Regulations, 2014 (as amended), states that *“if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land”*.

Regulation 39 (2) of the 2014 NEMA EIA Regulations, 2014 (as amended), further states that *“sub-regulation (1) does not apply in respect of: (a) linear activities; (b) activities constituting, or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and (c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014”*.

The proposed powerlines are linear activities, and landowner consent is therefore not required. The landowners and/or occupants of the affected farm portions, on which the proposed powerlines are proposed, will however be notified. The notifications are included as **Appendix 7**.

The table below provides details regarding the landowners / occupiers (affected and adjacent) who have been contacted and/or notified with regards to the BA process, as well as the method in which the landowners / occupiers were contacted.

TABLE 6: Details regarding the landowners / occupiers (affected and adjacent) who have been contacted and/or notified with regards to the BA

Landowners (Affected and Adjacent)				Occupier Details Requested	Method of Contact				Date	Follow-up
Landowner (Affected or Adjacent)	ERF	Farm Name	Contact Name		Phone	Email	SMS	Registered Post		
Affected Landowner	RE/212	Brakpan	Estate Late Jacobus Hendrik Louw Nel	✓	✓	✓	✓	07-01-2021 & 08-01-2021	SiVEST sent the landowners / occupiers notifications on 07 and 08 January 2021 respectively, at the start of the Public Participation period.	
Affected Landowner	RE/213	Aan die Karee Doorn Pan	Jacobus Gert Lombard	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Affected Landowner	213	Aan die Karee Doorn Pan	Abraham Petrus Linvelt	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Affected Landowner	3/213	Aan die Karee Doorn Pan	Transnet (The Manager)	SiVEST only have a landline number available. Will continue to follow-up and will send notifications once an email address has been received (if email address can be obtained)						
Affected Landowner	RE/226	Sous	Andries Landman	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Affected Landowner	228	Narosies	Sunay Mol	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Occupier of Affected Property	RE/212	Brakpan	Mr Van Der Merwe	✓	✓		✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	1/214	Aan die Karee Doorn Pan	Jacobus Gert Lombard	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	RE/209	Bitter K'mas								
Adjacent Landowner	184	Buchu Fontein	Charles Nicholas Versfeld	✓	✓		✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	RE/187	Bitter Puts	Willem Jacobus Strauss	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	RE/211	Kamas	Christoffel Lombard	✓	✓		✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	1/211	Kamas	Johannes Gerhadus Maritz Visagie	✓	✓		✓	07-01-2021 & 08-01-2021		
Adjacent Landowner		Kaalspruit	Marianne Husselmann	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner		Blouputs	Koos O'Kennedy	✓	✓		✓	07-01-2021 & 08-01-2021		
Adjacent Landowner		Klein Rooiberg	Gideon Van Der Westhuizen	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	74	Dorp Frankfort	Marianne Husselmann	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	2/176	Gras Koppies	Nico Louw	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	1397	Slabberts	John Muller	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	1242	Leeuwpan	Jako Naude	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	1165	Langbank	Catharina Scott	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	227	Kleine Rooiberg	Josias Johannes van der Westhuizen	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	164	Leeuwklip	AJ Kirsten	✓	✓	✓	✓	07-01-2021 & 08-01-2021		
Adjacent Landowner	799	Ausker's Dale	Coenraad & Magda Deysel	✓	✓	✓	✓	07-01-2021 & 08-01-2021		

Landowners (Affected and Adjacent)				Occupier Details Requested	Method of Contact				Date	Follow-up
Landowner (Affected or Adjacent)	ERF	Farm Name	Contact Name		Phone	Email	SMS	Registered Post		
Adjacent Landowner	127	Deelfontein	Wolf Edmeyer	✓	✓	✓		07-01-2021 & 08-01-2021		
Adjacent Landowner	532	Zonop S	JAB Cilliers	✓	✓			07-01-2021 & 08-01-2021		

7.3.3 Notification of BAR for Public Comment

A notification letter for the BA Process was compiled and circulated to all identified I&APs by SMS or email, where required, on the 08th January 2020. The purpose of the notification letter was to notify I&APs of the BA process and invite them to participate. Furthermore, the notification letter invited comments from I&APs on the DBAR. A copy of the Notification Letter is included as **Appendix 7** of this report.

Digital copies of the DBAR are available for public review at the following venue:

VENUE	ADDRESS	OPENING HOURS	CONTACT
Loeriesfontein Library	Plein Street, Loeriesfontein	8am-4pm	+27 27 662 1603

The report will be uploaded on to the SiVEST Website at:

- <http://enviroenergy.sivest.co.za/download/16606BA>.

The link to this portal will be on the main website whereby all registered I&APs can download the document at no cost.

Electronic copies (CD / flash drive / dropbox link) of the DBAR will also be distributed on written request¹⁵.

All issues, comments and concerns raised will be captured in the Comments and Response Report (C&RR), which will be included in the final BAR (FBAR) submitted to the DEFF for a decision on EA. The C&RR will provide a summary of the issues and concerns raised, as well as any responses provided to I&APs and key stakeholders. A detailed C&RR will be included in **Appendix 7** of the FBAR.

7.3.4 Review of the Draft Basic Assessment Report (DBAR) by Organs of State (OoS) / Key Stakeholders

In terms of section 40 (2) of the EIA Regulations, 2014 (as amended), public participation must include consultation with all OoS which have jurisdiction in respect of the activity to which the application relates.

The Table below includes all the OoS who were e-mailed the DBAR and sent electronic copies of the full report, including all appendices as well as the method in which they were notified. Telephonic follow-up will be undertaken throughout the 30-day DBAR comment and review period in order to provide them with ample opportunity to comment on the application.

¹⁵ The use of postage will only be required should and I&AP request that the documents be sent to them via CD or flash drive. All I&APs and OoS have either email / SMS and will be sent an electronic link to the website where the reports can be reviewed or downloaded, as well as a data free portal where the report can be reviewed. Should any I&APs / stakeholders / OoS request documents via post or courier, this will be indicated and proof will be provided in the final report.

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

DISTRIBUTION OF THE DRAFT BASIC ASSESSMENT REPORT TO ORGANS OF STATE (OoS) FOR COMMENT

TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
HANTAM LOCAL MUNICIPALITY							
Mr	van Wyk	Riaan	Environmental Officer	Private Bag X14 CALVINIA 8190	socialoev1@hantam.gov.za	√	-
NAMAKWA DISTRICT MUNICIPALITY							
Mr	Loubser	Jannie	Manager: Planning	Private Bag X20 SPRINGBOK 8240	janniel@namakwa-dm.gov.za	√	-
AGRI SA-NORTHERN CAPE							
Mr	Myburg	Henning	General Manager	PO Box 1094 KIMBERLEY 8300	henning@agrink.co.za	√	-
ATNS							
Ms	Morobane	Johanna	Manager: Corporate Sustainability and Environment	Private Bag X15 KEMPTON PARK 1620	JohannaM@atns.co.za	√	-
Mr	Mondzinger	Graham	Obstacle Evaluator	Private Bag X15 KEMPTON PARK 1620	GrahamM@atns.co.za	√	-
BIRDLIFE SOUTH AFRICA							
Mr	Booth	Jonathan	Policy Manager	PO Box 515 RANDBURG 2125	advocacy@birdlife.org.za	√	-
Ms	Ralston	Samantha		PO Box 515 RANDBURG 2125	energy@birdlife.org.za	√	-
ENDANGERED WILDLIFE TRUST							

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

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TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
Mr	Little	Ian	Senior Manager	Kirstenbosch National Botanical Garden Rhodes Drive Newlands CAPE TOWN	ianl@ewt.org.za	√	-
Mr	Leeuwner	Lourens	Renewable Energy Project Manager	Private Bag X11, MODDERFONTEIN 1609	lourensl@ewt.org.za	√	-
ESKOM							
Mr	Geeringh	John	Chief Planner	PO Box 1091 JOHANNESBURG 2000	GeerinJH@eskom.co.za	√	-
DEPARTMENT OF ENVIRONMENTAL AFFAIRS BIODIVERSITY							
Mr	Lekota	Seoka		Private Bag X447 PRETORIA 0001	slekota@environment.gov.za	√	-
Mr	Rabothata	Mmatlala		Private Bag X447 PRETORIA 0001	slekotamrabothata@environment.gov.za	√	-
DEPARTMENT OF WATER AND SANITATION							
Provincial Department- Northern Cape							
Ms	Mokhoantle	Lerato	Environmental Officer	28 Central road Beaconsfield KIMBERLEY 8300	Mokhoantlel@dws.gov.za	√	-
DEPARTMENT OF MINERAL RESOURCES (DMR) - NORTHERN CAPE							

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

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TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
Mr	Swart	Pieter	Regional Manager	41 Schmidtsdrift street, Telkom Building, KIMBERLEY, 8300	pieter.swart@dmr.gov.za	√	-
Ms	Mondela	Lungi	Secretary	41 Schmidtsdrift street, Telkom Building, KIMBERLEY, 8300	Lungi.Mondela@dmr.gov.za	√	-
DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES							
National Department							
Ms	Buthelezi	Thoko	AgriLand Liaison Office	Private Bag X120 PRETORIA 0001	ThokoB@daff.gov.za	√	-
Ms	Marubini	Mashudu	Delegate of the Minister	Delpen Building Cnr Annie Botha and Union Street Office 270 PRETORIA 0001	MashuduMa@daff.gov.za	√	-
Provincial Department- Northern Cape							
Ms	Mans	Jacoline	Chief Forester	Koelenhof, 306 Schroder Street UPINGTON 8800	jacolinema@daff.gov.za	√	-
NORTHERN CAPE PROVINCIAL DEPARTMENT OF AGRICULTURE, LAND REFORM & RURAL DEVELOPMENT							

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

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TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
Ms	Bloem	Nomandla	MEC	Private Bag X5018 KIMBERLEY 8300	premier@ncpg.gov.za	√	-
Mr	Van Heeden	Denver	HOD	Private Bag X6010 KIMBERLEY 8300	dvaheeden@ncpg.gov.za	√	-
NORTHERN CAPE DEPT OF ENVIRONMENT AND NATURE CONSERVATION							
Mr	Fisher	Brian	Director Environmental Impact Management	Private Bag X86102 KIMBERLEY 8300	bfisher@ncpg.gov.za	√	-
Mr	Mthombeni	Thulani		Private Bag X86102 KIMBERLEY 8300	tmtho@webmail.co.za tmthombeni@ncpg.gov.za	√	-
NORTHERN CAPE PROVINCIAL DEPT OF SPORT, ARTS & CULTURE: Heritage Resources Unit							
Mr	Lenyibi	Patrick	Manager: Heritage Resources	Private Bag X5004 KIMBERLEY 8300	plenyibi@ncpg.gov.za	√	-
NORTHERN CAPE DEPARTMENT OF ROADS AND PUBLIC WORKS							
Mr	Roelofse	Jaco	Director: Planning & Design	PO Box 3132 KIMBERLEY 8300	roelofse.j@vodamail.co.za	√	-
SANRAL - WESTERN REGION							
Ms	Abrahams	Nicole	Environmental Coordinator	Private Bag X19 BELLVILLE 7535	abrahamsn@nra.co.za	√	-
SAHRA: HEAD OFFICE							

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

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TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
Ms	Higgitt	Natasha	Heritage Officer: Northern Cape	PO Box 4637 CAPE TOWN 8000	nhiggitt@sahra.org.za	√	-
SQUARE KILOMETRE ARRAY							
Dr	Tiplady	Adriaan	Manager: Site Categorisation	PO Box 522 SAXONWOLD 2132	atiplady@ska.ac.za	√	-
SA CIVIL AVIATION AUTHORITY (SA CAA)							
Ms	Stroh	Lizell	Obstacle Specialist	Private Bag X73 HALFWAY HOUSE 1685	strohl@caa.co.za	√	-
SENTECH							
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Ms	Pretorius	Alisha		Private Bag X06 HONEYDEW 2040	pretoriusa@sentech.co.za	√	-
TRANSNET FREIGHT RAIL							
Mr	Fiff	Sam	Environmental Manager: Freight Rail	PO Box 255 BLOEMFONTEIN 9300	sam.fiff@transnet.net	√	-
TELKOM							
Mr	Thurling	Keverne		10 Jan Smuts Drive PINELANDS 7404	Thurling@telkom.co.za	√	-

South African Mainstream Renewable Power Developments (Pty) Ltd

Project No.: 16606

Description: Proposed construction of 132KV powerlines - Basic Assessment Report

Revision No.: 1.0

Date: 07 January 2021

Prepared By:



PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

DISTRIBUTION OF THE DRAFT BASIC ASSESSMENT REPORT TO ORGANS OF STATE (OoS) FOR COMMENT

TITLE	SURNAME	NAME	POSITION	POSTAL ADDRESS	EMAIL ADDRESS	METHOD OF COMMUNICATION	
						EMAIL	SMS
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Ms	van den Heever	Heleen	Ops Manager Central Region	Private Bag X20700 BLOEMFONTEIN 9300	vdheevhd@telkom.co.za	√	-
WESSA							
Mr	Griffiths	Morgan	Environmental Governance Programme Manager	PO Box 12444, Centrahill PORT ELIZABETH 6006	morgan.griffiths@wessa.co.za	√	-

8. ENVIRONMENTAL MONITORING AND AUDITING

The Environmental Management Programme (EMPr) becomes a tool by which compliance on the proposed site can be measured against. In order to utilise this tool, environmental monitoring needs to take place with regular audits against the EMPr to ensure that all aspects are attended to.

Environmental monitoring establishes benchmarks to judge the nature and magnitude of potential environmental and social impacts.

Some of the key parameters for monitoring and auditing of the proposed development include the following *inter alia*:

- Impacts to Agriculture and Soils;
- Impacts on Geotechnical aspects;
- Impacts on Terrestrial Ecology;
- Impacts on Botany;
- Impacts on Avifauna;
- Impacts on heritage resources, including archaeology, palaeontology and the cultural landscape
- Positive and negative socio-economic impacts;
- Impact on Aquatic environments; and
- Impacts on Transport systems.

Based on the outcomes of the impact assessment process concluded in **Section 9**, a Draft EMPr is included in **Appendix 8**. However, it should be noted that a Final EMPr will be submitted to the DEFF for review and approval prior to construction commencing.

A monitoring programme will be implemented for the duration of the lifecycle of the proposed development. This programme will include:

- Monthly Audits During the Construction Phase. These audits will be undertaken in accordance with the requirements of the EMPr, EA and permit conditions and will be undertaken by an independent Environmental Control Officer (ECO). These audits can be undertaken at random and do not require prior arrangement with the project manager;
- Compilation of an audit report with a rating of the compliance with the EMPr. This report will be submitted to the relevant authorities which includes the DEFF; and
- Annual Audits conducted during the Operational Phase should this be required by the DEFF.

The environmental monitoring program will operate throughout the pre-construction, construction, and if deemed necessary the operational phase. It will consist of a number of activities, each with a specific purpose with key indicators and criteria for significance assessment. The subsections below describe the various phases of the project and outline the overall objectives of what monitoring is to achieve. The requirements of the EMPr and EA will be monitored at defined intervals by an independent ECO.

8.1. PLANNING AND DESIGN PHASE

- Ensures that the design of the facility responds to the identified environmental constraints and opportunities;
- Ensures that pre-construction activities are undertaken in accordance with all relevant legislative requirements;

- Ensures that adequate regard has been taken of identified environmental sensitivities, as well as any landowner and community concerns and that these are appropriately addressed through design and planning (where applicable);
- Enables the construction activities to be undertaken without significant disruption to other land uses and activities in the area; and
- Ensures that the best environmental options are selected for the facility.

8.2. CONSTRUCTION PHASE

- Ensures that construction activities are properly managed in respect of environmental aspects and impacts;
- Enables construction activities to be undertaken without significant disruption to other land uses and activities in the area, in particular concerning noise impacts, farming practices, traffic and road use, and effects on local residents;
- Minimises the impact on the indigenous natural vegetation, protected tree species, and habitats of ecological value;
- Minimises impacts on fauna using the site; and
- Minimises the impact on heritage sites, should they be uncovered.

8.3. OPERATION PHASE

- Ensures that operational activities are properly managed in respect of environmental aspects and impacts;
- Enables the operation activities to be undertaken without significant disruption to other land uses in the area, in particular with regard to farming practices, traffic and road use, and effects on local residents; and
- Minimises impacts on fauna.

8.4. DECOMMISSIONING PHASE

At the end of the operational phase of the proposed development, the proposed development might need to be decommissioned. This would include the decommissioning of the overhead powerlines. Should the proposed development need to be decommissioned, the applicant will rehabilitate the project site as per the requirements in the NEMA Regulations, following the decommissioning of the project site. The aim of the decommissioning phase would be to return the site to its original pre-construction condition. In the unlikely event that decommissioning is required (i.e. PPA not renewed, facility becoming outdated or the land being required for other purposes), the decommissioning phase will be undertaken in line with the EMPr and the requirements in the NEMA Regulations.

Most of the components of the OHL are considered to be reusable or recyclable. In the event of the proposed development being decommissioned, the components will be reused and recycled (where possible) or disposed of (where necessary) in accordance with the relevant regulatory requirements. Certain components may also be traded or sold as there is an active second-hand market for certain components. It must be noted that the decommissioning phase of the proposed development will also create skilled and unskilled employment opportunities.

The general specifications of Construction and Rehabilitation are relevant to the decommissioning of the proposed development and must be adhered to. These include the following, amongst others:

- All structures not required for the post-decommissioning use of the site are dismantled and/or demolished, removed and waste material disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.
- Rehabilitate access / service roads and servitudes not required for the post-decommissioning use of the development. If necessary, an Ecologist must be consulted to give input into rehabilitation specifications.
- All disturbed areas must be compacted, sloped and contoured to ensure drainage and run-off and to minimise the risk of erosion.
- Monitor rehabilitated areas quarterly for at least a year following decommissioning and implement remedial action, as and when required.
- Any fauna encountered during decommissioning activities must be removed to safety by a suitably qualified person.
- All vehicles to adhere to low speed limits (i.e.40km/h max) on the project site, to reduce risk of faunal collisions as well as reduce dust.
- Retrenchments must comply with South African Labour legislation of the day.

Monitoring should be undertaken at a number of levels (FIGURE 6). Firstly, it should be undertaken by the Contractor at work sites during construction, under the direction and guidance of the Supervision Consultant who is responsible for reporting the monitoring to the implementing agencies. It is not the Contractor's responsibility to monitor land acquisition and compensation issues. It is recommended that the Contractor employ local full time qualified environmental inspectors for the duration of the Contract. The Supervision Consultant should include the services of an independent environmental and monitoring specialist (ECO) on a part-time basis as part of their team.

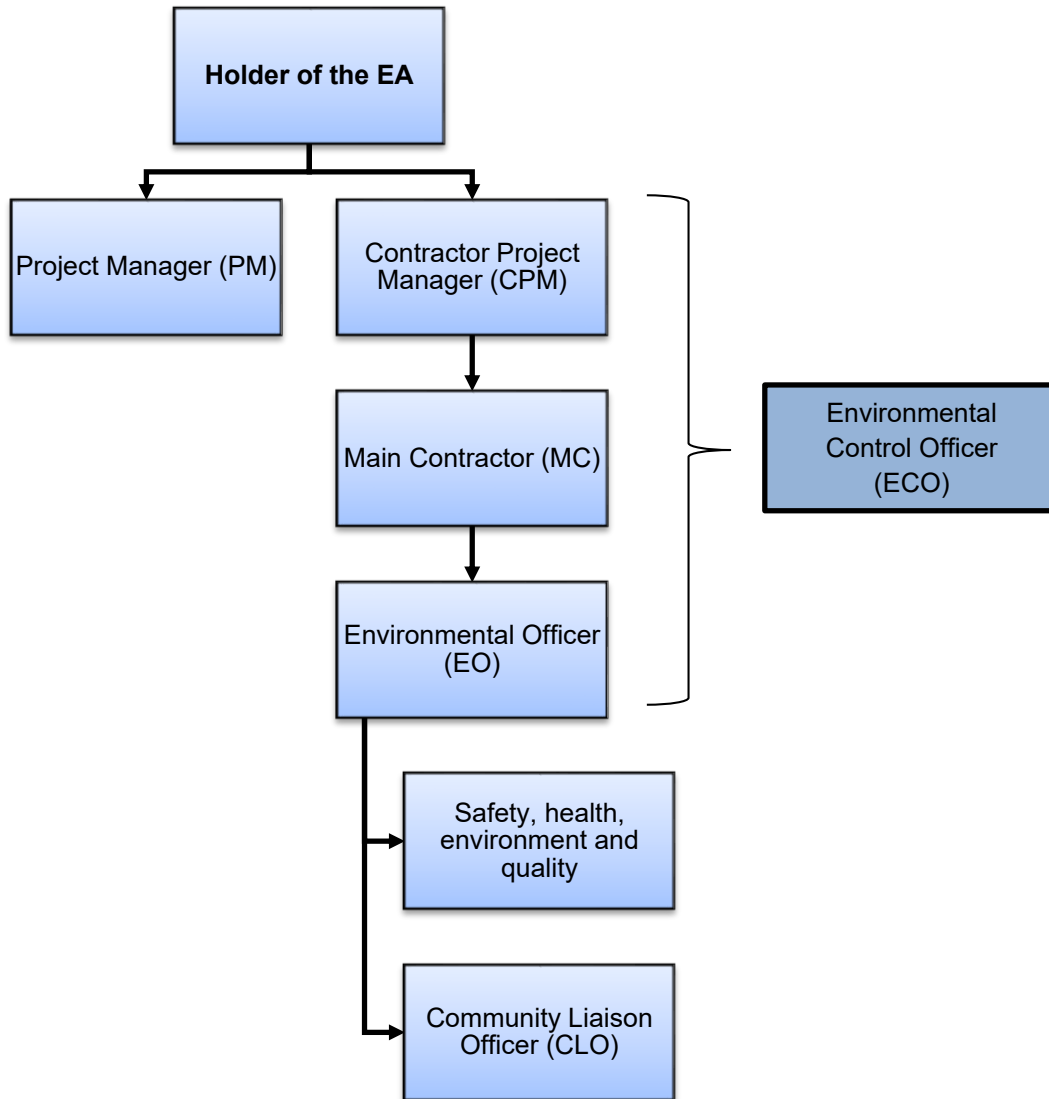


FIGURE 6: Organogram indicating the organisational structure

Environmental monitoring is also an essential component of project implementation. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measure, as they are required. It helps to anticipate possible environmental hazards and/or detect unpredicted impacts over time.

Periodic and on-going monitoring will be required during the life of the proposed development and the level can be determined once the proposed development is operational.

9. IMPACT ASSESSMENT AND MITIGATION MEASURES

9.1. IMPACT ASSESSMENT METHODOLOGY

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

8.1.1 Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in **Table 7**.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

8.1.2 Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the various project stages, as follows:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

8.1.3 Rating System Used to Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. In assessing the significance of each issue the following criteria (including an allocated point system) is used:

Table 7: Rating of impacts criteria

ENVIRONMENTAL PARAMETER		
A brief description of the environmental aspect likely to be affected by the proposed activity (e.g. Aquatic).		
ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity (e.g. oil spill in surface water).		
EXTENT (E)		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY (P)		

This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY (R)		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES (L)		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION (D)		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
INTENSITY / MAGNITUDE (I / M)		
Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		

1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

SIGNIFICANCE (S)

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude / intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

9.2. IMPACTS IDENTIFIED

Specialist studies have been conducted in terms of the stipulations contained within Appendix 6 of the EIA Regulations, 2014 (as amended). In addition, the relevant specialist Protocols as published in Government Notice No. 648 of 10 May 2019 were also followed, where required (<https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols>).

As previously mentioned, the following specialist assessments were conducted as part of the BA process in order to identify and assess the issues associated with the proposed development:

- Desktop Agriculture Compliance statement¹⁶;
- Desktop Geotechnical Impact Assessment;
- Avifauna Impact Assessment;
- Terrestrial Ecology Compliance Statement¹⁷;
- Botany Compliance Statement;
- Heritage Impact Assessment;
- Palaeontology Impact Assessment;
- Desktop Socio-Economic Impact Assessment;
- Aquatic Compliance Statement¹⁸; and
- Visual Impact Assessment.

The above-mentioned specialist assessments have been undertaken to identify and assess issues. These assessments were also undertaken to inform the route alignments and the impact assessment of the proposed development. It should be noted that the specialists assessed the proposed powerline corridors (including alternatives) as part of their respective assessments and also focused on specific impacts of the proposed development area and power line and substation infrastructure in detail.

SIVEST has considered the suite of potential impacts in a holistic manner and in certain instances, based on independent professional judgment and this integrated approach, may have altered impact significance ratings provided by the specialist.

The EAP has assessed the Impacts in the Table below and in **Chapter 10.3 - Impact Assessment**.

The specialists have provided recommendations for the management of impacts, and the EAP has assessed these recommendations. For the sake of brevity, only key mitigation measures are presented in impact rating tables (**Section 9.3**), with a collective summary of all recommended mitigation measures for the proposed construction and operation of the project are provided in TABLE 8.

¹⁶ Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more, gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

¹⁷ Protocol for the assessment and reporting of environmental impacts on Terrestrial biodiversity gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

¹⁸ Protocol for the assessment and reporting of environmental impacts on aquatic biodiversity gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

TABLE 8: Impacts identified by the EAP and Specialists and associated mitigation measures

Impact	Description	Mitigation
Avifauna	<p><u>Construction</u></p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the construction activities <p><u>Operation</u></p> <ul style="list-style-type: none"> Mortality of priority species due to electrocutions on the 132kV OHLs Mortality of priority species due to collisions with the 132kV OHLs <p><u>Decommissioning</u></p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the decommissioning activities 	<p><u>Construction</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 455 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the construction activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction. <p><u>Operation</u></p> <ul style="list-style-type: none"> The 7649 vulture friendly pole design should be used. The entire 132kV OHL should be marked with Bird flight diverters, on the full span length, on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung. <p><u>Decommissioning</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 452 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the decommissioning activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the decommissioning period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction

Impact	Description	Mitigation
Agriculture	<p>Electrical grid infrastructure has negligible agricultural impact in this study area for two (2) reasons:</p> <ul style="list-style-type: none"> • Overhead transmission lines have no agricultural impact because all agricultural activities that are viable in this environment (grazing) can continue completely unhindered underneath transmission lines. • The direct, permanent, physical footprint of the development that has any potential to interfere with agriculture, is restricted to pylon bases and a small substation that, in the context of the agricultural environment of low density grazing on farms which are typically thousands of hectares large, is entirely insignificant. • The only possible source of impact is minimal disturbance to the land during construction and decommissioning • The single agricultural impact is therefore minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance. • 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 excavations. • Soil degradation will reduce the ability of the soil to support vegetation growth. This is a direct, negative impact that applies to only two of the phases of the development (construction and decommissioning). • The cumulative agricultural impact of the proposed development can confidently be assessed as negligible. 	<p>takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction.</p> <p>There are no additional mitigation measures required, over and above what has already been included in the Generic EMPr for overhead electricity transmission and distribution infrastructure as per Government Notice 435, which was published in Government Gazette 42323 on 22 March 2019.</p>
Biodiversity	<p><u>Construction and Operation Phase</u></p> <ul style="list-style-type: none"> • Clearing of natural vegetation – vehicle traffic on the power line corridor – that will result in an increase in loss of vegetation cover • With the sensitivity of the vegetation on the low hills south of the railway line, the status of “medium sensitivity” can be confirmed. 	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Ensure rehabilitation of cleared patches, manage any alien invasives • Rehabilitate any tracks on slopes - monitor after rain events • Rehabilitate impacts on drainage lines - constant monitoring after rain events • Rehabilitate exposed corridor - ensure covering of large exposed areas • Clean and rehabilitate immediately - vehicle inspections and maintenance

Impact	Description	Mitigation
	<ul style="list-style-type: none"> • Increase in storm water runoff from hardened surfaces (roads) that will lead to an increase in flow velocities resulting in erosion • An increase of wind erosion on the exposed soils (e.g. access roads and power line corridor) • Potential oil spills/leaks during construction • Potential for waste material left on site 	<ul style="list-style-type: none"> • Monitoring and cleaning - wind-blown materials on site <p><u>Operation</u></p> <ul style="list-style-type: none"> • Need careful monitoring of the corridor - rehabilitate as needed • Monitoring and rehabilitation after rain events • Cumulative impacts - need monitoring and rehabilitation • Rehabilitation of bare soils • Maintenance of all vehicles - regular inspections of sites and corridor • Solid waste and wind-blown - regular inspections and cleaning
Surface Water	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Change in impervious surface preventing infiltration • Increase in Storm Water • General spills/Leaks • Clearing of vegetation for Access roads and pylons 	<p><u>Construction</u></p> <ul style="list-style-type: none"> • The development must ensure areas around the pylons and construction access are revegetated. • The existing vegetation should not be removed in the corridor unless completely necessary. • The mitigation measures required relates to the development and implementation of an adequate storm water management plan to be designed by an appropriate engineer. • The engineer should account for both natural run-off (that which can be released into the natural landscape with no detrimental effect) and excess artificial run-off generated by the access roads and pylon base. • Storm water drains can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion. • The pylon footprint and access roads must stay outside of the 1:100 year flood extent. • All vehicles will need to be checked for leakage before and after entering the construction area. • Areas where fuels are either kept or transferred will need to be bunded so as to contain spillage. • Cement mixing sites will also need to be strategically positioned and bunded to prevent spillage. • Ablution facilities must be provided to prevent workers urinating near or in the wetlands. • Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> The loss of vegetation is inevitable and necessary for the proposed development to take place. Hence, the impact of vegetation clearance will be definite. Mitigation measures primarily will relate to the cumulative impacts associated with exposed open stretches of land. Run-off is to be mitigated by the use of structures that will reduce the rate and volume of run-off so as to prevent erosion and siltation impacts affecting nearby wetlands.
	<u>Operation</u> <ul style="list-style-type: none"> Increase in Storm Water Spills/Leaks during maintenance 	<u>Operation</u> <ul style="list-style-type: none"> The corridor area must be revegetated where clearing was done. Any areas where watercourses were crossed by access roads must be rehabilitated. Maintenance should be undertaken with aerial means where possible. Implement the storm-water management plan and ensure appropriate water diversion systems are put in place. Compile an emergency response plan and implement should an emergency occur such as an electrical fire. Ensure that spill kits (if appropriate) are available on site for clean-up of spills and leaks. Immediately clean up spills and dispose of contaminated soil at a licensed waste disposal facility.
	<u>Decommissioning</u> <ul style="list-style-type: none"> Sediments and spills entering water resources 	<u>Decommissioning</u> <ul style="list-style-type: none"> All vehicles will need to be checked for leakage before and after entering the decommission area. Areas where fuels are either kept or transferred will need to be bunded so as to contain spillage. Ablution facilities must be provided to prevent workers urinating near or in the wetlands. Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones. Revegetation must occur immediately following the decommission.
	<u>Cumulative</u> <ul style="list-style-type: none"> Compounded impacts from surrounding development 	<u>Cumulative</u> <ul style="list-style-type: none"> The mitigation measures required relates to the development and implementation of an adequate storm water management plan/structures to be designed by an appropriate engineer.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> Such structures can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion downstream.
Heritage	<u>Construction, Operation, Decommissioning and Cumulative</u> <ul style="list-style-type: none"> Impact on archaeological and historical heritage resources 	<u>Construction, Operation, Decommissioning and Cumulative</u> <ul style="list-style-type: none"> Include heritage chance finds procedure in EMP for project development An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr .
Palaeontology	<ul style="list-style-type: none"> Loss of fossil heritage 	<ul style="list-style-type: none"> Chance find protocol <p>If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that correct mitigation (recording and collection) can be carry out by a palaeontologist.</p>
Socio-Economic	<u>Construction</u> <ul style="list-style-type: none"> Health and social wellbeing impact; <ul style="list-style-type: none"> Annoyance, air quality and noise Increase in crime Increased risk of HIV infections An influx of construction workers Hazard exposure. Quality of the living environment; <ul style="list-style-type: none"> Disruption of daily living patterns. Economic <ul style="list-style-type: none"> Job creation and skills development Socio-economic stimulation. 	<ul style="list-style-type: none"> Health and social wellbeing impact; <ul style="list-style-type: none"> Air Quality <ul style="list-style-type: none"> Ensure that dust suppression measures, such as damping down of unsealed roads where necessary are applied. Noise <ul style="list-style-type: none"> Ensure that no construction activity occurs near residences between 18:30 and 06:30 during the week and between 08:30 and 16:30 over weekends. Increase in crime <ul style="list-style-type: none"> Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. Prevent loitering within the vicinity of the construction camp and construction sites. Increased risk of HIV infections <ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ▪ Expose workers to a health and HIV/AIDS awareness educational program. ○ An influx of construction workers <ul style="list-style-type: none"> ▪ Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. ▪ Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy. ○ Hazard exposure. <ul style="list-style-type: none"> ▪ Ensure all construction equipment and vehicles are properly maintained at all times. ▪ Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly. ▪ Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. ▪ Make staff aware of the dangers of fire during regular toolbox talks. • Quality of the living environment; <ul style="list-style-type: none"> ○ Disruption of daily living patterns. <ul style="list-style-type: none"> ▪ Ensure that, at all times, people have access to their properties and social facilities. • Economic <ul style="list-style-type: none"> ○ Job creation and skills development <ul style="list-style-type: none"> ▪ Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. ▪ Women should be given equal employment opportunities and encouraged to apply for positions. ▪ A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction.

Impact	Description	Mitigation
	<p><u>Operation</u></p> <ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. • Quality of the living environment; <ul style="list-style-type: none"> ○ Transformation of the sense of place • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. 	<ul style="list-style-type: none"> ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase. <ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. <ul style="list-style-type: none"> ▪ Ensure that where ever possible the power line is routed away from areas of high human and animal habitat. ▪ Establish a grievance mechanism and deal with grievances transparently. • Quality of the living environment <ul style="list-style-type: none"> ○ Transformation of the sense of place <ul style="list-style-type: none"> ▪ Apply the mitigation measures suggested in the Visual Impact Assessment Report. ▪ A Grievance Mechanism should be initiated and all grievances should be dealt with transparently. ▪ The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed. • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ The power line will revert to Eskom and become an Eskom asset over the operational phase. Consequently, optimisation measures as they apply in respect to similar Eskom assets would also apply in this in this case.
Visual	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. • Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. 	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Carefully plan to minimise the construction period and avoid construction delays. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner. • Maintain a neat construction site by removing rubble and waste materials regularly. • Make use of existing gravel access roads where possible. • Limit the number of vehicles and trucks travelling to and from the construction site, where possible. • Ensure that dust suppression techniques are implemented: <ul style="list-style-type: none"> ○ on all access roads; ○ in all areas where vegetation clearing has taken place;

Impact	Description	Mitigation
	<ul style="list-style-type: none"> • Surface disturbance during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. • Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	<ul style="list-style-type: none"> ○ on all soil stockpiles.
	<p><u>Operation</u></p> <ul style="list-style-type: none"> • The proposed power lines could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. • The decommissioning activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. • The night time visual environment will be altered if any lighting is placed on pylon structure. 	<p><u>Operation</u></p> <ul style="list-style-type: none"> • As far as possible, limit the number of maintenance vehicles using access roads. • Where possible, avoid placing lights on pylon structures. • Non-reflective surfaces should be utilised where possible.
	<p><u>Decommissioning</u></p> <ul style="list-style-type: none"> • Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. • Decommissioning activities may be perceived as an unwelcome visual intrusion. • Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning activities may evoke negative sentiments from surrounding viewers. • Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. • Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	<p><u>Decommissioning</u></p> <ul style="list-style-type: none"> • All infrastructure that is not required for post-decommissioning use should be removed. • Carefully plan to minimize the decommissioning period and avoid delays. • Maintain a neat decommissioning site by removing rubble and waste materials regularly. • Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. • Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.
	<p><u>Cumulative</u></p> <ul style="list-style-type: none"> • Additional renewable energy and associated grid connection infrastructure developments in the broader area will alter the natural 	<p><u>Cumulative</u></p> <ul style="list-style-type: none"> • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner.

Impact	Description	Mitigation
	<p>character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts.</p> <ul style="list-style-type: none"> • Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. • Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. • The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities and associated substations in the broader area. • If the 132kV power lines is not developed in this area, there will be no change in the visual character or the sense of place. There will be no visual impacts on receptors or on the night-time visual environment. 	<ul style="list-style-type: none"> • As far as possible, limit the number of maintenance vehicles using access roads. • Where possible, avoid placing lights on pylon structures. • Non-reflective surfaces should be utilised where possible.
Air quality	<ul style="list-style-type: none"> • Potential dust generation from soil stripping, vehicle traffic on the access roads and motor vehicle fumes will have an impact on air quality; • Dust will be created during the Construction Phase, which may impact on surrounding local community members. 	<ul style="list-style-type: none"> • All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum, as per the requirements of the EMPr; • Road dampening must be undertaken as and when required to prevent excess dust during construction; • Road surface stabilisers can also be implemented to suppress dust during construction.
Waste	<ul style="list-style-type: none"> • There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil / hazardous substance spills, litter from personnel on-site, sewage from ablutions etc.); and • Waste generation could be created from the following: <ul style="list-style-type: none"> - Solid waste - plastics, metal, wood, concrete, stone, asphalt; - Chemical waste- petrochemicals, resins and paints; and - Sewage as may be generated by employees. 	<ul style="list-style-type: none"> • All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials is supported; • All solid wastes must be disposed of at an appropriately registered landfill site and records maintained to confirm safe disposal; • Adequate scavenger-proof refuse disposal containers must be supplied to control solid waste on-site; • It must be ensured that existing waste disposal facilities in the area are able to accommodate the increased waste generated from the proposed construction; • Chemical waste must be stored in appropriate containers and disposed of at an appropriately licensed disposal facility; • Portable sanitation facilities must be erected for construction personnel. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation). These facilities must also be monitored and serviced regularly and located more than 100m away from any natural water resources so as to prevent contamination of the water resource.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • The construction site must be inspected for litter on a daily basis. Extra care must be taken on windy days. • Soil that is contaminated with, e.g. cement, petrochemicals or paint, must be disposed of at a registered waste disposal site. • It must be ensured that all hazardous contaminants are stored in designated areas that are sign-posted, lined with an appropriate barrier and banded to 110% of the volumes of liquid being stored to prevent the bio-physical contamination of the environment (ground and surface water and soil contamination). Hazardous substance storage must not take place within 100m of a wetland/watercourse or within the 1:100 year floodline; and • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / Municipality etc.) and must be remediated as per the EMPr. • All waybills and disposal slips (e.g. safe disposal certificates, waste manifests) must be retained for a minimum period of five (5) years for the disposal activities associated with the construction and decommissioning of the proposed facility, per regulation 8(1) of the NEM:WA, 2008 Waste Classification and Management Regulations published in GN No. R. 634 of 23 August 2013. • All hazardous waste materials, if present, must be carefully stored as advised by the ECO, and then disposed of off-site at a licensed landfill site, where practical. • Contaminants to be stored safely to avoid spillage. • Machinery must be properly maintained to keep oil leaks in check • All necessary precaution measures must be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills must immediately be cleaned up and all affected areas rehabilitated • Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. • Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site. • The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil. • If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. • Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. • Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment and stored in adequate containers until appropriate disposal.
Security	<ul style="list-style-type: none"> • Crime • Alcohol and drug abuse • Loitering • Access control • Firearms 	<ul style="list-style-type: none"> • A security company must be employed to guard the construction site and monitor access. • Site access must be controlled via a boom and gatehouse, with security staff stationed at access booms during construction. • Labour must be transported to and from the site to discourage loitering in adjacent areas and a possible increase in crime or disturbance. • Unsocial activities such as consumption or illegal selling of alcohol, drug utilisation or selling and prostitution on site must be prohibited. Disciplinary or criminal action must be taken against any persons found to be engaged in such activities. • Only pre-approved staff must be permitted to stay in the staff accommodation where staff accommodation is provided. • The construction camp site must be fenced, where necessary to prevent any loss or injury to persons during the construction phase. • No alcohol / drugs to be present on site.
Geotechnical	<ul style="list-style-type: none"> • Disturbance/ displacement/ removal of soil and rock • Soil Erosion 	<ul style="list-style-type: none"> • Design access roads and pylon locations to minimise earthworks and levelling based on high resolution ground contour information • Correct topsoil and spoil management • Avoid development in preferential drainage paths • Appropriate engineering design of road drainage and watercourse crossings • Temporary berms and drainage channels to divert surface runoff where needed • Landscape and rehabilitate disturbed areas timeously (e.g. regressing) • Use designated access and laydown areas only to minimise disturbance to surrounding areas • Maintain access roads including drainage features • Monitor for erosion and remediate and rehabilitate timeously • Restore natural site topography • Landscape and rehabilitate access roads and disturbed areas timeously (e.g. regressing)

Impact	Description	Mitigation
Terrestrial Ecology	Construction impacts on small pan-like structures, defined as ESAs.	<ul style="list-style-type: none"> • Locate infrastructure outside sensitive zones. • If impact unavoidable, rehabilitate disturbed areas.

9.3. IMPACT ASSESSMENT

Some Specialist assessments were informed by the DEFF Screening Tool as being compliance statements due to the outcome of the Site Verification Reports undertaken by specialists where **Low Impacts** were recorded, as such their findings are described below. **It should be noted that as part of the Protocol as published in Government Notice No. 648 of 10 May 2019, these specialists were not required to formally rate impacts.**

Those specialists, whose studies were informed by the DEFF Screening Tool as following the Appendix 6 of the EIA Regulations have indicated impacts according to the SiVEST Impact Rating Methodology. These impact ratings are tabulated below.

9.1.1. Terrestrial Ecology Impacts (Compliance Statement)

The Terrestrial Ecology Compliance Statement¹⁹ was compiled by Dr David Hoare from David Hoare Consulting and is included in **Appendix 6**.

The overall impact of the Loeriesfontein 3 PV - Dwarsrug powerline, on the terrestrial biodiversity and animal species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.

The rating of the significance of the impacts of the proposed powerline project, on the terrestrial biodiversity and animal species resources, is provided below.

¹⁹ Protocol for the assessment and reporting of environmental impacts on Terrestrial biodiversity gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

No Planning and Design Phase, Operational Phase, Decommissioning Phase, Cumulative or No-Go impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S
		Construction Phase																		
Terrestrial Ecology	Construction impacts on pans (Ecological Support Areas)	1	3	3	2	3	2	24	-	Medium	<ul style="list-style-type: none"> Locate infrastructure outside sensitive zones. If impact unavoidable, rehabilitate disturbed areas. 	1	2	2	2	3	1	10	-	Low
Operational Phase																				
n/a																				
Decommissioning Phase																				
n/a																				
Cumulative																				
n/a																				
No-go option																				
n/a																				

9.1.2. Botany Impacts (Compliance Statement)

The Botany Compliance Statement was compiled by Dr Wynand Vlok from BioAssets Biological Assessments and is included as **Appendix 6**.

The key impacts identified for the proposed 132kV power lines are:

- Clearing of natural vegetation – vehicle traffic on the power line corridor – that will result in an increase in loss of vegetation cover
- With the sensitivity of the vegetation on the low hills, mostly south of the railway line, the status of “medium sensitivity” can be confirmed.
- There will be an increase in storm water runoff from hardened surfaces (roads) that will lead to an increase in flow velocities resulting in erosion
- In addition, there will be an increase of wind erosion on the exposed soils (e.g. access roads and power line corridor)
- A smaller issue will be the potential of oil spills / leaks during construction
- There is a potential for waste material left on site

The overall impact of the Loeriesfontein 3 PV - Dwarsrug WEF powerline and Dwarsrug WEF Powerline to Narosies substation, on plant biodiversity, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.

It should be noted that when looking at Option / Corridor 3, the short distance (3km) associated with the sensitive low hills is therefore less impact of the habitat and its associated vegetation. This is due to the following reason:

- The shorter corridor will have low impacts associated with wind and water erosion

From a Botany perspective, no fatal flaws, sensitivities, or areas to be avoided have been identified within or close to the assessment area. It is therefore recommended that the proposed activity be authorised.

The rating of the significance of the impacts of the proposed powerline project, on vegetation / botany, is provided below.

No Planning and Design Phase or No-Go impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S	
Construction Phase																					
Clearing of natural vegetation	Loss of vegetation to clearing of the servitude, vehicle travel outside the corridor, large vehicles turning outside designated areas, possible establishment of alien invasives	1	3	3	3	2	3	3	6	-	Medium	<ul style="list-style-type: none"> Ensure rehabilitation of cleared patches; manage any alien invasives; strict monitoring of vehicles to stay on designated roads; limit all vehicle travel during construction 	1	2	2	2	2	2	18	-	Low
Increase in storm water runoff	Hardened surfaces will increase run-off potential, this will result in increased erosion potential	2	3	2	2	2	3	3	3	-	Medium	<ul style="list-style-type: none"> Rehabilitate all roads and tracks - monitor after rain events 	2	2	1	1	2	1	8	-	Low
Increase of water erosion	All roads and exposed surfaces create possible water erosion potential, increased run-off volumes will contribute to	2	3	2	3	2	3	3	6	-	Medium	<ul style="list-style-type: none"> Rehabilitate impacts on runoff areas and drainage lines - constant monitoring after rain events 	2	2	2	1	2	1	9	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S	
	erosion in drainage lines																				
Increase of wind erosion	All exposed areas will contribute to wind-blown particles - increased erosion	1	4	3	2	2	3	3	6	-	Medium	<ul style="list-style-type: none"> Rehabilitate exposed corridor - ensure covering of large exposed areas 	1	3	2	1	2	2	18	-	Low
Potential oil spills/leaks	Possible leaks of vehicles on site	2	2	4	2	2	2	2	4	-	Medium	<ul style="list-style-type: none"> Clean and rehabilitate immediately - vehicle inspections and maintenance prior to access to site (in vehicle pool area) 	2	1	1	1	2	1	7	-	Low
Waste material	Waste from construction, food packaging, plastic water bottles	2	2	4	2	2	2	2	4	-	Medium	<ul style="list-style-type: none"> Monitoring and cleaning - wind-blown materials + on site 	1	1	2	1	2	1	7	-	Low
Operational Phase																					
Clearing of natural vegetation	Loss of vegetation - maintenance and driving in the servitude, vehicle	1	3	3	2	3	2	2	4	-	Medium	<ul style="list-style-type: none"> Ensure rehabilitation of cleared patches; 	1	2	2	2	3	1	10	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION														
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S						
	travel outside the corridor, possible establishment of alien invasives												<ul style="list-style-type: none"> manage any alien invasives; strict monitoring of vehicles to stay on designated roads; limit all vehicle travel 													
Increase in storm water runoff	Hardened surfaces will increase run-off potential, this will result in increased erosion potential	2	3	2	3	3	3	3	9	-	Medium	<ul style="list-style-type: none"> Rehabilitate all roads, corridor and tracks - monitor after rain events 	2	2	1	2	3	1	10	-	Low					
Increase of water erosion	All roads and exposed surfaces create possible water erosion potential, increased run-off volumes will contribute to erosion in drainage lines, driving in wet conditions a concern	2	3	3	3	3	3	4	2	-	Medium/high	<ul style="list-style-type: none"> Rehabilitate impacts on runoff areas and drainage lines - constant monitoring after rain events, limit driving in wet periods, limit driving on small tracks 	2	2	2	1	3	1	10	-	Low					
Increase of wind erosion	All exposed areas will contribute to wind-blown particles - increased erosion	1	4	3	2	3	3	3	9	-	Medium	<ul style="list-style-type: none"> Rehabilitate exposed corridor and access roads - ensure 	1	3	2	1	3	2	20	-	Low / medium					

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S	
												covering of large exposed areas									
Potential oil spills/leaks	Possible leaks of vehicles on site	2	2	4	2	3	2	2	6	-	Medium	<ul style="list-style-type: none"> Clean and rehabilitate immediately - vehicle inspections and maintenance prior to access to site (in vehicle pool area) 	2	1	1	1	3	1	8	-	Low
Waste material	Waste from maintenance, food packaging, plastic water bottles	2	1	2	1	3	1	9	-	Low	<ul style="list-style-type: none"> Monitoring and cleaning - wind-blown materials + on site 	1	1	1	1	3	1	7	-	Low	
Decommissioning Phase																					
Clearing of natural vegetation	Loss of vegetation during activities of removal of structures, clearing of storage areas of material, vehicle travel outside the designated roads, large vehicles turning outside designated areas, possible	2	4	4	3	2	3	4	5	-	High	<ul style="list-style-type: none"> Strict guidelines for all activities; constant monitoring; External monitoring critical; ensure rehabilitation of cleared patches; manage any alien invasives; 	1	2	2	2	2	2	18	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION																						
		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S														
	establishment of alien invasive																				<ul style="list-style-type: none"> strict monitoring of vehicles to stay on designated roads limit all vehicle travel during decommissioning 													
Increase in storm water runoff	Hardened surfaces will increase run-off potential, this will result in increased erosion potential, increased vehicle travel will be high	2	2	4	2	3	2	2	6	-	Medium	<ul style="list-style-type: none"> Rehabilitate all roads and tracks - monitor after rain events 	2	1	1	1	3	1	8	-	Low													
Increase of water erosion	All roads and exposed surfaces create possible water erosion potential, increased run-off volumes will contribute to erosion in drainage lines	2	4	3	3	2	3	4	2	-	Medium/high	<ul style="list-style-type: none"> Rehabilitate impacts on runoff areas and drainage lines - constant monitoring after rain events 	2	2	1	2	2	1	9	-	Low													
Increase of wind erosion	All exposed areas will contribute to wind-blown particles - increased erosion	1	4	3	3	2	3	3	9	-	Medium	<ul style="list-style-type: none"> Rehabilitate exposed corridor - ensure covering of 	1	3	2	1	2	2	18	-	Low													

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S	
												large exposed areas									
Potential oil spills/leaks	Possible leaks of vehicles on site	2	2	4	2	2	2	2	4	-	Medium	<ul style="list-style-type: none"> Clean and rehabilitate immediately - vehicle inspections and maintenance prior to access to site (in vehicle pool area) 	2	1	1	1	2	1	7	-	Low
Waste material	Waste from decommissioning, food packaging, plastic water bottles	2	3	2	2	2	2	2	2	-	Low / medium	<ul style="list-style-type: none"> Monitoring and cleaning - wind-blown materials + on site 	1	2	1	1	2	1	7	-	Low
Cumulative																					
Clearing of natural vegetation	Loss of vegetation	2	3	3	3	2.5	2.5	3	4	-	Medium	<ul style="list-style-type: none"> Ensure rehabilitation of cleared patches 	1	2	2	2	2.5	2	19	-	Low
Increase in storm water runoff	Hardened surfaces	2	3.5	2.5	3	2.5	3	4	1	-	Medium / high	<ul style="list-style-type: none"> Rehabilitate 	2	2.5	1.5	2	2	1.5	15	-	Low
Increase of water erosion	All roads and exposed surfaces	2	3.5	2.5	3	2.5	3	4	1	-	Medium / high	<ul style="list-style-type: none"> Rehabilitate - constant monitoring after rain events 	2	2	2	1.5	2	1	9.5	-	Low
Increase of wind erosion	All exposed areas	1.5	4	3	3	2.5	3	4	2	-	Medium / high	<ul style="list-style-type: none"> Rehabilitate 	1	3	2	1	2.5	2	19	-	Low

South African Mainstream Renewable Power Developments (Pty) Ltd

Project No.: 16606

Description: Proposed construction of 132KV powerlines - Basic Assessment Report

Revision No.: 1.0

Date: 07 January 2021

Prepared By:



ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Potential oil spills / leaks	Possible leaks of vehicles on site	2	2	4	2	2.5	2	2.5	-	Low / medium	<ul style="list-style-type: none"> Clean and rehabilitate immediately 	2	1	1	1	2.5	1	1.5	-	Low
Waste material	Various waste sources	2	2	3	2	2.5	2	2.3	-	Low / medium	<ul style="list-style-type: none"> Monitoring and cleaning 	1	1.5	1.5	1	2.5	1	7.5	-	Low

9.1.3. Avifauna Impacts

The Avifaunal Impact Assessment has been conducted by Chris van Rooyen and Albert Fronemann of Chris van Rooyen Consulting and is included in **Appendix 6**.

The proposed Loeriesfontein PV 3 - Dwarsrug 132kV OHL will have several impacts on priority avifauna. The impacts can be summarised as follows:

- Construction Phase:
 - Displacement of priority species due to disturbance associated with the construction and decommissioning activities of the 132kV OHLs.

- Operational Phase:
 - Mortality of priority species due to electrocutions on the 132kV OHLs.
 - Mortality of priority species due to collisions with the 132kV OHLs.

- Decommissioning:

Decommissioning activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. Large terrestrial species namely Ludwig's Bustard, Karoo Korhaan could be affected by displacement due to disturbance. The biggest potential impact could be on the Martial Eagles that breed on the Aries – Helios 400kV line. The proposed Loeriesfontein – Dwarsrug 132kV OHL will pass underneath the Aries – Helios 400kV line very close to Tower 455, which contains one of the two nests that the birds are currently using.

This impact is assessed to be medium and can be reduced to low through mitigation.

The proposed powerline route alignments are expected to have a medium impact on priority species. This impact could be reduced to low through the application of appropriate mitigation measures. No fatal flaws were discovered in the course of the investigations. Based on the outcome of the investigations into the impact of the proposed powerlines on avifauna, the authorisation of the powerlines is supported, provided the mitigation measures contained in this specialist report are strictly implemented.

See **Chapter 6.7.1** for a full description of the above-mentioned impacts. The rating of the significance of the impacts of the proposed powerline project, on avifauna, is provided below.

No Planning and Design Phase or No-Go impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE									
		BEFORE MITIGATION											AFTER MITIGATION									
		E	P	R	L	D	I/M	STATUS	TOTAL	S	E		P	R	L	D	I/M	STATUS	TOTAL	S		
Construction Phase																						
Avifauna	Displacement of priority species due to disturbance associated with the construction activities of the OHLs	1	3	2	3	1	3	-	30	Medium	<ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 455 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the construction activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the construction period. This could include measures such as subscribing a 2km 	1	2	2	1	1	2	-	14	Low		

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION																						
		BEFORE MITIGATION											AFTER MITIGATION																						
		E	P	R	L	D	I/M	STA	TLIS	TOT	A		S	E	P	R	L	D	I/M	STA	TLIS	TOT	A	S											
																							temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction.												
Operational Phase																																			
Avifauna	Mortality of priority species due to electrocutions on the 132kV OHLs	1	1	2	4	3	2	-	22	Low	The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6).	1	2	2	4	3	1	-	12	Low															
Avifauna	Mortality of priority species due to collisions with the 132kV OHL	1	3	2	4	3	2	-	26	Medium	The entire 132kV OHL should be marked with Bird flight diverters, on the full span length, on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.	1	2	2	4	3	2	-	24	Medium															
Decommissioning Phase																																			
Avifauna	Displacement of priority species due to disturbance associated with the	1	3	2	3	1	3	-	30	Medium	<ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; 	1	2	2	1	1	2	14	-	Low															

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION														
		E	P	R	L	D	I/M	STA	TLUS	TOT	ALL		S	E	P	R	L	D	I/M	STA	TLUS	TOT	ALL	S			
	decommissioning activities											<ul style="list-style-type: none"> Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 452 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the decommissioning activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the decommissioning period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no 															

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																						
		BEFORE MITIGATION											AFTER MITIGATION																						
		E	P	R	L	D	I/M	STA	TLS	TOT	ALL		S	E	P	R	L	D	I/M	STA	TLS	TOT	ALL	S											
																							construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction.												
Cumulative																																			
Avifauna	Displacement of priority species due to disturbance associated with the construction activities of the 132kV overhead lines	1	3	2	3	1	3	-	30	Medium	<ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to breeding eagles on existing HV lines during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to 	1	2	2	1	1	2	-	14	Low															

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																			
		BEFORE MITIGATION											AFTER MITIGATION																			
		E	P	R	L	D	I/M	STATUS	TOTAL	A	S		E	P	R	L	D	I/M	STATUS	TOTAL	A	S										
																						avoid delaying construction.										
Avifauna	Mortality of priority species due to electrocutions on the 132kV OHLs	1	1	2	4	3	2	-	22		Low											The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6).	1	2	2	4	3	1	-	12		Low
Avifauna	Mortality of priority species due to collisions with the 132kV OHL	1	3	2	4	3	2	-	26		Medium											All the 132kV grid connections should be marked with BFDs for their entire lengths.	1	2	2	4	3	2	-	24		Medium
Avifauna	Displacement of priority species due to disturbance associated with the decommissioning activities	1	1	3	4	3	1	-	12		Low											<ul style="list-style-type: none"> No off-road driving Maximum use of existing roads Measures to control noise Restricted access to the rest of the property The avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to breeding eagles on existing HV lines during the decommissioning period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no 	1	1	3	4	3	1	-	12		Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																				
		BEFORE MITIGATION											AFTER MITIGATION																				
		E	P	R	L	D	I/ M	STA TUS	TOT AL		S		E	P	R	L	D	I/ M	STA TUS	TOT AL		S											
																						construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction.											
No-go option																																	
No additional impacts are expected as the <i>status quo</i> as it currently stands will be maintained																																	

9.1.4. Agricultural Impacts (Compliance Statement)

The Agricultural and Soils Compliance statement²⁰ was conducted by Johann Lanz (**SACNASP registration: 400268/12**) and is included in Appendix 6. It should be noted that the document adheres to the process and content requirements of the gazetted agricultural protocol.

An Agricultural Compliance Statement is not required to formally rate agricultural impacts. It is only required to indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site. It must provide a substantiated statement on the acceptability, or not, of the proposed development and a recommendation on the approval, or not of the proposed development.

The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the following points:

- The proposed development is on land of very low agricultural potential.
- The amount of agricultural land loss is completely insignificant within the agricultural context.
- The proposed development poses a low risk in terms of causing soil degradation, which can be adequately and fairly easily managed by mitigation management actions. In addition, the degradation risk is only to land of low agricultural value, and the significance of the impact is therefore low.

Therefore, from an agricultural impact point of view, it is recommended that the development be approved.

The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.

Since an Agricultural Compliance Statement is not required to formally rate agricultural impacts, the rating of the significance of the impacts of the proposed powerline project, on agriculture, is not provided.

9.1.5. Geotechnical Impacts

The Desktop Geotechnical Impact Assessment was conducted by Duan Swart of GaGE Consulting (Pty) Ltd. A site visit was not undertaken and the assessment was subsequently done at a desktop level, using available information (see Section 1.4 of Desktop Geotechnical Impact Assessment Report). The full Desktop Geotechnical Impact Assessment Report is included in **Appendix 6**.

Based on the impact significance ratings, the development of the proposed powerlines within Corridor 1, Corridor 2 and Corridor 3, from a geological and geotechnical perspective, will be “Negative Low impact”, provided that the recommended mitigation measures are implemented. Corridor 1 is considered marginally more suitable for development from a geotechnical perspective than Corridor 2, due to the generally flatter topography, however, other factors are likely to be more critical in determining the final layout. Therefore, no preference between Corridor 1 and Corridor 2 is provided.

²⁰ Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more, gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

From a geotechnical and geological perspective, no fatal flaws, sensitivities, or areas to be avoided have been identified within or close to the assessment area. It is therefore recommended that the proposed activity be authorised.

The rating of the significance of the impacts of the proposed powerline project, on geology, is provided below.

No Planning and Design Phase or No-Go impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION/MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE									
		BEFORE MITIGATION											AFTER MITIGATION									
		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S	E		P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S		
Construction Phase (Corridor 1)																						
Disturbance / displacement / removal of soil and rock	Ground disturbance during earthworks, subgrade preparation, platform road preparation, trenching	1	4	2	2	3	1	12	-	Low	<ul style="list-style-type: none"> Design facility layout to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management 	1	4	2	1	3	1	11	-	Low		
Soil Erosion	Increased erosion due to vegetation clearing, alteration of natural drainage	1	4	2	2	2	1	11	-	Low	<ul style="list-style-type: none"> Avoid development in preferential drainage paths Appropriate engineering design of road drainage and water crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. regrassing) Use designated access and laydown areas only to minimise disturbance to surrounding areas 	1	2	1	1	2	1	7	-	Low		
Construction Phase (Corridor 2)																						

Disturbance / displacement / removal of soil and rock	Ground disturbance during earthworks, subgrade preparation, trenching	2	4	2	2	3	1	13	-	Low	<ul style="list-style-type: none"> Design facility layout to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management 	2	4	2	1	3	1	12	-	Low
Soil Erosion	Increased erosion due to vegetation clearing, alteration of natural drainage	1	4	2	2	2	2	22	-	Low	<ul style="list-style-type: none"> Avoid development in preferential drainage paths Appropriate engineering design of road drainage and water crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. regrassing) Use designated access and laydown areas only to minimise disturbance to surrounding areas 	1	2	1	1	2	1	7	-	Low
Construction Phase (Corridor 3)																				
Disturbance / displacement / removal of soil and rock	Ground disturbance during earthworks, subgrade preparation, trenching	1	4	2	2	3	1	12	-	Low	<ul style="list-style-type: none"> Design facility layout to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management 	1	4	2	1	3	1	11	-	Low

Soil Erosion	Increased erosion due to vegetation clearing, alteration of natural drainage	1	4	2	2	2	1	11	-	Low	<ul style="list-style-type: none"> Avoid development in preferential drainage paths Appropriate engineering design of road drainage and water crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. regrassing) Use designated access and laydown areas only to minimise disturbance to surrounding areas 	1	2	1	1	2	1	7	-	Low
Operational Phase (Corridor 1)																				
Soil Erosion	Increased erosion due to alteration of natural drainage	1	2	1	1	2	1	7	-	Low	<ul style="list-style-type: none"> Maintain access roads including drainage features Monitor for erosion and remediate and rehabilitate timeously 	1	1	1	1	2	1	6	-	Low
Operational Phase (Corridor 2)																				
Soil Erosion	Increased erosion due to alteration of natural drainage	1	2	1	1	2	1	7	-	Low	<ul style="list-style-type: none"> Maintain access roads including drainage features Monitor for erosion and remediate and rehabilitate timeously 	1	2	1	1	2	1	7	-	Low
Operational Phase (Corridor 3)																				

Soil Erosion	Increased erosion due to alteration of natural drainage	1	2	1	1	2	1	7	-	Low	<ul style="list-style-type: none"> Maintain access roads including drainage features Monitor for erosion and remediate and rehabilitate timeously 	1	1	1	1	2	1	6	-	Low
Decommissioning Phase (Corridor 1)																				
Disturbance / displacement / removal of soil and rock	Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure	1	4	2	2	2	1	11	-	Low	<ul style="list-style-type: none"> Restore natural site topography Landscape and rehabilitate disturbed areas timeously (e.g. regrassing) 	1	4	2	1	2	1	10	-	Low
Soil Erosion	Increased erosion due to ground disturbance during rehabilitation activities	1	2	2	2	2	1	9	-	Low	<ul style="list-style-type: none"> Temporary berms and drainage channels to divert surface runoff where needed Restore natural site topography Use designated access and laydown areas only to minimise disturbance to surrounding areas 	1	1	1	1	2	1	6	-	Low
Decommissioning Phase (Corridor 2)																				
Disturbance / displacement / removal of soil and rock	Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure	1	4	2	2	2	1	11	-	Low	<ul style="list-style-type: none"> Restore natural site topography Landscape and rehabilitate disturbed areas timeously (e.g. regrassing) 	1	4	2	1	2	1	10	-	Low
Soil Erosion	Increased erosion due to ground disturbance during rehabilitation activities	1	2	2	2	2	1	9	-	Low	<ul style="list-style-type: none"> Temporary berms and drainage channels to divert surface runoff where needed Restore natural site topography 	1	1	1	1	2	1	6	-	Low

9.1.6. Heritage Impacts

The Heritage Impact Assessment (HIA) was conducted by Wouter Fourie of PGS Heritage. The full HIA Report is included in **Appendix 6**.

- The current study has confirmed that the impact will be low. This finding and with the implementation of a chance finds procedure as part of the EMPr (**Appendix 8**) will mitigate possible impacts on unidentified heritage resources.
- The calculated impact of this report confirms the low negative impact rating pre-and post-mitigation.

The overall impact of the powerline project, on the heritage resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

The rating of the significance of the impacts of the proposed powerline project, on heritage resources, is provided below.

No Planning and Design Phase impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE								
		BEFORE MITIGATION										AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S
Construction Phase																				
Heritage resources	Impact on archaeological and historical heritage resources	1	1	4	1	3	1	-	10	Low	<ul style="list-style-type: none"> Include heritage chance finds procedure in EMP for project development. An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr 	1	1	4	1	3	1	-	10	Low
Operational Phase																				
Heritage resources	Impact on archaeological and historical heritage resources	1	2	4	4	4	1	-	15	Low	Include heritage chance finds procedure in EMPr for project development	1	1	4	4	4	1	-	14	Low
Decommissioning Phase																				
Heritage resources	Impact on archaeological and historical heritage resources	1	2	4	4	4	1	-	15	Low	Include heritage chance finds procedure in EMPr for project development	1	1	4	4	4	1	-	14	Low
Cumulative																				

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE								
		BEFORE MITIGATION										AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S		E	P	R	L	D	I/M	STATUS (+ OR -)	TOTAL	S
Heritage resources	Impact on archaeological and historical heritage resources	1	2	4	4	4	1	-	15	Low	Include heritage chance finds procedure in EMPr for project development	1	1	4	4	4	1	-	14	Low
No-go option																				
Impact on archaeological and historical heritage resources	In the event that the powerlines will not be implemented and operational	1	2	4	4	4	1	+	15	Low	None	1	2	4	4	4	1	+	15	Low

9.1.7. Paleontological Impacts

The Desktop Palaeontological Impact Assessment (PIA) was conducted by Elize Butler of Banzai Environmental. The PIA was undertaken as a standalone assessment, however, it also forms part of the HIA. The full PIA Report is included in **Appendix 6**.

The significance of the impact occurring will be negative medium high before mitigation and negative low after mitigation. Post mitigation the overall significance will be low as the superficial sediments has h low sensitivity but locally high. Excavations into bedrock will also not be deep and thus the overall significance of the development will be low. This will be applicable to both power line alternatives.

Loss of fossil heritage will have a negative impact. Only the affected properties (localities) will be affected by the proposed development. The expected duration of the impact is assessed as potentially permanent. In the absence of mitigation procedures, the damage or destruction of any palaeontological materials will be permanent. Impacts on palaeontological heritage during the construction phase could potentially occur and are regarded as having a high probability. The significance of the impact occurring will be medium before mitigation and Low after mitigation.

The significance of the impact occurring will be medium before mitigation and Low after mitigation. The overall impact of the proposed development, on the paleontological resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

The rating of the significance of the impacts of the proposed powerline project, on palaeontology, is provided below.

No Planning and Design Phase impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I/M	TOTAL	STATUS (+ OR -)	S
Construction Phase																				
Loss of fossil heritage		2	4	4	4	4	3	54	-	Medium	Chance find Protocol	2	4	4	4	4	1	18	-	Low
Operational Phase																				
Loss of fossil heritage		2	4	4	4	4	3	54	-	Medium	Chance find Protocol	2	4	4	4	4	1	18	-	Low
Decommissioning Phase																				
Loss of fossil heritage		2	4	4	4	4	3	54	-	Medium	Chance find Protocol	2	4	4	4	4	1	18	-	Low
Cumulative																				
Loss of fossil heritage		2	4	4	4	4	3	54	-	Medium	Chance find Protocol	2	4	4	4	4	1	18	-	Low
No Go Option																				
Loss of fossil heritage		2	4	4	4	4	1	18	+	Low	None	2	4	4	4	4	1	18	+	Low

9.1.8. Social Impacts

The Desktop Social Impact Assessment was conducted by Dr Neville Bews & Associates. The full Social Impact Assessment Report is included in **Appendix 6**. The Social Impact Assessment was undertaken via desktop means.

Planning / Pre-Construction:

The need for Eskom to purchase a specified amount of electricity from independent power producers has recently been gazetted (Government Gazette No. 43734 Notice No. 1015 Department of Mineral Resources and Energy, 2020). In addition, a review of applicable policy and legislation shows support on an international; national; regional and local government level for the provision of renewable energy into the National Grid. Towards this end, the project is a necessary component required in connecting the approved substation at the authorised 100 MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) and approved substation at the authorised 140 MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4) and the Dwarsrug WEF and the proposed (and authorised) Narosies Substation (12/12/20/2049/3). This will create a hybrid energy facility to ensure a more constant supply of electricity into the National Grid and as such will fit the relevant national planning criteria.

A sensitivity verification, undertaken on 28 October 2020, did not identify any socially linked restrictions, exclusions or prohibitions that apply to the proposed development site or any socially sensitive features on the site. It is therefore unlikely that any negative social impacts will be associated with the planning/pre-construction phase of the project.

Construction Phase:

Most of the impacts discussed above apply over the short-term to the construction phase of the project and include:

- Health and social wellbeing impact;
 - Annoyance, air quality and noise
 - Increase in crime
 - Increased risk of HIV infections
 - An influx of construction workers
 - Hazard exposure.
- Quality of the living environment;
 - Disruption of daily living patterns.
- Economic
 - Job creation and skills development.
 - Socio-economic stimulation.

Operational Phase:

The social impacts that apply to the operational phase of the project are:

- Health and wellbeing;
 - Electromagnetic fields.
- Quality of the living environment;
 - Transformation of the sense of place. and
- Economic;
 - Socio-economic stimulation.

Decommissioning Phase:

Considering the time to decommissioning, the uncertainty of what would exactly occur over this period and the significance of the impact in isolation; it would be rather meaningless to attach assessment criteria to decommissioning at this point. Apart from this, once the project is commissioned it will be ceded to Eskom becoming an Eskom asset over the operational phase.

No-go Impact:

The 'no-go' option would mean that the social environment would not be affected, as the status quo would remain intact. The impact of this is that the opportunity to connect the proposed Oya Energy Facility as well as the potential of connecting other nearby developments to the National Grid will be lost. This will have a negative social impact, as it will compromise national efforts in ensuring the security of energy supply. In addition, national efforts to reduce CO₂ emissions through increasing renewable energy capacity would also be compromised without the means of connecting these renewable energy facilities in the area to the National Grid.

Considering all social impacts associated with the project, it is evident that the positive elements outweigh the negative and that the project carries with it a significant social benefit. In addition, the project fits with international and governmental policy and legislation. Consequently, the construction of the proposed development is supported at the social level with no further assessment being required.

The rating of the significance of the impacts of the proposed powerline project, on the social environment, is provided below.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE									RECOMMENDED MITIGATION/MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE								
		BEFORE MITIGATION										AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Construction Phase																				
Health & Social Wellbeing	Air Quality	1	3	1	1	1	1	7		Low	Ensure that dust suppression measures, such as damping down of unsealed roads where necessary are applied.	1	3	1	1	1	1	7		Low
	Noise	1	1	1	1	1	1	5		Low	Ensure that no construction activity occurs near residences between 18:30 and 06:30 during the week and between 08:30 and 16:30 over weekends.	1	1	1	1	1	1	5		Low
	Increase in crime	1	2	3	2	1	2	18		Low	<ul style="list-style-type: none"> Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. Prevent loitering within the vicinity of the construction camp and construction sites. 	1	2	3	2	1	2	18		Low

	Increased risk of HIV infections	3	2	3	3	3	3	42		Medium	<ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. Expose workers to a health and HIV/AIDS awareness educational program. 	3	2	3	3	3	3	42		Low
	Influx of construction workers	1	4	1	1	1	1	8		Low	<ul style="list-style-type: none"> Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy. 	1	4	1	1	1	1	8		Low

	Hazard Exposure	2	2	2	2	1	2	18		Low	<ul style="list-style-type: none"> Ensure all construction equipment and vehicles are properly maintained at all times. Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly. Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. Make staff aware of the dangers of fire during regular toolbox talks. 	2	2	2	2	1	2	18		Low
Quality of the living environment	Disruptions of daily living patterns	2	2	1	2	1	1	8		Low	Ensure that, at all times, people have access to their properties and social facilities.	2	2	2	2	1	2	18		Low

Economic	Job creation and skills development	2	4	2	2	1	1	11	+	Low	<ul style="list-style-type: none"> • Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. • Women should be given equal employment opportunities and encouraged to apply for positions. • A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction. 	2	4	2	2	1	1	11	+	Low
	Socio-economic stimulation	3	4	2	3	1	1	13	+	Low	<ul style="list-style-type: none"> • A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase. 	3	4	2	3	1	1	13	+	Low
Operational Phase																				
Health and Wellbeing	Electromagnetic fields	1	3	1	3	3	2	33	-	Low	<ul style="list-style-type: none"> • Ensure that where ever possible the power line is routed away from areas of high human and animal habitat. Establish a grievance mechanism and deal with grievances transparently 	1	2	1	3	3	2	20	-	Low

Quality of the living environment	Transformation of the sense of place	3	4	3	3	3	2	32	-	Medium	<ul style="list-style-type: none"> Apply the mitigation measures suggested in the Visual Impact Assessment Report. A Grievance Mechanism should be initiated and all grievances should be dealt with transparently. The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed. 	3	4	3	3	3	2	32	-	Medium
Economic	Socio-economic stimulation	4	4	2	3	3	2	32	+	Medium	The power line will revert to Eskom and become an Eskom asset over the operational phase. Consequently, optimisation measures as they apply in respect to similar Eskom assets would also apply in this in this case.	4	4	2	3	3	2	32	+	Medium

9.1.9. Visual Impacts

The VIA was conducted by Kerry Schwartz of SiVEST. The full VIA Report is included in **Appendix 6**.

- Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural, untransformed setting with some pastoral elements. As such, the proposed power lines would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across much of the broader study area. The level of contrast is however significantly reduced by the presence of the operational Khobab and Loeriesfontein 2 WEFs with associated grid connection infrastructure, as well as the Helios substation, existing high voltage power lines, the Granaatboskolk Road and rail infrastructure affecting mainly the central sector of the study area.
- An overall impact rating was also conducted in order to allow the visual impact to be assessed alongside other environmental parameters. The assessment revealed that impacts associated with the proposed 132kV power lines will be of low significance during construction, operation and decommissioning phases with a number of mitigation measures available.
- Although other renewable energy developments and infrastructure projects, either proposed or in operation, were identified within a 35km radius of the proposed development, it was determined that only six (6) of these would have any significant impact on the landscape within the visual assessment zone. These facilities include the existing Khobab and Loeriesfontein 2 WEFs, the proposed Dwarsrug and Kokerboom 3 WEFs and the proposed Loeriesfontein 3 and Hantam SEFs. These facilities and the associated grid connection infrastructure will alter the inherent sense of place and introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts.
- From a visual perspective, the further concentration of renewable energy facilities with associated grid connection infrastructure as proposed will inevitably change the visual character of the area and alter the inherent sense of place, introducing an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. 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 in their respective reports. In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as medium. It is important to note, however, that the renewable energy facilities located in close proximity to each other could potentially be seen as one large renewable energy complex rather than 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.
- No fatal flaws were identified for any of the proposed power line corridors and all three (3) corridors were found to be favourable.

The visual impacts associated with the proposed development are of low to moderate significance. Given the low level of human habitation and the relative absence of sensitive receptors, the project is deemed acceptable from a visual impact perspective and the EA should be granted for the BA application. SiVEST is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

The rating of the significance of the impacts of the proposed powerline project, on the visual environment, is provided below.

No Planning and Design Phase impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																											
		BEFORE MITIGATION											AFTER MITIGATION																											
		E	P	R	L	D	I/M	STATUS	TOTAL	S	E		P	R	L	D	I/M	STATUS	TOTAL	S																				
Construction Phase																																								
1. Potential alteration of the visual character and sense of place 2. Potential visual impact on receptors in the study area	1. Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. 2. Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. 3. Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. 4. Surface disturbance																					1. Carefully plan to minimise the construction period and avoid construction delays. 2. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. 3. Vegetation clearing should take place in a phased manner. 4. Maintain a neat construction site by removing rubble and waste materials regularly. 5. Make use of existing gravel access roads where possible. 6. Limit the number of vehicles and trucks travelling to and from the construction site, where possible. 7. Ensure that dust suppression techniques are implemented: on all access roads; in all areas where vegetation clearing																		
		2	3	1	2	1	2	-	18	Low	2	2	1	2	1	2	-	14	Low																					

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I/M	STATUS	TOTAL	S		E	P	R	L	D	I/M	STATUS	TOTAL	S	
	during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. 5. Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.										has taken place; on all soil stockpiles.										
Operational Phase																					
1. Potential alteration of the visual character and sense of place. 2. Potential visual impact on receptors in the study area. 3. Potential visual impact on the night time visual environment.	1. The proposed power lines could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. 2. The decommissioning activities may be perceived as an unwelcome visual intrusion, particularly in more natural	2	4	2	2	3	1	-	13	Low	1. As far as possible, limit the number of maintenance vehicles using access roads. 2. Where possible, avoid placing lights on pylon structures. 3. Non-reflective surfaces should be utilised where possible.	2	4	2	2	3	1	-	13	Low	

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS	TOTAL	S		E	P	R	L	D	I/M	STATUS	TOTAL	S
			undisturbed settings. 3. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. 4. The night time visual environment will be altered if any lighting is placed on pylon structure.																	
Decommissioning Phase																				
1. Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; 2. Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and 3. Potential visual intrusion of any remaining	1. Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. 2. Decommissioning activities may be perceived as an unwelcome visual intrusion. 3. Dust emissions and dust plumes	2	3	1	2	1	2	-	18	Low	1. All infrastructure that is not required for post-decommissioning use should be removed. 2. Carefully plan to minimize the decommissioning period and avoid delays. 3. Maintain a neat decommissioning site by removing rubble and waste materials regularly. 4. Ensure that dust suppression procedures are	2	2	1	1	1	2	-	14	Low

South African Mainstream Renewable Power Developments (Pty) Ltd

Project No.: 16606

Description: Proposed construction of 132KV powerlines - Basic Assessment Report

Revision No.: 1.0

Date: 07 January 2021

Prepared By:



ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS	TOTAL	S		E	P	R	L	D	I/M	STATUS	TOTAL	S
		infrastructure on the site.	from increased traffic on the gravel roads serving the decommissioning activities may evoke negative sentiments from surrounding viewers. 4. Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. 5. Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact											maintained on all gravel access roads throughout the decommissioning phase. 5. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.						
Cumulative																				
1. Potential alteration of the visual character and sense of place in the	1. Additional renewable energy and associated grid connection infrastructure	3	3	2	3	3	2	-	28	Medium	1. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.	3	3	2	2	2	2	-	24	Medium

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		E	P	R	L	D	I/M	STATUS	TOTAL	S		E	P	R	L	D	I/M	STATUS	TOTAL	S
		broader area. 2. Potential visual impact on receptors in the study area. Potential visual impact on the night time visual environment.	developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. 2. Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. 3. Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. 4. The night time visual environment could be altered as a result of											2. Vegetation clearing should take place in a phased manner. 3. As far as possible, limit the number of maintenance vehicles using access roads. 4. Where possible, avoid placing lights on pylon structures. 5. Non-reflective surfaces should be utilised where possible.						

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		BEFORE MITIGATION										AFTER MITIGATION								
		E	P	R	L	D	I/M	STATUS	TOTAL	S		E	P	R	L	D	I/M	STATUS	TOTAL	S
	operational and security lighting at multiple renewable energy facilities and associated substations in the broader area.																			
No-go options																				
1. Potential alteration of the visual character and sense of place in the broader area. 2. Potential visual impact on receptors in the study area. 3. Potential visual impact on the night time visual environment.	If the 132kV power lines is not developed in this area, there will be no change in the visual character or the sense of place. There will be no visual impacts on receptors or on the night-time visual environment.																			
		NIL	NIL	NIL	NIL	NIL	NIL	-	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	-	NIL	NIL

9.1.10. Aquatic Impacts (Compliance Statement)

The Aquatic Compliance Statement²¹ was compiled by Bruce Scott-Shaw of NatureStamp and is included as **Appendix 6**.

The key impacts identified for the proposed 132 kV powerline are:

- Disturbance of the ground surface from pylons and access roads;
- A slight increase in impervious surface reducing the infiltration/groundwater recharge;
- A slight Increase in stormwater leading to an increase of peak flows entering watercourse systems; and
- Potential oil spills/leaks during construction.

Mitigating measures need to be strictly adhered to during construction and during any subsequent maintenance. The design of the power line is important to ensure that impacts are prevented such as the location of the pylons, location of the access roads and maintenance of vegetation within the corridor.

- The assessment undertaken for the additional 132kV powerlines (preferred option 1 to link Dwarsrug WEF to Loeriesfontein 3 PV and option 3 to link Dwarsrug WEF Narosies substation) resulted in low significance impacts for the site.
- The impacts would be very low if pylons and access roads are kept outside of identified watercourse areas for option 1 and option 3. There were no suitable alternatives for option 3 and this was considered to be the best location for this site.
- Through the impact assessment, the risks identified during construction have the highest impact although it would still be considered to be low.
- The construction and operation phase associated impacts of the access roads, turbines, crane pads / laydown areas, PV arrays, substation, maintenance building and power lines have already been approved by the respective authorities.
- Therefore, the addition of the 132kV powerline (Corridors 1 (or 2) and 3) to the approved development will have a minimal impact.

NatureStamp is of the opinion that the impacts of the powerline option 1 and option 3 would be minimal and acceptable and hence the EA should be granted for this BA process. Option 2 would have a slightly greater impact and is thus least preferred. In addition, should the proposed mitigation measures be adhered to, the additional power line area would remain a low sensitivity. No further assessments are required given the location of the powerline. NatureStamp hereby acknowledges that there are no fatal flaws associated with the proposed power line and should be authorised.

The rating of the significance of the impacts of the proposed powerline project, on the aquatic environment, is provided below.

²¹ Protocol for the assessment and reporting of environmental impacts on aquatic biodiversity gazetted on 20 March 2020 (Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

No Planning and Design Phase or No-Go impacts were identified by the specialist.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE									
		BEFORE MITIGATION											AFTER MITIGATION									
		E	P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S	E		P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S		
Construction Phase																						
Surface and groundwater Quantity	Change in impervious surface preventing infiltration	3	1	2	2	1	2	-	18	Low	<ul style="list-style-type: none"> The development must ensure areas around the pylons and construction access are revegetated. The existing vegetation should not be removed in the corridor unless completely necessary. 	3	1	2	2	2	2	-	14	Low		
Flood Hydrology / Storm Water	Increase in Storm Water	1	2	1	1	3	3	-	24	Low	<ul style="list-style-type: none"> The mitigation measures required relates to the development and implementation of an adequate storm water management plan to be designed by an appropriate engineer. The engineer should account for both natural run-off (that which can be released into the natural landscape with no detrimental effect) and excess artificial run-off generated by the 	1	2	1	1	3	1	-	8	Low		

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																								
		BEFORE MITIGATION											AFTER MITIGATION																								
		E	P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S	E		P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S																	
																						access roads and pylon base. <ul style="list-style-type: none"> Storm water drains can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion. The pylon footprint and access roads must stay outside of the 1:100 year flood extent. 															
Surface and Groundwater Quality	General spills / Leaks	1	2	3	3	3	3	-	36	Low											1	1	1	1	3	1	-	7	Low	<ul style="list-style-type: none"> All vehicles will need to be checked for leakage before and after entering the construction area. Areas where fuels are either kept or transferred will need to be bunded so as to contain spillage. Cement mixing sites will also need to be strategically positioned and bunded to prevent spillage. 							

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																										
		BEFORE MITIGATION											AFTER MITIGATION																										
		E	P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S	E		P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S																			
																							<ul style="list-style-type: none"> Ablution facilities must be provided to prevent workers urinating near or in the wetlands. Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones. 																
Aquatic Biodiversity	Clearing of vegetation for access roads and pylons	1	4	3	3	4	3	-	45	Low	1	4	3	3	4	2	-	30	Low	<ul style="list-style-type: none"> The loss of vegetation is inevitable and necessary for the proposed development to take place. Hence, the impact of vegetation clearance will be definite. Mitigation measures primarily will relate to the cumulative impacts associated with exposed open stretches of land. Run-off is to be mitigated by the use of structures that will reduce the rate and volume of run-off so as to prevent erosion and siltation 																			

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																							
		BEFORE MITIGATION											AFTER MITIGATION																							
		E	P	R	L	D	I / M	STATUS (+OR)	TOTAL	S	E		P	R	L	D	I / M	STATUS (+OR)	TOTAL	S																
																								impacts affecting nearby wetlands.												
Operational Phase																																				
Flood Hydrology / Storm water	Increase in storm water	1	2	1	3	3	3	-	24	Low	<ul style="list-style-type: none"> The corridor area must be revegetated where clearing was done. Any areas where watercourses were crossed by access roads must be rehabilitated. Maintenance should be undertaken with aerial means where possible. 	1	2	1	1	3	1	-	8	Low																
Aquatic Biodiversity	Spill/Leaks during maintenance	1	2	3	3	4	3	-	39	Low	<ul style="list-style-type: none"> Implement the storm-water management plan and ensure appropriate water diversion systems are put in place. Compile an emergency response plan and implement should an emergency occur such as an electrical fire. Ensure that spill kits (if appropriate) are available on site for clean-up of spills and leaks. 	2	2	4	1	1	1	-	10	Low																

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																			
		BEFORE MITIGATION										AFTER MITIGATION																			
		E	P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S		E	P	R	L	D	I / M	STATUS (+ OR -)	TOTAL	S											
																					<ul style="list-style-type: none"> Immediately clean up spills and dispose of contaminated soil at a licensed waste disposal facility. 										
Decommissioning Phase																															
Aquatic Biodiversity / Water Quality / Hydrology	Sediments and spills entering water resources	1	1	4	1	3	1	-	10	Low	<ul style="list-style-type: none"> All vehicles will need to be checked for leakage before and after entering the decommissioning area. Areas where fuels are either kept or transferred will need to be banded so as to contain spillage. Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones. Revegetation must occur immediately following the decommission. 	1	1	4	1	3	1	-	10	Low											
Cumulative																															
Water Quality / Hydrology	Compounded impacts from surrounding development	2	2	2	1	3	1	-	10	Low	<ul style="list-style-type: none"> The mitigation measures required relates to the development and implementation of an adequate storm 	2	1	2	1	2	1	-	8	Low											

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE										RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE																
		BEFORE MITIGATION											AFTER MITIGATION																
		E	P	R	L	D	I/M	STATUS	S/L	OR	TOTAL		S	E	P	R	L	D	I/M	STATUS	S/L	OR	TOTAL	S					
													water management plan / structures to be designed by an appropriate engineer. <ul style="list-style-type: none"> Such structures can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion downstream. 																
No-go options																													
Water Quality / Hydrology	N/A	/	/	/	/	/	/	/	/	/	Low	The No-Go alternative entails no change to the status quo.	/	/	/	/	/	/	/	/	/	/	Low						

Based on the significance ratings of identified impacts associated with the proposed powerline project, no fatal flaws have been identified by the specialists. The impacts associated with the proposed powerline project can be reduced to acceptably low levels when mitigation is applied and the project is therefore deemed to be acceptable in the views of the project specialists.

9.4. CUMULATIVE ASSESSMENT

The general area has seen a notable interest from developers of various renewable energy developments, which could be associated with the energy resource potential found in the region, proximity to the grid access, as well as other factors. Such developments, whether already approved or only proposed, need to be considered as they have the potential to create cumulative impacts, whether positive or negative, if implemented. The potential cumulative impact of the proposed powerlines in combination with other renewable energy facilities and their associated transmission infrastructure in the area has been identified and assessed and mitigation measures have been identified to address the cumulative impact, where possible. Cumulative impacts were also rated as part of the impact rating system and used to determine the significance of the impacts (refer to **Section 10.3** above).

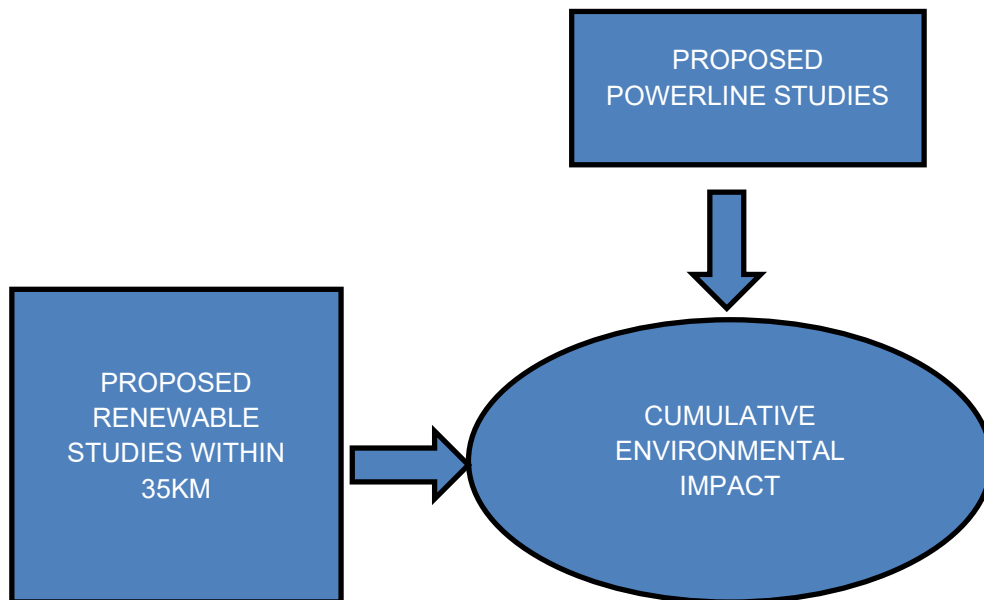


FIGURE 7: Cumulative Impact Organogram

As part of the cumulative impact assessment, literature reviews of other specialist assessments / studies which were undertaken (where possible) for the other renewable energy developments and their associated infrastructure (both wind and solar) proposed within a 35km radius of the proposed powerline application sites was undertaken by the respective specialists in order to ascertain any additional cumulative impacts that should be taken into consideration. A fair amount of information was available and was provided to the respective specialists to assess and incorporate into their respective assessment reports, where applicable. TABLE 9 below highlights the renewable energy developments that are being proposed and/or which are approved within a 35km radius of the proposed powerline application sites, as well as the various stages of the development. Their location relative to the proposed powerlines under review is illustrated in FIGURE 8.

In examining these facilities, it was assumed that all of them will have electrical transmission lines of varying types and lengths and such the EAPs and Specialist discretion was used in determining the likely cumulative impact.

TABLE 9: Renewable energy developments identified within a 35km radius of the proposed powerline application sites

Project	Current status of EIA / development	Proponent	Technology	Capacity
Dwarsrug Wind Farm	EA issued	Mainstream Renewable Power Developments (Pty) Ltd	Wind	140MW
Khobab Wind Farm	Operational	Mainstream Renewable Power Developments (Pty) Ltd	Wind	140MW
Loeriesfontein 2 Wind Farm	Operational	Mainstream Renewable Power Developments (Pty) Ltd	Wind	140MW
Graskoppies Wind Farm	EA Issued	Mainstream Renewable Power Developments (Pty) Ltd	Wind	235MW
Hartebeest Leegte Wind Farm	EA Issued	Mainstream Renewable Power Developments (Pty) Ltd	Wind	235MW
Ithemba Wind Farm	EA Issued	Mainstream Renewable Power Developments (Pty) Ltd	Wind	235MW
!Xha Boom Wind Farm	EA Issued	Mainstream Renewable Power Developments (Pty) Ltd	Wind	235MW
Loeriesfontein PV3 Solar Energy Facility	EA issued	Mainstream Renewable Power Developments (Pty) Ltd	Solar	100MW
Hantam PV Solar Energy Facility	EA issued	Solar Capital (Pty) Ltd	Solar	Up to 525MW
PV Solar Power Plant	EA issued	BioTherm Energy (Pty) Ltd	Solar	70MW
Kokerboom 1 Wind Farm	Environmental Impact Assessment (EIA) underway	Business Venture Investments No. 1788 (Pty) Ltd (BVI)	Wind	240MW
Kokerboom 2 Wind Farm	Environmental Impact Assessment (EIA) underway	Business Venture Investments No. 1788 (Pty) Ltd (BVI)	Wind	240MW
Kokerboom 3 Wind Farm	Environmental Impact Assessment (EIA) underway	Business Venture Investments No. 1788 (Pty) Ltd (BVI)	Wind	240MW

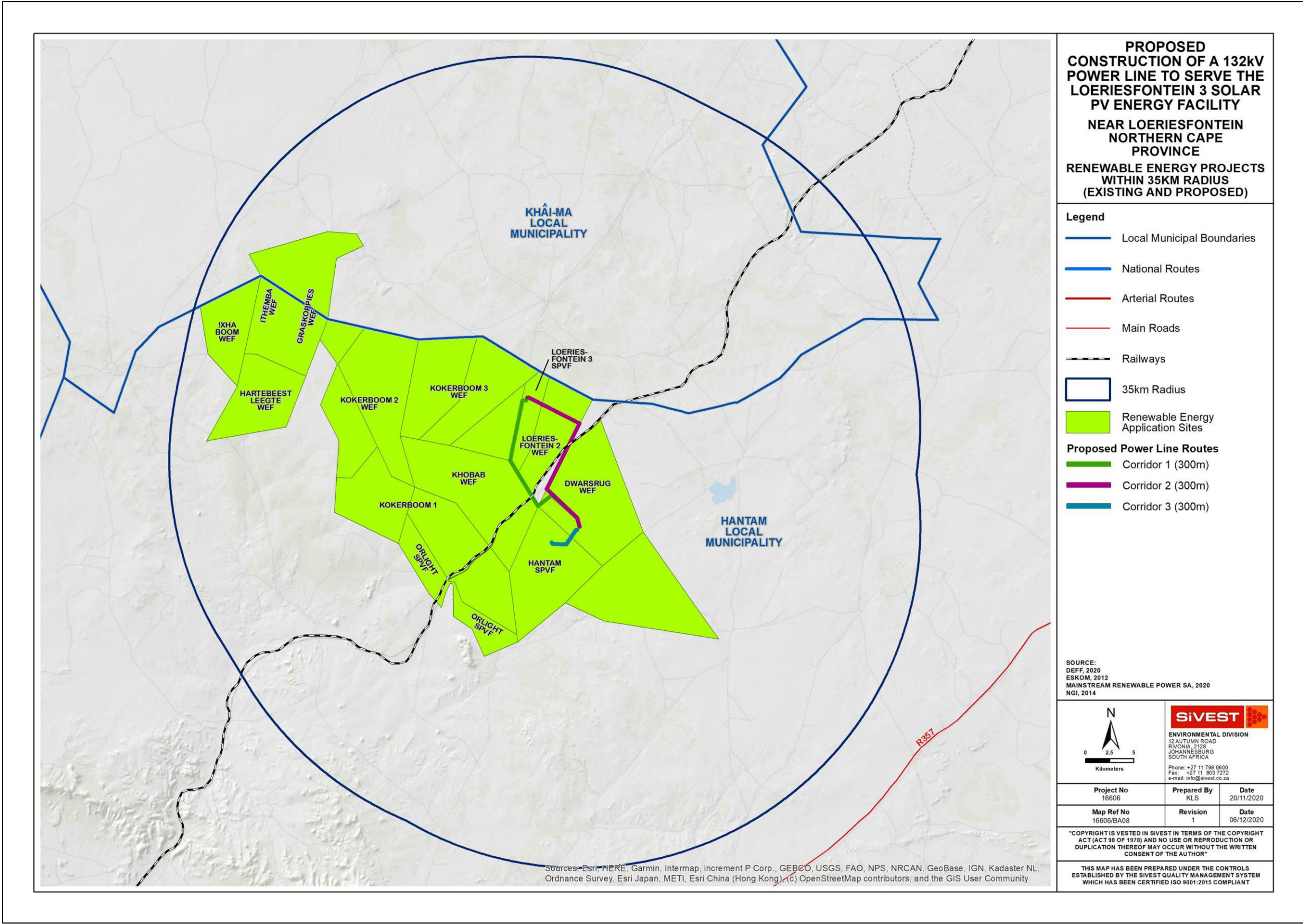


FIGURE 8: Map showing other proposed renewable energy developments within 35km of the proposed powerlines

Cumulative impacts have been assessed and rated by the respective specialists and is information is included in **Chapter 9.3**. Based on the rating of the significance cumulative impacts associated with the proposed powerline project are deemed to be low provided the necessary mitigation measures are implemented. No fatal flaws have been identified. The cumulative impacts associated with the proposed powerline project are deemed to be acceptable.

10. ASSESSMENT IN TERMS OF EQUATOR PRINCIPLES

The Equator Principles (EPs) are a financial industry benchmark for determining, assessing and managing social and environmental risk in project financing. Several banks, exchanges and organisations worldwide have adopted the EPs as requirements to be undertaken for project funding on application and approval. Furthermore, certain funding institutions have not formally adopted the EPs, but require clients to be compliant with them in order to qualify for loans. The EPs are summarised below:

Principle 1: Review and Categorisation

When a project is proposed for financing subject to adherence to EPs, the Equator Principles Funding Institution (“EPFI”) will categorise the project based on the magnitude of its potential environmental and social impacts and risks.

Principle 2: Environmental and Social Assessment

For each project assessed as being either Category A or Category B, the client / borrower must conduct a Social and Environmental Assessment (“Assessment”) process to address the relevant impacts and risks of the proposed project. The Assessment should also propose mitigation and management measures relevant and appropriate to the nature and scale of the proposed project. This BA meets this requirement.

Principle 3: Applicable Environmental and Social Standards

The Assessment will refer to the applicable IFC Performance Standards and applicable Industry Specific Environmental, Health, and Safety (EHS) Guidelines.

Principle 4: Environmental and Social Management System and Equator Principles Action Plan

The client / borrower must prepare an Environmental and Social Management System (ESMS). Further, an Environmental and Social Management Plan (ESMP) must be prepared by the client to address issues raised in the Assessment process and incorporate actions required to comply with the applicable standards. Where applicable standards are not met to the EPFI’s satisfaction, the client and the EPFI will agree to an Equator Principles Action Plan to outline gaps and commitments. The EMPr meets this requirement.

Principle 5: Stakeholder Engagement

For all Category A and Category B Projects, the EPFI will require the client to demonstrate effective Stakeholder Engagement as an on-going process in a structured and culturally appropriate manner with Affected Communities and, where relevant, Other Stakeholders. For projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process. The client will tailor its consultation process to the risks and impacts of the Project; the Project’s phase of development; the language preferences of the Affected Communities; their decision-making processes; and the needs of disadvantaged and vulnerable groups.

Principle 6: Grievance Mechanism

The EPFI will require the client, as part of the ESMS, to establish a grievance mechanism designed to receive and facilitate resolution of concerns and grievances about the project’s environmental and social performance. The grievance mechanism is required to be scaled to the risks and impacts of the Project and have Affected Communities as its primary user. It will seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate, readily accessible, at no

cost, and without retribution to the party that originated the issue or concern. The mechanism should not impede access to judicial or administrative remedies.

Principle 7: Independent Review

For all Category A projects and, as appropriate, for Category B projects, an independent social or environmental expert not directly associated with the borrower must review the Assessment, AP and consultation process documentation in order to assist the EPFIs due diligence and assess EPs compliance.

Principle 8: Covenants

An important strength of the EPs is the incorporation of covenants linked to compliance. For all projects, the client will covenant in the financing documentation to comply with all relevant host country environmental and social laws, regulations and permits in all material respects. For Category A and B projects, the client / borrower will covenant in financing documentation:

- To comply with the ESMPs and EPs AP (where applicable) during the construction and operation of the Project in all material respects;
- To provide periodic reports in a format agreed with the EPFI (with the frequency of these reports proportionate to the severity of impacts, or as required by law, but not less than annually), prepared by in-house staff or third-party experts, that i) document compliance with the ESMPs and EPs AP (where applicable), and ii) provide representation of compliance with relevant local, state and host country environmental and social laws, regulations and permits; and
- To decommission the facilities, where applicable and appropriate, in accordance with an agreed decommissioning plan.

Principle 9: Independent Monitoring and Reporting

To ensure on-going monitoring and reporting over the life of the loan, EPFIs will, for all Category A projects, and as appropriate, for Category B projects, require appointment of an independent environmental and/or social expert, or require that the borrower to retain qualified and experienced external experts to verify its monitoring information, which would be shared with EPFIs.

Principle 10: Reporting and Transparency

For all Category A and, as appropriate, Category B Projects:

- The client will ensure that, at a minimum, a summary of the ESIA is accessible and available online.
- The client will publicly report GHG emission levels (combined Scope 1 and Scope 2 Emissions) during the operational phase for Projects emitting over 100,000 tonnes of CO₂ equivalent annually.

Although this report is not written in terms of the EPs, it fully acknowledges that EPs will need to be complied with should funding for the proposed development be required from a development financial institution. In general, the following documentation will need to be considered in that regard:

- The “Equator Principles” 2013
- International Finance Corporations Performance Standards on Social and Environment, IFC, January 2012, namely:
 - Performance Standard 1: Social and Environmental Assessment and Management Systems
 - Performance Standard 2: Labour and Working Conditions
 - Performance Standard 3: Pollution Prevention and Abatement
 - Performance Standard 4: Community Health, Safety and Security
 - Performance Standard 5: Land Acquisition and Involuntary Resettlement
 - Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management
 - Performance Standard 7: Indigenous Peoples
 - Performance Standard 8: Cultural Heritage
- International Finance Corporation – World Bank Guidelines, General EHS Guidelines 2007.

EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. These EHS Guidelines are applied as required by the World Bank’s respective policies and standards. These General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines which provide guidance to users on EHS issues in specific industry sectors. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

10.1. ASSESSMENT RESULTS

This section details the current compliance level with which the proposed development meets with the EPs and the related Performance Standards which are outlined below.

The coding key is as follows:

Compliance Level			
Clear			
Not assessed / determined	Not compliant	Partially compliant	Compliant

Table 10: Compliance level of proposed development in terms of EPs and related performance standards

Principles	Compliance Level	Reference
General, Performance Standard 1 Environmental & Social Reporting		
1. Baseline Information		Refer to section 6 – Description of the receiving environment
2. Alternatives (Assessment of alternatives)		Refer to section 5.3
3. Impacts and risks		Refer to section 9
4. Global impacts	N/A	N/A
5. Legal requirements		Refer to section 2 for legal requirements and guidelines
6. Transboundary	N/A	N/A
7. Disadvantaged / vulnerable groups		Addressed in Appendix 6 as part of the Socio-economic Impact Assessment. This has also been addressed as part of the EMPr (Appendix 8)
8. Third party		Addressed in Appendix 6 as part of the Socio-economic Impact Assessment.
9. Mitigation measures		Addressed in section 9 , as well as part of specialist assessments (Appendix 6). Also addressed as part of the EMPr (Appendix 8)
10. Documentation process		Refer to section 1 , section 4 and section 8
11. Action Plans		Partially addressed in section 12 . No major Action Plans required as mostly generic mitigation measures have been required
12. Organisational capacity		Refer to Appendix 1

Principles	Compliance Level	Reference
13. Training		Refer to Appendix 1
14. Grievance mechanism		Refer to Appendix 1 . The applicant will commit to full compliance with this standard when financial closure has been reached. The applicant is fully aware of the implications of this standard and this information will be made available in due course as part of the development planning for the project.
15. Report content		Refer to section 1
Performance Standard 2, Labour & Working Conditions		
1. Human Resource Policy		Refer to Appendix 1 . The applicant will commit to full compliance with this standard when financial closure has been reached. The applicant is fully aware of the implications of this standard and this information will be made available in due course as part of the development planning for the project.
2. Working relationship		Refer to Appendix 1
3. Working conditions with and terms of employment		Refer to Appendix 1
4. Workers organisation		Refer to Appendix 1
5. Non-discrimination and equal opportunities		Refer to Appendix 1 . Partly addressed in section 7 as part of the Social Impact Assessment (Appendix 6I). This issue has also been addressed as part of the EMPr (Appendix 8)
6. Grievance mechanism		Refer to Appendix 1 . Addressed as part of the EMPr (Appendix 8)
7. Occupational Health and Safety		Refer to Appendix 1 . Addressed as part of the EMPr (Appendix 8)
8. Non-employee workers		Refer to Appendix 1 . Addressed as part of the EMPr (Appendix 8)
9. Supply Chain		Refer to Appendix 1 . Addressed as part of the EMPr (Appendix 8)
10. Labour Assessment Component of a Social and Environmental Assessment		Refer to Appendix 1 . Addressed as part of the EMPr (Appendix 8)
Performance Standard 3, Pollution		
1. Pollution Prevention, Resource Conservation and Energy Efficiency		Refer to EMPr in Appendix 8
2. Wastes		Refer to EMPr in Appendix 8
3. Hazardous material		Refer to EMPr in Appendix 8

Principles	Compliance Level	Reference
4. Dangerous substances		Refer to EMPr in Appendix 8
5. Emergency preparedness and response		Refer to EMPr in Appendix 8 . The applicant will commit to full compliance with this standard when financial closure has been reached. The applicant is fully aware of the implications of this standard and this information will be made available in due course as part of the development planning for the project
6. Technical guidance – ambient considerations		Refer to Appendix 1
7. Greenhouse gas emissions		N/A. No greenhouse gas emissions will result from the proposed development apart from the manufacturing of the WEF components and limited emissions during construction phase
Performance Standard 4, Health & Safety		
1. Hazardous materials safety		Refer to EMPr in Appendix 8
2. Environmental and natural resource issues		Refer to section 7
3. Emergency preparedness and response		Refer to EMPr in Appendix 8 . The applicant will commit to full compliance with this standard when financial closure has been reached. The applicant is fully aware of the implications of this standard and this information will be made available in due course as part of the development planning for the project
Performance Standard 5, Land Acquisition		
Performance Standard 6, Biodiversity		Refer to Section 10.3 which summarises the findings from the Terrestrial Ecology Impact Assessment
Performance Standard 7, Indigenous People		Refer to section 10.3 which summarises the findings Social Impact Assessment
Performance Standard 8, Cultural Heritage		Refer to sections 10.3

It is important to note that most of the issues listed per performance standard in the table above will only be addressed during the pre-construction and construction phase of the proposed development.

11. ENVIRONMENTAL IMPACT STATEMENT

The NEMA: EIA Regulations of 2014, as amended, prescribe the required content of a BAR, including, *inter alia*, the Environmental Impact Statement which is presented below.

The proposed project includes an application for a powerline from the approved 100MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) to the approved 140MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4) to link the two (2) facilities in order to create a hybrid renewable energy facility. A further powerline is required to link

this hybrid facility to the to the National grid at the approved Narosies substation. The linking of these two (2) facilities to the National grid supports the objectives of the RMIPPPP in terms of accelerated electrical supply into the National grid amid the country's current electricity supply constraints. Furthermore, the proposed development will facilitate South Africa's move to towards a greener and cleaner energy generation mix through feeding energy generated from already approved solar and wind facilities into the National grid. The need and desirability of the project, in the context of both the greater community, as well in the context of the proponent, have been clearly established within this assessment report.

The BA process for the proposed development has been conducted in accordance with the EIA Regulations of 2014, as amended, promulgated in terms of Chapter 5 of NEMA. A detailed public participation process was followed during the BA process which conformed to the public consultation requirements as stipulated in the EIA Regulations of 2014, as amended, as well as the recent circular by the DEFF (dated 05 June 2020, Government Gazette 43412) (refer to **Chapter 7**). In addition, all issues raised by I&APs and key stakeholders will be captured in the FBAR and where possible, mitigation measures provided in the EMPr (**Appendix 8**) to address these concerns.

This BAR has identified and assessed the potential biophysical and socio-economic impacts associated with the proposed powerline project and has, where necessary, identified mitigation measures to reduce impacts to acceptable levels. No fatal flaws associated with the project have been identified by the EAP or Specialists. A summary of the findings of the Impact Assessment process and identified mitigation measures is included in Table 11 below.

Table 11: A summary of the findings for each identified environmental impact evaluated in the context of the proposed development (both biophysical and social)

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
Avifauna Assessment	<p>The proposed Loeriesfontein PV 3 - Dwarsrug 132kV overhead line (OHL) will have several impacts on priority avifauna. The impacts can be summarised as follows:</p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the construction and decommissioning activities of the 132kV OHLs. Mortality of priority species due to electrocutions on the 132kV OHLs. Mortality of priority species due to collisions with the 132kV OHLs. <p>PREFERRED CORRIDOR OPTION FOR AVIFAUNA</p> <p>Both alternatives are routed through similar habitat and will therefore result in similar impacts. However, none of the other route alternatives were deemed to be fatally flawed.</p> <p>ENVIRONMENTAL SENSITIVITIES</p> <p>The entire study area is rated as High sensitivity due to the presence of collision-prone species. It would therefore be advisable to mitigate the whole OHL with Bird Flight Diverters (BFDs) if possible.</p>	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> Displacement of priority species due to disturbance associated with the construction activities of the 132kV OHLs 	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 455 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the construction activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction 	<p>The proposed Loeriesfontein PV - Dwarsrug 132kV OHL, and the 132kV powerline to link these two (2) facilities to the National grid at the Narosies substation, are expected to have a medium impact on priority species. This impact could be reduced to low through the application of appropriate mitigation measures. No fatal flaws were discovered in the course of the investigations. Based on the outcome of the investigations into the impact of the proposed 132kV OHLs on avifauna, the authorisation of the OHLs is supported, provided the mitigation measures contained in this specialist report are strictly implemented.</p>
		<p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> Mortality of priority species due to electrocutions on the 132kV OHLs. Mortality of priority species due to collisions with the 132kV OHLs. 	<p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6B). The entire 132kV OHL should be marked with Bird flight diverters, on the full span length, on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung. 	
		<p><u>Decommissioning Phase:</u></p> <p>Decommissioning activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. Large terrestrial species namely Ludwig's Bustard, and Karoo Korhaan could be affected by displacement due to disturbance. The biggest potential impact could be on the Martial Eagles that breed on the Aries – Helios 400kV line. The proposed Loeriesfontein – Dwarsrug 132kV OHL will pass underneath the Aries – Helios 400kV line very close to Tower 455, which contains one of the two nests that the birds are currently using.</p> <p>The priority species which are potentially vulnerable to this impact are listed in Table 2 of the Avifauna Impact Report (Appendix 6B), and below. Species with a high likelihood of regular occurrence in the study area are in bold:</p> <ul style="list-style-type: none"> Ludwig's Bustard Karoo Korhaan Martial Eagle <p>This impact is assessed to be medium and can be reduced to low through mitigation.</p>	<p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist should conduct an inspection to see if the Martial Eagle nest on Tower 452 of the Aries-Helios 400kV transmission line is active. If the nest is not active, the decommissioning activities can proceed without delay. If the nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding pair of eagles during the decommissioning period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction. <p><u>Cumulative:</u></p> <ul style="list-style-type: none"> No off-road driving; Maximum use of existing roads; 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion																					
		<p>OVERALL SIGNIFICANCE RATING</p> <p>The respective significance ratings, and an average overall rating before and after mitigation is summarised below:</p> <table border="1"> <thead> <tr> <th>Impact</th> <th>Rating pre-mitigation</th> <th>Rating post-mitigation</th> </tr> </thead> <tbody> <tr> <td>Displacement due to disturbance (Construction)</td> <td>Medium (30)</td> <td>Low (14)</td> </tr> <tr> <td>Electrocution on the 132kV OHLs</td> <td>Low (22)</td> <td>Low (12)</td> </tr> <tr> <td>Collisions with 132kV OHLs</td> <td>Medium (26)</td> <td>Medium (24)</td> </tr> <tr> <td>Displacement due to disturbance (De-commissioning)</td> <td>Medium (30)</td> <td>Low (14)</td> </tr> <tr> <td>Cumulative impacts</td> <td>Medium (23)</td> <td>Low (16)</td> </tr> <tr> <td>Average:</td> <td>Medium (26)</td> <td>Low (16)</td> </tr> </tbody> </table>	Impact	Rating pre-mitigation	Rating post-mitigation	Displacement due to disturbance (Construction)	Medium (30)	Low (14)	Electrocution on the 132kV OHLs	Low (22)	Low (12)	Collisions with 132kV OHLs	Medium (26)	Medium (24)	Displacement due to disturbance (De-commissioning)	Medium (30)	Low (14)	Cumulative impacts	Medium (23)	Low (16)	Average:	Medium (26)	Low (16)	<ul style="list-style-type: none"> Measures to control noise; Restricted access to the rest of the property; The avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to breeding eagles on existing HV lines during the construction period. This could include measures such as subscribing a 2km temporary buffer around the nest during breeding season where no construction takes place. Construction can continue outside of a 2km buffer so as to avoid delaying construction; The 7649 vulture friendly pole design should be used (see Appendix 4 of Avifauna Impact Report – Appendix 6B); All the 132kV grid connections should be marked with BFDs for their entire lengths. 	
Impact	Rating pre-mitigation	Rating post-mitigation																							
Displacement due to disturbance (Construction)	Medium (30)	Low (14)																							
Electrocution on the 132kV OHLs	Low (22)	Low (12)																							
Collisions with 132kV OHLs	Medium (26)	Medium (24)																							
Displacement due to disturbance (De-commissioning)	Medium (30)	Low (14)																							
Cumulative impacts	Medium (23)	Low (16)																							
Average:	Medium (26)	Low (16)																							
Agriculture Compliance Statement	<p>The aridity of the area is a significant agricultural constraint that seriously limits the level of agricultural production (including grazing) which is possible across the site.</p> <p>Shallow, sandy soils on underlying rock or carbonate hardpan are a further agricultural limitation.</p> <p>As a result of these limitations, the study area is unsuitable for cultivation and agricultural land use is limited to low density grazing. The majority of land within the development area is classified as low agricultural sensitivity by the screening tool but includes areas of medium sensitivity.</p> <p>The only possible agricultural impact is minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance during construction and decommissioning.</p> <p>The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.</p> <p>From an agricultural impact point of view, it is recommended that the proposed development be approved.</p>	<p>Electrical grid infrastructure has negligible agricultural impact in this study area for two (2) reasons:</p> <ul style="list-style-type: none"> Overhead transmission lines have no agricultural impact because all agricultural activities that are viable in this environment (grazing) can continue completely unhindered underneath transmission lines. The direct, permanent, physical footprint of the development that has any potential to interfere with agriculture, is restricted to pylon bases and a small substation that, in the context of the agricultural environment of low density grazing on farms which are typically thousands of hectares large, is entirely insignificant. The only possible source of impact is minimal disturbance to the land during construction and decommissioning The single agricultural impact is therefore minimal soil and land degradation (erosion and topsoil loss) as a result of land disturbance. 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 excavations. Soil degradation will reduce the ability of the soil to support vegetation growth. This is a direct, negative impact that applies to only two of the phases of the development (construction and decommissioning). The cumulative agricultural impact of the proposed development can confidently be assessed as negligible. 	<p>There are no additional mitigation measures required, over and above what has already been included in the Generic EMPr for overhead electricity transmission and distribution infrastructure as per Government Notice 435, which was published in Government Gazette 42323 on 22 March 2019.</p>	<p>The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very low agricultural potential, the amount of agricultural land loss is insignificant, and that the proposed development poses a low risk in terms of causing soil degradation.</p> <p>From an agricultural impact point of view, it is recommended that the development be approved.</p> <p>The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions.</p>																					
Botany Compliance Statement	<p>With regards to Option 2, the following was noted and influenced the recommendation to use Option 1:</p>	<p><u>Construction and Operation Phase</u></p> <ul style="list-style-type: none"> Clearing of natural vegetation – vehicle traffic on the power line corridor – that will result in an increase in loss of vegetation cover 	<p><u>Construction</u></p> <ul style="list-style-type: none"> Ensure rehabilitation of cleared patches, manage any alien invasives 	<p>From an ecological, botanical and habitat perspective it is recommended that Option 1 is the route that must be used for the new proposed 132kV power line.</p>																					

Specialist Assessme	Key Findings	Impacts	Mitigation	Conclusion						
	<ul style="list-style-type: none"> This corridor will encroach into the least disturbed vegetation areas on the property – limited roads A whole new road access system is needed to get access to the corridor – no current roads from the turbine access roads to the proposed corridor The area to the northeast and east of the existing wind generator network is more undulating compared to the area next to the road (Loeriesfontein/Granaatboskolk) (Option 1) There are a number of small drainage lines along this corridor that will increase the erosion potential and added impacts on the vegetation – these systems drain to the Bitterputs Pan in the northeast. These pans form part of the important Bushmanland Vloere vegetation type (Mucina and Rutherford, 2006). According to Todd (2014), the drainage lines associated with the study area are not well developed, which can be ascribed to the stony nature of the area and the low rainfall. <i>“The drainage lines are typically dominated by species such as Phaeoptilum spinosum, Rhigozum trichotomum and Osteospermum armatum along their banks, with Stipagrostis namaquensis typically dominating any relatively stable sediments or bed material. Due the ecological role they play and their vulnerability to disturbance, drainage lines are considered sensitive and should be avoided as much as possible”.</i> 	<ul style="list-style-type: none"> With the sensitivity of the vegetation on the low hills south of the railway line, the status of “medium sensitivity” can be confirmed. Increase in storm water runoff from hardened surfaces (roads) that will lead to an increase in flow velocities resulting in erosion An increase of wind erosion on the exposed soils (e.g. access roads and power line corridor) Potential oil spills/leaks during construction Potential for waste material left on site 	<ul style="list-style-type: none"> Rehabilitate any tracks on slopes - monitor after rain events Rehabilitate impacts on drainage lines - constant monitoring after rain events Rehabilitate exposed corridor - ensure covering of large exposed areas Clean and rehabilitate immediately - vehicle inspections and maintenance Monitoring and cleaning - wind-blown materials + on site <p><u>Operation</u></p> <ul style="list-style-type: none"> Need careful monitoring of the corridor - rehabilitate as needed Monitoring and rehabilitation after rain events Cumulative impacts - need monitoring and rehabilitation Rehabilitation of bare soils Maintenance of all vehicles - regular inspections of sites and corridor Solid waste and wind-blown - regular inspections and cleaning 							
Terrestrial Ecology Compliance Statement	<p>Through the interrogation of various databases, imagery and the previous ecological assessment, it is clear that few sensitive features are present within or near the proposed footprint of the proposed powerlines. As such, it is hereby confirmed that the majority of the site should be considered to have Low Sensitivity. The exception is the small pan-like structures, most of which are designated as Ecological Support Areas (ESAs). Where possible, impacts on these should be avoided by locating powerline pylons appropriately.</p> <p>Through the site verification, background investigation and impact assessment, the following are confirmed by the specialist:</p> <p>5. The powerline servitudes are mostly low sensitivity in a terrestrial biodiversity and animal species context, with the exception of the ESAs (pans), which are high sensitivity.</p>	<p>The key impacts identified for the proposed powerline are:</p> <ul style="list-style-type: none"> Construction impacts on small pan-like structures, defined as ESAs 	<ul style="list-style-type: none"> Locate infrastructure outside sensitive zones. If impact unavoidable, rehabilitate disturbed areas. <p><u>Environmental Management Programme (EMPr) input:</u></p> <p>Rehabilitation actions for inclusion into the EMPr</p> <table border="1"> <thead> <tr> <th>Objective</th> <th>Action</th> <th>Timing</th> </tr> </thead> <tbody> <tr> <td>Manage alien invasive plants</td> <td>2. Rehabilitate any disturbed areas within pans (ESAs).</td> <td>With immediate effect</td> </tr> </tbody> </table>	Objective	Action	Timing	Manage alien invasive plants	2. Rehabilitate any disturbed areas within pans (ESAs).	With immediate effect	<p>The overall impact of the Loeriesfontein 3 PV - Dwarsrug powerline, on the terrestrial biodiversity and animal species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.</p>
Objective	Action	Timing								
Manage alien invasive plants	2. Rehabilitate any disturbed areas within pans (ESAs).	With immediate effect								

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
	<p>6. The proposed alignment alternatives would have similar to one another due to the relative uniformity of the habitat.</p> <p>7. Impacts have been identified with proposed mitigation measures. Should these measures be adhered to, the impacts of the proposed powerline would have a low significance.</p> <p>8. Conditions have been provided that should be included in the Environmental Management Programme (EMPr). Where relevant, additional measures unrelated to terrestrial biodiversity systems should be extended from the original EMPr.</p>			
Aquatic Assessment	<p>Through the impact assessment, the risks identified during construction have the highest impact although it would still be considered to be of low risk. The construction and operation phase associated impacts of the access roads, WEF, PV modules, substation, maintenance building and power lines have already been approved by the respective authorities. Therefore, the addition of the power line to the existing proposed development will have a minimal impact as it falls within the original developable area. The location of the proposed power line has been strategically placed to cross the least watercourses and follow existing servitudes.</p>	<p><u>Construction</u></p> <ul style="list-style-type: none"> Change in impervious surface preventing infiltration Increase in Storm Water General spills / Leaks Clearing of vegetation for Access roads and pylons 	<p><u>Construction</u></p> <ul style="list-style-type: none"> The development must ensure areas around the pylons and construction access are revegetated. The existing vegetation should not be removed in the corridor unless completely necessary. The mitigation measures required relates to the development and implementation of an adequate storm water management plan to be designed by an appropriate engineer. The engineer should account for both natural run-off (that which can be released into the natural landscape with no detrimental effect) and excess artificial run-off generated by the access roads and pylon base. Storm water drains can reduce the amount and rate of excess run-off generated by the proposed development entering wetlands and thereby prevent the onset of erosion. The pylon footprint and access roads must stay outside of the 1:100 year flood extent. All vehicles will need to be checked for leakage before and after entering the construction area. Areas where fuels are either kept or transferred will need to be bunded so as to contain spillage. Cement mixing sites will also need to be strategically positioned and bunded to prevent spillage. Ablution facilities must be provided to prevent workers urinating near or in the wetlands. Ablution facilities must be positioned at least 100metres away from the wetland areas and buffer zones. The loss of vegetation is inevitable and necessary for the proposed development to take place. Hence, the impact of vegetation clearance will be definite. Mitigation measures primarily will relate to the cumulative impacts associated with exposed open stretches of land. Run-off is to be mitigated by the use of structures that will reduce the rate and volume of run-off so as to prevent erosion and siltation impacts affecting nearby wetlands. 	<p>The proposed 132kV powerlines locations have taken cognisance of alternative locations and “no go” areas and option 1 is deemed to be the best possible location to link Dwarsrug WEF to Loeriesfontein 3 PV. In this area, given the low water use requirement on-site and adherence to specialist recommendations, the site is of low risk of negative aquatic impacts during construction and operation.</p> <p>Option 3 132kV powerline location is deemed to be the best possible location to link Dwarsrug WEF to the Narosies Substation.</p> <p>The previously approved specialist reports and the subsequent environmental authorisation (EA) are still relevant and these studies covered the proposed powerline footprint. NatureStamp strongly confirms that the aquatic impacts associated with the powerline would be minimal and acceptable and hence the EA should be granted to include the powerline.</p>
Heritage Assessment	<p>No heritage resources were identified during the site survey.</p>	<p><u>Construction, Operation, Decommissioning and Cumulative</u></p> <ul style="list-style-type: none"> Impact on archaeological and historical heritage resources 	<p><u>Construction, Operation, Decommissioning and Cumulative</u></p> <ul style="list-style-type: none"> Include heritage chance finds procedure in EMP for project development An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr. 	<p>The current study has confirmed that the impact of the OHL will be low. This finding and with the implementation of a chance finds procedure as part of the EMPr will mitigate possible impacts on unidentified heritage resources.</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
				<p>The calculated impact as summarised in section 7 of this report confirms the low negative impact rating pre-and post-mitigation.</p> <p>An assessment of the final alignment must be conducted with the final walkdown of the OHL layout during the implementation of the EMPr.</p>
Palaeontology Assessment	<p>As the authorised Loeriesfontein 3 Photovoltaic Solar Energy Facility and the approved substation at the authorised Dwarsrug Wind Energy was originally assessed in a Palaeontological Impact Assessment (Groenewald, 2014) and as the proposed project falls in the same area the Palaeontological Significance of the three power lines and two route alternatives is low. There is also no preference between the two route alternatives as the geology of the routes are the same.</p>	<ul style="list-style-type: none"> Loss of fossil heritage 	<ul style="list-style-type: none"> Chance find protocol <p>If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that correct mitigation (recording and collection) can be carry out by a palaeontologist.</p>	<p>The overall impact is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels. allowing for the development to be authorized.</p> <p>It is thus considered that the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area.</p> <p>It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.</p>
Socio-Economic Assessment	<p>Most negative impacts will apply over the short-term and are confined to the construction phase of the project. All impacts are within acceptable ranges and there are no fatal flaws associated with the construction or operation of the project.</p> <p>The proposed development supports the objectives of the RMIPPPP, which serves as an "emergency" power generation programme for accelerated assistance to the national grid amid electricity supply constraints. The DMRE issued an RFP for the emergency procurement of 2000 MW of electricity. Due to the emergency nature of the RMIPPPP, the objective is to procure energy from projects that are near ready and can connect to the grid quickly. The proposed development is deemed to meet these requirements and can reduce the risk of load shedding.</p>	<p><u>Construction</u></p> <ul style="list-style-type: none"> Health and social wellbeing impact; <ul style="list-style-type: none"> Annoyance, air quality and noise Increase in crime Increased risk of HIV infections An influx of construction workers Hazard exposure. Quality of the living environment; <ul style="list-style-type: none"> Disruption of daily living patterns. Economic <ul style="list-style-type: none"> Job creation and skills development Socio-economic stimulation. 	<ul style="list-style-type: none"> Health and social wellbeing impact; <ul style="list-style-type: none"> Air Quality <ul style="list-style-type: none"> Ensure that dust suppression measures, such as damping down of unsealed roads where necessary are applied. Noise <ul style="list-style-type: none"> Ensure that no construction activity occurs near residences between 18:30 and 06:30 during the week and between 08:30 and 16:30 over weekends. Increase in crime <ul style="list-style-type: none"> Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. Prevent loitering within the vicinity of the construction camp and construction sites. Increased risk of HIV infections <ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. Expose workers to a health and HIV/AIDS awareness educational program. An influx of construction workers <ul style="list-style-type: none"> Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy. 	<p>Considering all social impacts associated with the project, it is evident that the positive elements outweigh the negative and that the project carries with it a significant social benefit. In addition, the project fits with international and governmental policy and legislation.</p> <p>Consequently, the construction of the proposed 132 kV Loeriesfontein to Dwarsrug Overhead Powerline is supported at the social level with no further assessment being required.</p>

Specialist Assessme	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> ○ Hazard exposure. <ul style="list-style-type: none"> ▪ Ensure all construction equipment and vehicles are properly maintained at all times. ▪ Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly. ▪ Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. ▪ Make staff aware of the dangers of fire during regular toolbox talks. • Quality of the living environment; <ul style="list-style-type: none"> ○ Disruption of daily living patterns. <ul style="list-style-type: none"> ▪ Ensure that, at all times, people have access to their properties and social facilities. • Economic <ul style="list-style-type: none"> ○ Job creation and skills development <ul style="list-style-type: none"> ▪ Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. ▪ Women should be given equal employment opportunities and encouraged to apply for positions. ▪ A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction. ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase. 	
		<p><u>Operation</u></p> <ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. • Quality of the living environment; <ul style="list-style-type: none"> ○ Transformation of the sense of place • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. 	<ul style="list-style-type: none"> • Health and wellbeing <ul style="list-style-type: none"> ○ Electromagnetic fields. <ul style="list-style-type: none"> ▪ Ensure that were ever possible the power line is routed away from areas of high human and animal habitat. ▪ Establish a grievance mechanism and deal with grievances transparently. • Quality of the living environment <ul style="list-style-type: none"> ○ Transformation of the sense of place <ul style="list-style-type: none"> ▪ Apply the mitigation measures suggested in the Visual Impact Assessment Report. 	

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
			<ul style="list-style-type: none"> ▪ A Grievance Mechanism should be initiated and all grievances should be dealt with transparently. ▪ The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed. • Economic; <ul style="list-style-type: none"> ○ Socio-economic stimulation. <ul style="list-style-type: none"> ▪ The power line will revert to Eskom and become an Eskom asset over the operational phase. Consequently, optimisation measures as they apply in respect to similar Eskom assets would also apply in this in this case. 	
Visual Assessment	<p>The Visual Impact Assessment (VIA) identified seven (7) potentially sensitive receptors in the study area, i.e. within 5kms from the outer boundary of the combined power line assessment corridors, all of which are farmsteads. None of these receptors are considered to be Sensitive Receptors as they are not linked to leisure/nature-based tourism activities in the area. They are however regarded as potentially sensitive visual receptors as they are located within a mostly natural setting and the proposed development will likely alter natural vistas experienced from these dwellings.</p> <p>All of the identified receptors were assessed in terms of SiVEST's receptor impact rating matrix and this showed that five (5) potentially sensitive receptors will be subjected to moderate levels of visual impact as a result of the proposed power lines, while the remaining two (2) receptors will be subjected to low levels of visual impact. It was noted however, that all of these receptors are located on application sites for adjacent existing and renewable energy projects, including the existing Khobab and Loeriesfontein 2 WEFs, the proposed Kokerboom 3 WEF and the proposed Hantam Solar PV Energy Facility. As such the owners / occupants of these farmsteads are not expected to perceive the proposed power lines in a negative light.</p> <p>The overall impact rating revealed that the proposed development is expected to have a negative low visual impact rating during construction, operation and decommissioning phases with a number of mitigation measures available to prevent any additional visual impacts.</p>	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Large construction vehicles and equipment will alter the natural character of the study area and expose visual receptors to impacts associated with construction. • Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. • Surface disturbance during construction would expose bare soil (scarring) which could visually contrast with the surrounding environment. • Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. <p><u>Operation</u></p> <ul style="list-style-type: none"> • The proposed power lines could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. • The decommissioning activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. • The night time visual environment will be altered if any lighting is placed on pylon structure. <p><u>Decommissioning</u></p> <ul style="list-style-type: none"> • Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. • Decommissioning activities may be perceived as an unwelcome visual intrusion. • Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning activities may evoke negative sentiments from surrounding viewers. • Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. 	<p><u>Construction</u></p> <ul style="list-style-type: none"> • Carefully plan to minimise the construction period and avoid construction delays. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner. • Maintain a neat construction site by removing rubble and waste materials regularly. • Make use of existing gravel access roads where possible. • Limit the number of vehicles and trucks travelling to and from the construction site, where possible. • Ensure that dust suppression techniques are implemented: <ul style="list-style-type: none"> ○ on all access roads; ○ in all areas where vegetation clearing has taken place; ○ on all soil stockpiles. <p><u>Operation</u></p> <ul style="list-style-type: none"> • As far as possible, limit the number of maintenance vehicles using access roads. • Where possible, avoid placing lights on pylon structures. • Non-reflective surfaces should be utilised where possible. <p><u>Decommissioning</u></p> <ul style="list-style-type: none"> • All infrastructure that is not required for post-decommissioning use should be removed. • Carefully plan to minimize the decommissioning period and avoid delays. • Maintain a neat decommissioning site by removing rubble and waste materials regularly. • Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. • Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required. 	<p>From a visual perspective therefore, the proposed 132 kV overhead power lines between the proposed (and authorised) 100MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) and proposed (and authorised) 140MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation is deemed acceptable and the Environmental Authorisation (EA) should be granted. SiVEST is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.</p>

Specialist Assessment	Key Findings	Impacts	Mitigation	Conclusion
		<ul style="list-style-type: none"> Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. <p><u>Cumulative</u></p> <ul style="list-style-type: none"> Additional renewable energy and associated grid connection infrastructure developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities and associated substations in the broader area. If the 132kV power lines is not developed in this area, there will be no change in the visual character or the sense of place. There will be no visual impacts on receptors or on the night-time visual environment. 	<p><u>Cumulative</u></p> <ul style="list-style-type: none"> Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. Vegetation clearing should take place in a phased manner. As far as possible, limit the number of maintenance vehicles using access roads. Where possible, avoid placing lights on pylon structures. Non-reflective surfaces should be utilised where possible. 	
Geotechnical Assessment	<p>Some geotechnical constraints have been identified, including the presence of shallow bedrock and loose / collapsible sands. These constraints may be mitigated via standard engineering design and construction measures. Shallow spread footings or drilled foundations are considered suitable to support the structures.</p> <p>No fatal flaws have been identified that would render the proposed powerlines unsuitable from a geological and geotechnical perspective.</p>	<ul style="list-style-type: none"> Disturbance/ displacement/ removal of soil and rock Soil Erosion 	<ul style="list-style-type: none"> Design access roads and pylon locations to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management Avoid development in preferential drainage paths Appropriate engineering design of road drainage and watercourse crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. regressing) Use designated access and laydown areas only to minimise disturbance to surrounding areas Maintain access roads including drainage features Monitor for erosion and remediate and rehabilitate timeously Restore natural site topography Landscape and rehabilitate access roads and disturbed areas timeously (e.g. regressing) 	<p>Based on the impact significance ratings presented, the development of the proposed powerlines within Corridor 1, Corridor 2 and Corridor 3, from a geological and geotechnical perspective, will be "Negative Low impact", provided that the recommended mitigation measures are implemented.</p> <p>From a geotechnical and geological perspective, no fatal flaws, sensitivities, or areas to be avoided have been identified within or close to the assessment area. It is therefore recommended that the proposed activity be authorised.</p>

In terms of Section 31 (n) of the NEMA, the EAP is required to provide a rationalised opinion as to whether the activity should or should not be authorised. In this section, a qualified opinion is ventured, and in this regard SiVEST believes that sufficient information is available for DEFF to make an informed decision on EA.

For ease of reference the findings of the specialist assessments and sensitivity mapping were used to compare the two (2) above-mentioned powerline alternatives linking the Loeriesfontein 3 PV SEF to the Dwarsrug WEF, and inform the EAPs recommendations as to the preferred routing of these proposed powerline alternatives. The table below evaluates the preferences associated with each alternative.

Table 12: A summary of the findings for each identified environmental impact evaluated in the context of the proposed development (both biophysical and social)

Key

PREFERRED	The alternative will result in the lowest possible impact and is preferable over its alternative option
LEAST PREFERRED	The alternative will result in a higher impact than its alternative option
NO PREFERENCE	There is no preferred Corridor between the project alternatives & both are deemed to be acceptable

POWERLINE CORRIDOR ROUTE ALIGNMENT ALTERNATIVES (LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF)		
Specialists	Powerline Corridor Alternative 1	Powerline Corridor Alternative 2
Aquatic	<p><u>Preferred:</u></p> <ul style="list-style-type: none"> - Crosses the least area of watercourses - Crosses the least significant watercourse - Pylons and access roads can be easily placed outside of these watercourses - Follows existing disturbed areas (roads) 	<p><u>Least Preferred:</u></p> <ul style="list-style-type: none"> - Crosses some significant watercourses - Follows less existing road than option 1
Terrestrial Ecology	<p><u>No preference:</u></p> <ul style="list-style-type: none"> - Proposed alignment alternatives would have similar impacts to one (1) another due to the relative uniformity of the habitat 	<p><u>No preference:</u></p> <ul style="list-style-type: none"> - Proposed alignment alternatives would have similar impacts to one (1) another due to the relative uniformity of the habitat
Botany	<p><u>Preferred:</u></p> <ul style="list-style-type: none"> - The area is associated with the current activities and disturbances of the project (newly constructed wind generator infrastructure): <ul style="list-style-type: none"> ▪ It is near the Loeriesfontein / Granaatboskolk road and in an area where the vegetation shows the most signs of modification due to the construction of the wind generators ▪ There are a few very small drainage lines noted, but the slope is not severe (some erosion was noted during the walk down – associated with the recent construction activities and urgent rehabilitation must be carried out ▪ There is better access from the wind farm property (access roads) to the proposed corridor (shorter distances) ▪ The section south of the Sishen / Saldanha railway line is in a fair to good condition 	<p><u>Least preferred:</u></p> <ul style="list-style-type: none"> - This corridor will encroach into the least disturbed vegetation areas on the property – limited roads <ul style="list-style-type: none"> ▪ A whole new road access system is needed to get access to the corridor – no current roads from the turbine access roads to the proposed corridor ▪ The area to the northeast and east of the existing wind generator network is more undulating compared to the area next to the road (Loeriesfontein / Granaatboskolk) (Option 1) ▪ There are a number of small drainage lines along this corridor that will increase the erosion potential and added impacts on the vegetation – these systems drain to the Bitterputs Pan in the northeast. These pans form part of the important Bushmanland Vloere vegetation type (Mucina and Rutherford, 2006). ▪ According to Todd (2014) the drainage lines associated with the

POWERLINE CORRIDOR ROUTE ALIGNMENT ALTERNATIVES (LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF)		
Specialists	Powerline Corridor Alternative 1	Powerline Corridor Alternative 2
		study area are not well developed, which can be ascribed to the stony nature of the area and the low rainfall. <i>"The drainage lines are typically dominated by species such as Phaeoptilum spinosum, Rhigozum trichotomum and Osteospermum armatum along their banks, with Stipagrostis namaquensis typically dominating any relatively stable sediments or bed material. Due the ecological role they play and their vulnerability to disturbance, drainage lines are considered sensitive and should be avoided as much as possible"</i> .
Heritage	<u>No preference:</u> - None of the alignments have a preference over the other and both will have a low impact on heritage resources	<u>No preference:</u> - None of the alignments have a preference over the other and both will have a low impact on heritage resources
Palaeontology	<u>No preference:</u> - The geology of the proposed alternatives is the same	<u>No preference:</u> - The geology of the proposed alternatives is the same
Visual	<u>No preference:</u> - Corridor 1 is located on relatively flat terrain and as such would only be moderately exposed on the skyline. - The closest potentially sensitive receptor to this corridor is 660m away, this being VR2. The visual impacts from Corridor 1 affecting this receptor are therefore rated as moderate. As VR2 is located on the Kokerboom 3 WEF application site however, the owners are not expected to perceive the proposed power line in a negative light. - The remaining receptors are all more than 1.7kms away and thus would only be subjected to moderate or low levels of impact. Here again, all of these receptors are located on application sites for other renewable energy projects and as such the owners are not expected to perceive the proposed power line in a negative light. - Much of the western section of this corridor is in close proximity to the Loeriesfontein 2 WEF and the associated power lines. As such this section of the route alignment is already largely transformed from its natural state. This would lessen the impacts of the new power line in this area. - In light of the above, there are no fatal flaws associated with Corridor 1 and this corridor is considered favourable from a visual perspective	<u>No preference:</u> - Corridor 2 is located on relatively flat terrain and as such would only be moderately exposed on the skyline. -The closest potentially sensitive receptors to this corridor are 888m and 735m away, these being VR3 and VR4 respectively. The visual impacts from Corridor 2 affecting these receptors are therefore rated as moderate. As both of these receptors are located on the Loeriesfontein 2 WEF application site however, the owners are not expected to perceive the proposed power line in a negative light. - The remaining receptors are all more than 2kms away and thus would only be subjected to low or negligible levels of impact. Here again, all of these receptors are located on application sites for other renewable energy projects and as such the owners are not expected to perceive the proposed power line in a negative light. - Much of the eastern and northern sections of this corridor are in close proximity to the Loeriesfontein 2 WEF and the associated power lines. As such this section of the route alignment is already largely transformed from its natural state. This would lessen the impacts of the new power line in this area. - In light of the above, there are no fatal flaws associated with Corridor 2 and this corridor is

POWERLINE CORRIDOR ROUTE ALIGNMENT ALTERNATIVES (LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF)		
Specialists	Powerline Corridor Alternative 1	Powerline Corridor Alternative 2
		considered favourable from a visual perspective
Socio-Economic	<u>No preference:</u> - Considering both the social and other specialist studies, no clear preferred route alternatives emerge in respect of these routes	<u>No preference:</u> - Considering both the social and other specialist studies, no clear preferred route alternatives emerge in respect of these routes
Agriculture	<u>No preference:</u> - Due to the low agricultural sensitivity of the site, and the effectively uniform agricultural conditions across the site, there will be absolutely no material difference between the agricultural impacts of any of the alternatives. All alternatives are considered acceptable	<u>No preference:</u> - Due to the low agricultural sensitivity of the site, and the effectively uniform agricultural conditions across the site, there will be absolutely no material difference between the agricultural impacts of any of the alternatives. All alternatives are considered acceptable
Birds	<u>No preference:</u> - Both alternatives are routed through similar habitat and will therefore result in similar impacts	<u>No preference:</u> - Both alternatives are routed through similar habitat and will therefore result in similar impacts
Geotechnical	<u>No preference:</u> - No geologically or geotechnically sensitive areas were identified within Corridor 1. While Corridor 1 is considered marginally more suitable for development from a geotechnical perspective than Corridor 2, due to the generally flatter topography, other factors are likely to be more critical in determining the preferred corridor. No preferences for Corridor 1 and Corridor 2 are therefore provided. - No geologically or geotechnically sensitive areas were identified that would render the proposed Corridor 1 unsuitable for development, provided that standard engineering design and construction measures are implemented to mitigate the identified geotechnical constraints	<u>No preference:</u> - No geologically or geotechnically sensitive areas were identified within Corridor 2. While Corridor 1 is considered marginally more suitable for development from a geotechnical perspective than Corridor 2, due to the generally flatter topography, other factors are likely to be more critical in determining the preferred corridor. No preferences for Corridor 1 and Corridor 2 are therefore provided. - No geologically or geotechnically sensitive areas were identified that would render the proposed Corridor 2 unsuitable for development, provided that standard engineering design and construction measures are implemented to mitigate the identified geotechnical constraints
Fatal Flaw	No	No

As highlighted in the table above, **Powerline Corridor Alternative 1 (Loeriesfontein 3 PV SEF to Dwarsrug WEF)** was deemed to be the slightly more preferred alternative from an environmental perspective. This is primarily due to the slightly elevated negative impacts associated with the botanical and aquatic features identified on **Corridor Alternative 2 (Loeriesfontein 3 PV SEF to Dwarsrug WEF)**. It is however noted that the area of disturbance associated with Corridor 2 is slightly less than Corridor 1 given that the latter is a marginally longer route. In summary it can be concluded that neither of the two (2) route alignment alternatives from Loeriesfontein 3 PV SEF to Dwarsrug WEF (Corridors 1 & 2) are fatally flawed, and both return low negative impact significance scores when mitigation is applied.

Additionally, EAP and Specialist assessment of the proposed Corridor 3 (**Powerline from Dwarsrug WEF to the Narosies Substation**) has also returned a low impact finding with mitigation applied, with no fatal flaws being identified along this alignment. This route alignment is therefore also deemed to be acceptable from an environmental impact perspective.

12. CONCLUSIONS AND RECOMMENDATIONS OF THE EAP

The powerline corridors (including all alternatives) put forward in this BAR have all been informed by specialist investigations, assessment and associated environmental sensitivity analysis. No fatal flaws are associated with any of the proposed routes and alternatives put forward in this BAR namely:

- (i) **LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF (ALTERNATIVE / CORRIDOR 1) (18.85 KM)**
 - a. Start Point: S30° 22' 30.979"; E19° 34' 48.082"
 - b. Middle Point: S30° 27' 10.795"; E19° 34' 19.731"
 - c. End Point: S30° 29' 58.734"; E19° 37' 54.087"

- (ii) **LOERIESFONTEIN 3 PV SEF TO DWARSRUG WEF (ALTERNATIVE / CORRIDOR 2) (18.34 KM)**
 - a. Start Point: S30° 22' 30.979", E19° 34' 48.082"
 - b. Middle Point: S30° 25' 35.465", E19° 37' 6.921"
 - c. End Point: S30° 29' 58.734", E19° 37' 54.087"

- (iii) **DWARSRUG WEF TO THE APPROVED NAROSIES SUBSTATION (3.50 KM)**
 - a. Start Point: S30° 29' 58.734"; E19° 37' 54.087"
 - b. Middle Point: S30° 30' 42.332"; E19° 37' 2.084"
 - c. End Point: S30° 30' 37.194"; E19° 36' 3.754"

Based on the findings of the respective specialist studies, no fatal flaws or environmental issues have been identified which would prevent the proposed development from received authorisation. Based on the rating of the significance of the impacts of the proposed powerline project undertaken by the respective specialists, it was confirmed that the impacts associated with the proposed development can be kept to a medium low significance provided that mitigation measures are implemented. In addition, the cumulative impacts associated with the proposed development can be kept low with mitigation applied, and no fatal flaws have been identified. The impacts associated with the proposed powerline project can therefore be reduced to acceptably low levels and the impacts associated with the project are therefore deemed to be within acceptable limits of change. All three (3) powerline corridors are thus deemed to be acceptable, and as such it is the EAP's reasoned opinion that the Applicant should be granted Environmental Authorisation for all of the above routes with the proviso that only one (1) of the two (2) Alternatives presented, namely Corridor 1 or 2, is constructed.

SIVEST, as the EAP, is of the view that:

- The need and desirability of the project has been clearly established;
- The site location and project description can be authorised based on the findings of the suite of specialist assessments;
- All of the powerline corridors are environmentally acceptable and will not result in significant detrimental impacts, provided that the recommended mitigation measures are implemented and the routing of the powerlines within the assessed corridor avoids tower placement within the identified sensitive areas;
- Through the implementation of mitigation measures, together with adequate compliance monitoring, auditing and enforcement thereof by an appointed independent Environmental Control Officer (ECO) and the Competent Authority, the potential detrimental impacts associated with the proposed development can be mitigated to acceptable levels.

Furthermore, it is the opinion of the EAP that based on the findings of the BA, the proposed development should be granted a positive decision on Environmental Authorisation and be allowed to proceed to construction phase, provided the following conditions are adhered to:

- The final detailed alignments of the powerlines which are to be constructed within the approved corridors must be submitted to the DEFF for approval prior to the commencement of construction activities;
- All feasible and practical mitigation measures recommended by the various specialists must be incorporated into the Environmental Management Programme (EMPr) and implemented, where applicable by the Authorisation Holder; and
- Where applicable, independent monitoring must be undertaken to evaluate the success of the mitigation measures recommended by the various specialists and EAP. At a minimum monthly monitoring by an ECO must be undertaken during the construction phase of the project. The ECO must be required to submit monthly audit reports to the DEFF detailing the levels of compliance against the conditions of EA and EMPr during the construction phase of the project.

In light of the information above, it is the EAP's qualified opinion that sufficient information is available for DEFF to make an informed decision on EA. The proposed routes recommended by the EAP for Environmental Authorisation have been included in Figure 9 below for reference purposes.

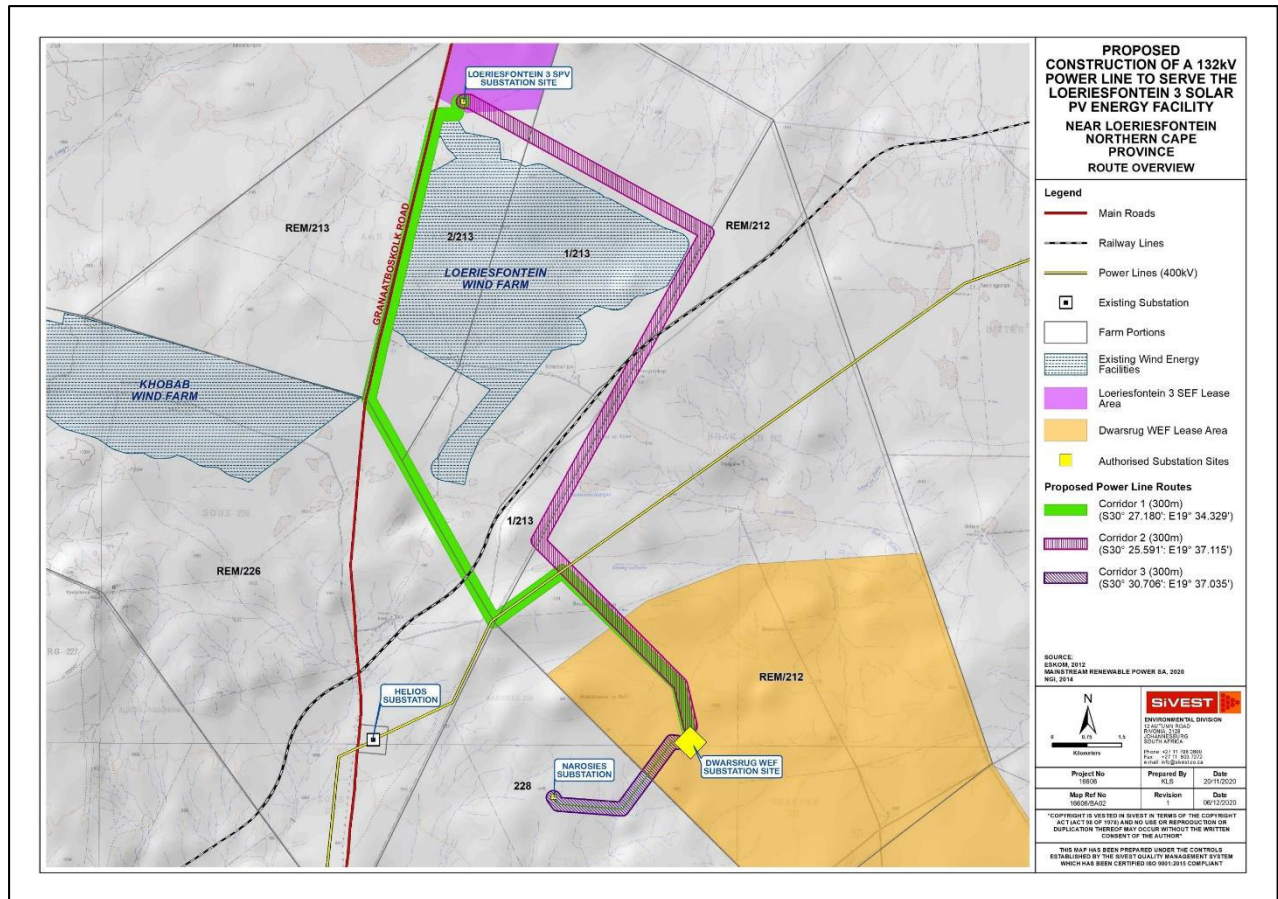


Figure 9: Layout recommended for Environmental Authorisation by the EAP (Based on the proviso that only one (1) of the two (2) Alternatives presented, namely Corridor 1 or 2, is constructed)

13. CONSTRUCTION TIMEFRAMES

Construction and implementation timeframes of the proposed powerlines were not available to the EAP at the time of writing. As such it is requested that the Environmental Authorisation for construction, if issued by the Competent Authority, be valid for a period of 10 years from the date of signature. It is not anticipated that once started, construction activities will require more than one year to be completed.

14. UNDERTAKING

SiVEST SA (Pty) Ltd hereby confirms that, to the best of our knowledge, the information provided in this report was correct at the time of compilation. Information included in this report was based on the information which was provided to SiVEST SA (Pty) Ltd by the Applicant and various specialist assessment reports.

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