agriculture, environmental affairs,
rural development and land reform

Department:
agriculture, environmental affairs,
rural development and land reform .
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

SASKO Building, 90 Long Street, Private Bag X6102, Kimberley 8300 Tel. 053-8077300 Fax: 053-8077328

Project applicant:	Soutrivier South Wind Energy Facility RF (Pty) Ltd. Alan Wolfromm, Director		
Business reg. no. /ID. no.:			
Contact person:	Jasper Dick		
Postal address:	PO BOX 762, Wilderness		
Telephone:		Cell:	066 307 3804
E-mail:	mrwolf@wkn-windcurrent.com jasper@wkn-windcurrent.com	Fax:	

Prepared by:

Environmental Assessment Practitioner/Firm:	Coastal and Environmental Services		
Business reg. no. /ID. no.:			
Contact person:	Dr Alan Carter		
Postal address:	P O Box 8145, Nahoon, East London, 5200		
Telephone:	043 726 7809	Cell:	083 379 9861
E-mail:	a.carter@cesnet.co.za c.evans@cesnet.co.za	Fax:	

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic Assessment Report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of07 April 2017. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	**YES**	~~NO~~

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. ACTIVITY DESCRIPTION

a) Describe the project associated with the listed activities applied for

WKN-Windcurrent SA (Pty) Ltd. plans to develop, construct and operate a Wind Energy Facility (WEF) approximately 30km southwest of Victoria West in the Northern Cape Province. The project site is situated in the Ubuntu Local Municipality (LM) which forms part of the Pixley ka Seme District Municipality (DM). In association with this proposed WEF an OHL of up to 132kV is being proposed to connect the WEF to the grid via collector substations. The proposed 132kV OHL is being undertaken separately from the proposed WEF as this piece of infrastructure will be owned and maintained by Eskom post-construction. The proposed 132kV OHL is being proposed as ancillary infrastructure to the proposed Soutrivier South Wind Energy Facility (WEF), DFFE Ref: 14/12/16/3/3/2/2190). Studies conducted to date show that this area has favourable wind conditions to operate a wind farm.

The proposed Soutrivier South 132kV OHL will consist of monopole and/or lattice structures which will span a length of up to 0.4km through the central region of the proposed Soutrivier South WEF. A jeep track will also be required to maintain the proposed OHL. The Basic Assessment process includes the assessment of a 300m wide proposed 132kV OHL corridor in which the 0.4km line is proposed.

Project Locality:
The proposed 132kV OHL is situated within the proposed Soutrivier South WEF, which is located in the Ubuntu LM and it is situated approximately 35km to the west of Victoria West. The R63 road connects the towns of Loxton and Victoria West directly to the North of the study area. The direction and distance from the project area to some of the nearest towns are indicated in Table 1 below:

Table 1: Towns in the vicinity of Soutrivier South WEF and associated OHL

TOWN NAME	APPROXIMATE DISTANCE	DIRECTION
Victoria West	35 km	East
Loxton	25 km	Northwest
Three Sisters	70 km	Southeast
Beaufort West	90 km	South

Table 2 indicates the property portions and farm names associated with the Soutrivier South 132kV OHL project area. The proposed project is situated on one (1) farm portion.

Table 2: Soutrivier South 132kV OHL Properties.

WEF: Soutrivier South

SG DIGIT NUMBER	FARM NUMBER/PORTION	AREA (HA)
C0800000000019700000	RE/197	6896
TOTAL		**6 896**

Wind Energy Linkages:

Wind turbines capture wind energy and convert it to electrical energy. Each turbine is fitted with its own transformer that steps up the voltage usually to 22 or 33kV. This electrical energy is then transported via underground cabling to an onsite substation where it will be boosted to 132 000 volts (132kV) for transmission into a main distribution line (usually 400 000 volts / 400kV) to connect to the national electrical grid network.

The proposed OHL will be used to transmit electrical energy generated by the Soutrivier South WEF to the proposed Soutrivier 400kV OHL and into the Gamma Eskom SS for distribution via the national electrical grid network. A generalised depiction of the infrastructure under this application is shown in Figure 1 below.

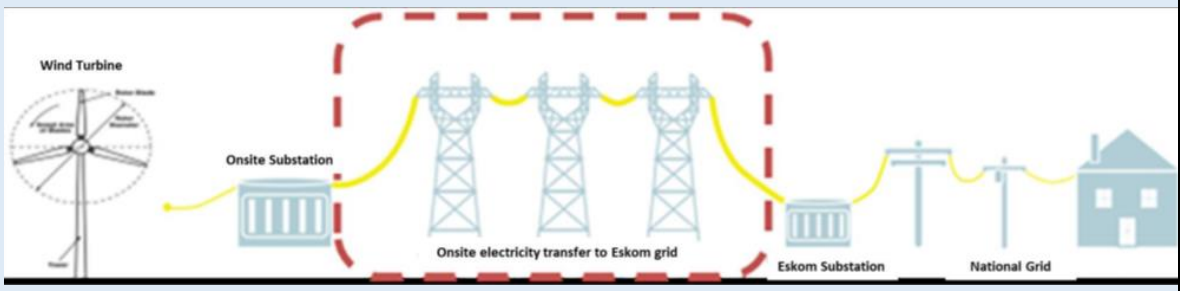


Figure 1: Typical WEF electricity evacuation process. The red dotted square indicates the components relevant to this application.

132kV Pylons:

An overhead powerline consists of one or more conductors that are strung on in-line (intermediate) structures and bend (strain) structures. The structures proposed for this 132kV OHL are the Double circuit 277 series. These are tubular steel monopole structures (see figures below).

Each structure varies in height from approx. 12 m to 35m. the size of the footprint depends on the type of structure used, i.e. whether it is an intermediate or strain structure. This will typically range from 0.8m x 0.8m to 1.9m, with the larger footprint being associated with the strain structures. The average distance between two structures would be approx. 250m but can vary between 200m to 375m depending on the topography of the area. The intermediate structures are typically used along straight sections of the powerline, whereas strain structures are used when there is a bend in the powerline alignment. This application is for the development of monopole and/or lattice structures.

Figure 2: Proposed steel monopole structures. A) Strain Structure. B) Intermediate Structure.

Servitude Requirements and Clearances:

The servitude width required for a 132kV OHL is 31m (i.e., 15.5m on either side measured from the centre line of the powerline). The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8m, while the minimum vertical clearance between the conductors and the ground is 6.7m.

The minimum distance of a 132kV OHL running parallel to proclaimed public roads is 95m from the centreline of the powerline servitude to the centreline of the road servitude. The minimum distance between trees and shrubs and any bare phase conductor of a 132kV OHL must be 4m, allowing for the possible sideways movement and swing of both the OHL and the tree or shrub.

Should the proposed powerline corridor receive environmental authorisation from the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform, and following negotiations with the landowners, the final deviation of the centreline for the OHL and co-ordinates of each bend in the line will be determined. Optimal tower sizes and locations will be identified and verified using a comprehensive ground survey of the preferred route and these positions will be reflected in, and appropriate management actions incorporated into the Environmental Management Programme (EMPr).

A narrow path will be cleared down the centre of the OHL servitude for stringing purposes. All trees and shrubs that cause clearance issues or may interfere with the operation and/or reliability of the OHL, will be trimmed or completely cleared. With complete clearance only being undertaken as a last option.

In areas where distribution lines cross existing agricultural lands in use, the footprint of the structures will be minimised and full-scale clearing of the servitude avoided to allow continued use of arable land, unless otherwise negotiated with the affected farmer/s. Clearing of vegetation will take place,

with the aid of a surveyor, along approved profiles and in accordance with the approved EMPr and the Eskom Vegetation Management Standard 240-52456757.

Once the centre line has been cleared, the surveyor pegs every tower position and marks the crossing point with existing fences for new gate installation. Once the tower positions have been marked, the vegetation clearing team will return to every tower position and clear vegetation (in accordance with the EMPr) for assembling and erection purposes.

Foundations:

The type of terrain encountered, as well as the underlying geotechnical conditions determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Strain structures require more expensive foundations for support than intermediate structures. The minimum working area required around a structure position is 20m x 20m.

Foundations will be mechanically excavated. Following this, a yard of concrete is cast at the bottom of the foundation. It will then be backfilled with a soil/cement mixture and then compacted in layers for the setting of the foundations. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distance of 200m will be implemented.

Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals (including livestock) and people from injury. All foundations are backfilled, stabilised through compaction, and capped with concrete at ground level.

Stringing of Conductors:

Tension stringing gear is used to string the conductors between towers. The line is strung in sections (from bend to bend). Cable drums are placed at the beginning of the sections of the line during this stringing process. In order to minimise any potential negative impacts on the surrounding area, these cable drums will be placed within the servitude.

Construction Process Of The OHLs:

OHL are constructed in the following simplified sequence:

a. Determination of technically feasible OHL alternatives;
b. Environmental assessment input route selection and obtaining of relevant environmental permits;
c. Negotiation of final route with affected landowners;
d. Survey of the route;
e. Selection of best-suited structures and foundations;
f. Final design of OHL and placement of towers;
g. Issuing of tenders and award of contract to construction companies;
h. Vegetation clearance and construction of access roads (if required);
i. Pegging of structures;
j. Construction of foundations;
k. Assembly and erection of structures;
l. Rehabilitation of disturbed areas and protection of erosion sensitive areas;
m. Testing and commissioning; and
n. Continued maintenance.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN R.327 and 324.	Description of project activity that triggers listed activity
GN R.327 Item 11: **The development of facilities or infrastructure for the transmission and distribution of electricity–** **Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.**	132kV overhead line will be constructed to transmit electricity generated by the wind turbines from the onsite 33/132kV IPP switching station (IPP SS) to the Soutrivier South collector substation (CSS).
GN R.327 Item 12: **The development of—** **i.infrastructure or structures with a physical footprint of 100 square metres or more;** **where such development occurs—** **a. if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —** **b. In front of a development setback; or** **If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.**	This relates to the proposed pylon structures which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process. It is anticipated that all watercourses will be avoided as the pylons can be between 200-400m apart. This will be removed in the Final BAR if no longer applicable.
GN R.327 Item 19: **The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;**	This relates specifically to road (jeep track) crossings that may be required during the OHL construction. The siting of the road (jeep track) will be refined throughout the BAR process of the proposed OHL.
GN R.327 Item 28: **Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:** **Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.**	The proposed development will entail the rezoning of land from agriculture to special industrial for the placement of the OHL pylons. The total footprint of the proposed OHL will exceed 1ha in extent.
GN R.324 Item 12(g)ii: **The clearance of an area of 300 square metres or more of indigenous vegetation**	The OHL pylons placement will result in the loss of Indigenous vegetation in excess of 300 square metres. The OHL contains CBA 1 and CBA 2 areas as

except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **g. Northern Cape** **ii. Within critical biodiversity areas identified in bioregional plans;**	defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016).
GN R.324 Item 14(ii)(a) and (b) (g)ii: **The development of—** **ii. infrastructure or structures with a physical footprint of 10 square metres or more;** **where such development occurs—** a. **within a watercourse;** c. **if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **g. Northern Cape** **ii. Outside urban areas:** **(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;**	This relates to the proposed pylon structures which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process. The combined physical footprint at the various watercourse crossings may exceed 10 square metres. The OHL contains CBA 1 and CBA 2 areas as defined in the Northern Cape Critical Biodiversity Areas Technical Report (2016). It is anticipated that all watercourses will be avoided as the pylons can be between 200-400m apart. This will be removed in the Final BAR if no longer applicable.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

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

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014.Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The proposed location of the pylons within the assessed corridor will be determined based on the environmental sensitivity assessment. This site has been selected due to its proximity to the proposed Soutrivier South WEF. It must be noted that the proposed OHL would not be constructed independently from the proposed Soutrivier South WEF. <u>Advantages:</u> • The preferred alternative is suitably located to supplement the development of the proposed Soutrivier South WEF. • The location of the powerline within the corridor will be determined based on the site sensitivity. • The primary land uses within this property, such as grazing, will be able to continue on the remainder of the property. <u>Disadvantages:</u> • Land previously undeveloped. • Potential impacts on avifauna. The main determining factors for selecting the proposed location were:- • Proximity to the Soutrivier South WEF. • Available land. • Available wind resource. Preliminary investigations have identified that the proposed project site meets the above land specifications.	31°37'06.49"S	22°46'46.36"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
No alternative properties have been identified or assessed. Alternative locations for the current project are limited and where		

not deemed to be either reasonable or feasible due to the following: • The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP. • A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project. • Therefore, alternative locations for the proposed Soutrivier South WEF and associated OHL, were not assessed.		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity	31°37'06.49"S	22°46'46.36"E
• Middle/Additional point of the activity		
• End point of the activity	31°37'06.81"S	22°46'58.48"E
Alternative S2 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The current proposed layout is to be determined based on the assessment of the sensitivity within the 300m wide corridor. <u>Advantages:</u> • The preferred layout alternative will consider the environmental sensitivities of the 300m wide corridor,	31°37'06.49"S	22°46'46.36"E

including ecological, avifaunal, archaeological and paleontological sensitivity, to determine the suitable routing of the powerline and the siting of the pylons. • The environmental sensitivities identified in the National Screening Tool Report, the Terrestrial Biodiversity, Avifaunal, Paleontologically and Archaeological Specialist Reports, the baseline description and during the site investigation(s) will be considered. <u>Disadvantages:</u> • The cumulative impact of additional infrastructure within this renewable energy cluster. • Potential avifaunal sensitivities. The layout alternative consists of the siting of the proposed Soutrivier South WEF 132kV OHLs within the assessable 300m wide corridor.		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
No alternative layouts have been identified or assessed. Alternative layouts for the current project are limited and where not deemed to be either reasonable or feasible due to the following: • The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP. • A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project. Therefore, alternative layouts for the proposed Soutrivier South WEF and associated OHL, were not assessed.		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
<u>Wind Energy Linkages</u> Wind turbines capture wind energy and convert it to electrical energy. Each turbine is fitted with its own transformer that steps up the voltage usually to 22 or 33kV. This electrical energy is then transported via underground cabling to an onsite substation where it will be boosted to 132 000 volts (132kV) for transmission into a main distribution line (usually 400 000 volts / 400kV) to connect to the national electrical grid network.

The proposed OHL will be used to transmit electrical energy generated by the Soutrivier South WEF to the proposed Soutrivier 400kV OHL and into the Gamma Eskom SS for distribution via the national electrical grid network. A generalised depiction of the infrastructure under this application is shown in Figure 3 below.

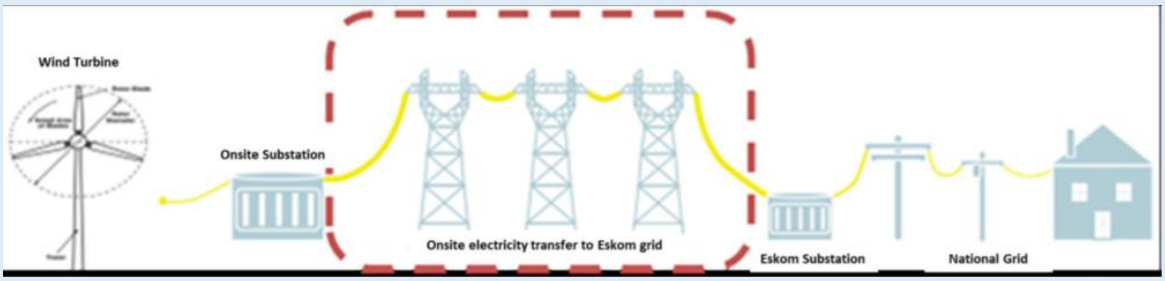


Figure 3: Typical WEF electricity evacuation process. The red dotted square indicates the components relevant to this application.

132kV Pylons:

An overhead powerline consists of one or more conductors that are strung on in-line (intermediate) structures and bend (strain) structures. The structures proposed for this 132kV OHL are the Double circuit 277 series. These are tubular steel monopole structures. Each structure varies in height from approx. 12 m to 35m. the size of the footprint depends on the type of structure used, i.e. whether it is an intermediate or strain structure. This will typically range from 0.8m x 0.8m to 1.9m, with the larger footprint being associated with the strain structures. The average distance between two structures would be approx. 250m but can vary between 200m to 375m depending on the topography of the area. The intermediate structures are typically used along straight sections of the powerline, whereas strain structures are used when there is a bend in the powerline alignment. This application is for the development of monopole and/or lattice structures.

Alternative 2

No alternative technology alternatives have been identified or assessed. Alternative technologies for the current project are limited and were not deemed to be either reasonable or feasible due to the following:

- The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP.
- A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project.

Therefore, alternative technologies for the proposed Soutrivier South WEF and associated OHL, were not assessed.

Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Operational aspects - Careful implementation of the EMPr (with updates to the working document) to inform the operational aspects of the Soutrivier South 132kV OHL.	31°37'06.49"S	22°46'46.36"E

• The operational aspects of the Soutrivier South OHL will be informed by the EMPr, which will be updated include the recommendations, mitigation measures and conditions of the environmental assessment process (including Stakeholder and I&AP input), Terrestrial Biodiversity Specialist Report, Avifaunal Specialist Report, Palaeontological Specialist Report and Archaeological Specialist Report, and the Environmental Authorisation. • Unanticipated environmental and/or social impacts could still occur during the operation of the Soutrivier South 132kV OHL System which may require the EMPr to be updated with additional recommendations and mitigation measures, as frequently as required, during both the construction and the operation of the Soutrivier South 132kV OHL.		
Alternative 2		
No alternative operational aspects have been identified or assessed. Alternative operational aspects for the current project are limited and were not deemed to be either reasonable or feasible due to the following: •The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP. •A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project. Therefore, alternative operational aspects for the proposed Soutrivier South WEF and associated OHL, were not assessed.		
Alternative 3		

e) No-go alternative

The “no-go” option, which entails no development within the proposed location.

<u>Advantages:</u>

- The site will remain largely undeveloped/in a natural state.
- Most of the adverse impacts associated with the Soutrivier South OHL are unlikely to occur in the absence of the development.

<u>Disadvantages:</u>

- The benefits associated with the proposed Soutrivier South OHL, such as supplementing the Soutrivier South WEF associated renewable energy facilities will be lost.
- The benefits associated with the proposed Soutrivier South OHL, such as the creation of employment opportunities during the construction of the OHL will be lost.
-

The No-Go Option has been assessed as an alternative to the development of the proposed Soutrivier South OHL.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	120 000 m^2
Alternative A2 (if any)	~~m^2~~
Alternative A3 (if any)	~~m^2~~

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	400 m
Alternative A2 (if any)	~~m~~
Alternative A3 (if any)	~~m~~

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	32 m wide
Alternative A2 (if any)	~~m^2~~
Alternative A3 (if any)	~~m^2~~

4. SITE ACCESS

Does ready access to the site exist?	**YES**	~~NO~~
If NO, what is the distance over which a new access road will be built		~~m~~

Describe the type of access road planned:

Access is required during both the construction and operational phases of the proposed project. The site proposed for development has largely been transformed through agricultural practises and already has gravel roads in place for these purposes. The proposed Soutrivier South WEF roads, proposed in DFFE Ref: 14/12/16/3/3/2/2189, will be used for the proposed Soutrivier South 132kV OHL. It must be noted that the Soutrivier South OHL will NOT be built independently from the proposed Soutrivier South WEF. No additional roads will be required.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

[1] "Alternative A.." refer to activity, process, technology or other alternatives.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	~~YES~~	**NO**	Please explain
The proposed development will entail the rezoning of land from agriculture to special industrial for the placement of the OHL pylons. The total footprint of the proposed OHL will exceed 1ha in extent.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	**YES**	~~NO~~	Please explain
The Northern Provincial Growth and Development Strategy (2019) (NCPGPS) aims to place the Northern Cape Province on a new development trajectory of sustainable development which forms part of its long-term strategic approach. The strategy is based on the 2015 Sustainable Development Goals (SDGs'), which is the blueprint for global development in order to achieve a better and more sustainable future for all. The NCPGDS recognises that social wellbeing is a complex concept, and refers to several aspects relating to human life, such as happiness, material fulfilment and personal needs. Although many aspects of social well-being can only be achieved by an individual and their subjective feelings and experiences, access to basic infrastructure and economic opportunities acts as a catalyst for achieving various levels of human well-being. In terms of the Economy, the Northern Cape is perfectly placed to be at the forefront of another industrial revolution. The Strategy points out that the provinces vast resources including sun, wind, open spaces, ocean, the various minerals and semi-precious stones, amongst others provides the province with competitive and comparative advantages. Environmental sustainability can only be achieved if the province's environmental assets and natural resources are protected and enhanced. The Northern Cape Province is endowed with rich natural resources and mineral deposits which offers the opportunity to fund the transition to a low-carbon future and a more diverse and inclusive green economy if used responsibly.			

Furthermore, the Northern Cape Province Strategic Plan 2020-2025 references the need to ensure the availability of inexpensive energy as a means to promote economic growth in the Northern Cape. The availability of electricity to key industrial users at critical localities at competitive rates will ensure the competitiveness of these industries. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display synergy with the province's natural resource endowments must be encouraged. The report further states that the development of energy sources such as wind energy, the natural gas fields, bio-fuels, etc., could be some of the means by which new economic opportunity and activity is generated in the Northern Cape. This also highlights the importance of close co-operation between public and private sectors in order for the economic development potential of the Northern Cape to be realised. The proposed Soutrivier South WEF and OHL is in line with the Northern Cape Provincial Development Plan as it entails the development of a wind farm which could potentially contribute up to 270 MW of electricity to the Eskom Grid.			
(b) Urban edge / Edge of Built environment for the area	**YES**	~~NO~~	Please explain
The establishment of Soutrivier South WEF and OHL infrastructure, if approved, will be a rural area, which previously had very few services, outside the urban edge. It would be regarded by the affected parties as resulting in benefits with very high significance.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	**YES**	~~NO~~	Please explain
The Ubuntu Local Municipality Integrated Development Plan 2021/2022 aims to be a blueprint for the future development trajectory of the municipality. One of the many challenges identified is to ensure that all citizens have access to basic services such as water, sanitation, electricity, and housing. In this regard, electricity infrastructure development is a key component of the municipality's strategic objective for the provision of sustainable basic services. The establishment of additional electrical infrastructure, such as the proposed Soutrivier South WEF is an important stepping-stone in achieving the desired goals. One of the strengths identified within the LM is the availability of land and the resulting opportunity to utilise this land for renewable energy projects. The proposed Soutrivier South WEF and OHL would contribute to the identified economic development within the LM and is in line with the development trajectory as described within the IDP.			
(d) Approved Structure Plan of the Municipality	**YES**	~~NO~~	Please explain
The Ubuntu LM IDP (2022/2023) lists Electricity as one of the main economic activities in the municipality, after Agriculture, Wholesale Trade, Construction, Finance and Other, Transport and Communication, Manufacturing, and Commerce and Personal Service. Farms in the Loxton area seem to be where most of the Electricity activities are located. The proposed Soutrivier South WEF and OHL would contribute to the identified economic development within the LM and is in line with the development trajectory as described within the IDP.			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	~~YES~~	**NO**	Please explain
There is no adopted Environmental Management Framework in the location of the Soutrivier South OHL site.			
(f) Any other Plans (e.g. Guide Plan)	~~YES~~	NO	Please explain
No other plans have been identified during this process.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	**YES**	~~NO~~	Please explain

The Vision for the District Municipality as presented in the Integrated Development Plan (IDP) is "Sustainably Developed District for future Generations". Along with the following Strategic goals:

- Supporting of local municipalities to create a home for all individuals in the towns, settlements and rural areas to render dedicated services;
- Providing political and administrative leadership and direction in the development planning process;
- Promoting economic growth that is shared across and within communities;
- Promoting and enhancing integrated development planning in the operations of all local municipalities; Aligning development initiatives in the district to the National Development Plan.

The Ubuntu Local Municipality Integrated Development Plan 2021/2022 aims to be a blueprint for the future development trajectory of the municipality. One of the many challenges identified is to ensure that all citizens have access to basic services such as water, sanitation, electricity, and housing. In this regard, electricity infrastructure development is a key component of the municipality's strategic objective for the provision of sustainable basic services. The establishment of additional electrical infrastructure, such as the proposed Soutrivier South WEF is an important stepping-stone in achieving the desired goals. One of the strengths identified within the LM is the availability of land and the resulting opportunity to utilise this land for renewable energy projects.

The proposed Soutrivier South WEF and OHL is in line with the Pixley Ka Seme IDP in that the SWOT analysis undertaken identified solar and wind farms as potential opportunities. They would also contribute to the identified economic development within the LM and are in line with the development trajectory as described within the IDP

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	~~NO~~	Please explain
Soutrivier South WEF intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes			

during the project's operational phase. A local community trust will be established in order to ensure that funds are channelled to these social development schemes.

The need and desirability of the proposed Soutrivier South WEF project can be demonstrated in the following main areas:

- Move to green energy due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources;
- Security of electricity supply, where over the last few years, South Africa has been adversely impacted by interruptions in the supply of electricity; and
- Stimulation of the green economy where there is a high potential for new business opportunities and job creation.

The above main drivers, for renewable energy projects, are supported by the following International, National and Provincial (Northern Cape Province) policy documents.

5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	**YES**	~~NO~~	Please explain

The following section outlines the water, sewerage, stormwater and electrical requirements for the construction of the proposed Soutrivier South 132kV OHL.

Water:

Water will be required for potable use and in the construction of the foundations for the towers. The water will be sourced from approved water use points at locations closest to the area of construction.

Sewerage:

Chemical toilets will be made available for use by project staff during the construction phase, which will be serviced regularly by the supplier. No ablution facilities will be required during the operational phase of the proposed project.

Stormwater:

The construction of infrastructure will require the clearing of vegetation which will result in exposed soil surfaces. These exposed surfaces may potentially increase stormwater runoff. Stormwater will therefore be managed in line with Eskom Guidelines for Erosion Control and Vegetation Management, and the EMPr, which will be complied for the proposed works.

Electricity:

Diesel generators will be utilised for the provision of electricity during the construction phase, where required.

6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	~~YES~~	NO	Please explain
The Soutrivier South 132kV OHL is proposed in order evacuate electricity from the Soutrivier South WEF into the national Eskom Grid. It is independent of municipal infrastructure. The development is in line with the municipalities' development goals, as discussed above. The Draft BAR has been made available to the Ubuntu Local and Pixley Ka Seme District Municipalities for comment. All PPP documents are included under Appendix I of the BAR.			
7. Is this project part of a national programme to address an issue of national concern or importance?	**YES**	~~NO~~	Please explain
Increasing pressure is being placed on countries internationally to reduce their reliance on fossil fuels, such as oil and coal, which contribute towards greenhouse gases (GHG) being emitted into the atmosphere and thus contributing to global climate change. Renewable energy resources such as wind energy facilities and solar PV farms are being implemented as alternative sources of energy at a global and national scale. South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA). The draft of the South African Integrated Resource Plan (IRP 2018) was released for public comment in August 2018, setting out a new direction in energy sector planning. The plan included a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. The revised plan marks a major shift in energy policy. The draft policy aimed to decommission a total of 35 GW (of 42 GW currently operating) of coal generation capacity from Eskom by 2050, starting with 12 GW by 2030, 16 GW by 2040 and a further 7 GW by 2050. The IRP 2019 was Gazetted in October 2019 and makes provision for the procurement of 1.6 GW of wind energy per annum from 2020 to 2030. The implementation of the IRP constitutes significant progress in the transformation of the South African energy sector. To be in line with the Paris Agreement goals for mitigation, South Africa would still need to adopt more ambitious actions by 2050 such as expanding renewable energy capacity beyond 2030, fully phasing out coal by mid-century, and substantially limiting unabated natural gas use. South Africa's current electricity generation and supply system is unreliable. Currently, Eskom has a net output of 47,201MWp, and it produces 85% of South Africa's electricity, which is an equivalent of 40% of Africa's electricity. Renewable energy accounts for 5% of South Africa's electricity. This is			

mainly due to the targets set in the IRP2010-2030 that aimed to change the electricity landscape from high coal (91.7%) to medium coal (48%) using electricity produced by the Independent Power Producers, with the utility company, Eskom, as the single buyer of the electricity. In addition to this the Eskom grid infrastructure needs to be upgraded and or expanded in order to facilitate any proposed new energy supply.

South Africa has a high level of renewable energy potential and presently has in place a target of 17 800 MW of renewable energy. The REIPPP Programme has been designed to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

In terms of the REIPPPP, bidders will be required to bid on tariff and the identified socio-economic development objectives of the DoE. The tariff will be payable by the Buyer (currently ESKOM) pursuant to the Power Purchase Agreement (PPA) to be entered into between the Buyer and the Project Company of a Preferred Bidder.

The Sixth (6th) Bid Window, under the REIPPPP, was concluded in December 2022. Eskom listed grid constraints as a limiting factor to certain areas within South Africa and as such no wind energy was awarded preferred bidder status during Round 6.

This procurement bid window is the second to be released in line with the Ministerial Determination, promulgated on 25th September 2020, which seeks to procure 11 813 MW of power from various sources including renewable energy, storage, gas and coal.

The RFP calls for proposals from Independent Power Producers (IPPs) to develop new generation capacity of 2 600 MW, including 1 600 MW from onshore wind energy and 1 000 MW from Solar Photovoltaic (Solar PV) power plants.

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	~~NO~~	Please explain

The establishment of additional electrical infrastructure, such as the proposed Soutrivier South WEF is an important stepping-stone in achieving the desired goals of greener energy in South Africa. One of the strengths identified within the district and local municipalities is the availability of land and the resulting opportunity to utilise this land for renewable energy projects.

9. Is the development the best practicable environmental option for this land/site?	**YES**	~~NO~~	Please explain

The proposed Soutrivier South WEF is an important stepping-stone in achieving the desired goals of greener energy in South Africa. Alternative locations for the current project are limited and were not deemed to be either reasonable or feasible due to the following:

- The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP.

- A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project.

Therefore, the site for the proposed Soutrivier South WEF and associated OHL are to be the best practicable environmental option.

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	**YES**	~~NO~~	Please explain

It is the opinion of the EAP that based on the information gathered during the course of the BAR process, to date, including specialist studies and PPP, the impacts described do not represent any fatal flaws regarding the proposed Soutrivier South 132kV OHL.

169 impacts were identified during the BA process. Of the identified impacts 147 are NEGATIVE and 22 are POSITIVE pre- and post-mitigation. The purpose of the BA process is to ensure that a site and proposed activity are assessed and then mitigated in terms of the mitigation hierarchy.

In terms of the mitigation hierarchy the figures below illustrate the following application.

1) Avoid: Sensitive will be avoided at a pylon placement level in relation to aquatic impacts. Sensitive areas related to avifauna have been avoided as per Chapter 10 of this report (sensitivity analysis) and no critical un-mitigatable impacts remain.
2) Minimise: Most of the impacts are LOW post-mitigation (80%), having been reduced from predominantly MODERATE pre-mitigation.
3) Offset: N/A as no VERY HIGH biodiversity impacts remain post mitigation.

Given the reduction in impact significance (negative impacts) through the mitigation hierarchy and the number of positive impacts associated with the development, the EAP is of the opinion that the environmental, social and economic cost does not outweigh the environmental, social and economic benefit of the proposed Soutrivier South 132kV OHL, associated with the Soutrivier South WEF.

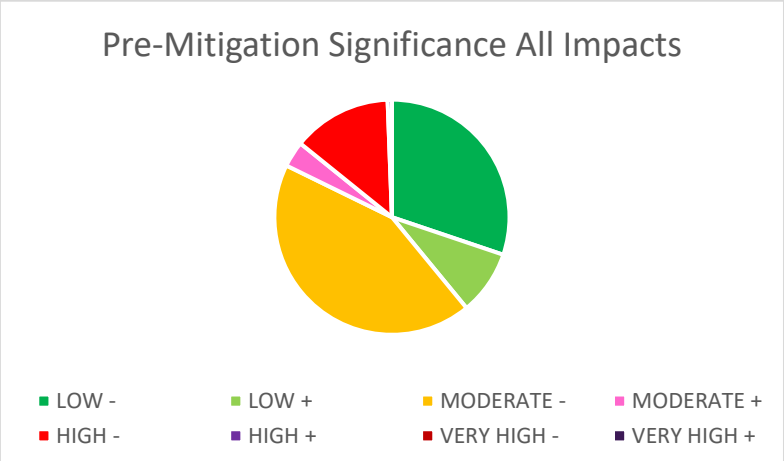


Figure 4: Soutrivier South *OHL* Full Impact Comparison, Pre-Mitigation

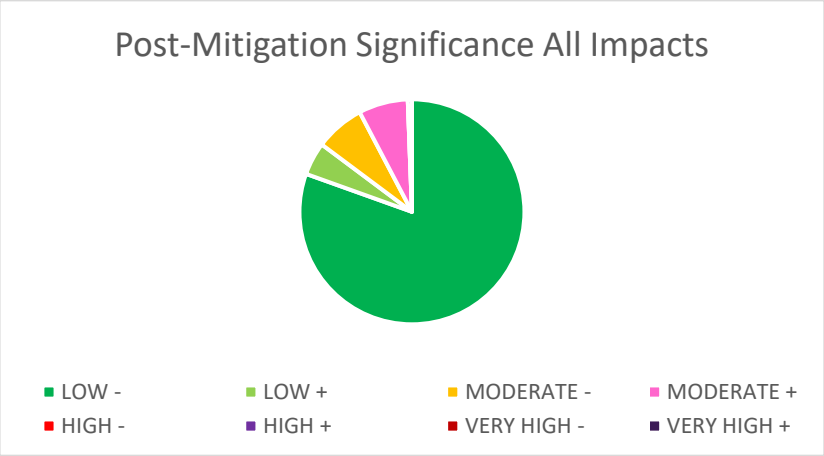


Figure 5: Soutrivier South *OHL* Full Impact Comparison, Post-Mitigation

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	**YES**	~~NO~~	Please explain

The development will improve grid connectivity for renewable energy facilities, which may encourage further developments of this type in the area. The proposed Soutrivier South WEF and 132kV OHL falls just to the North of the Beaufort West REDZ area. The site does, however, fall within the Central Corridor. Although the proposed Soutrivier South WEF and OHL does not occur within the REDZ area, it is situated within the central transmission corridor.

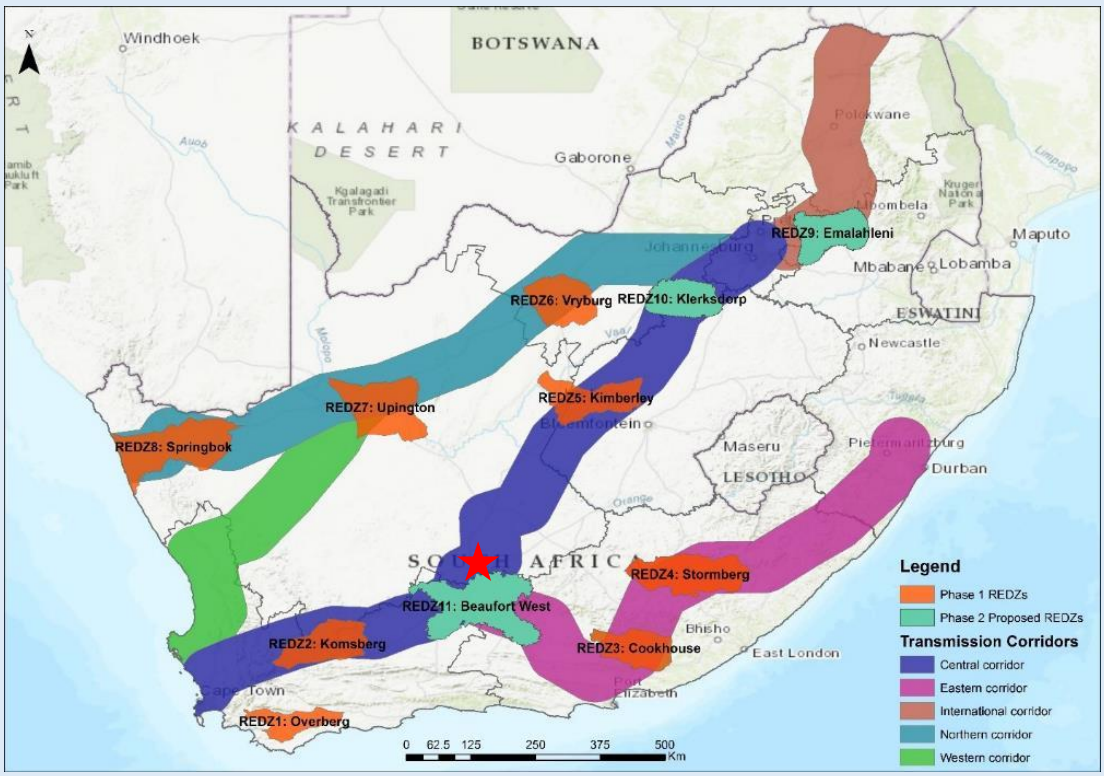


Figure 6:DFFE Strategic Transmission Corridors (the site is situated in the central transmission corridor).

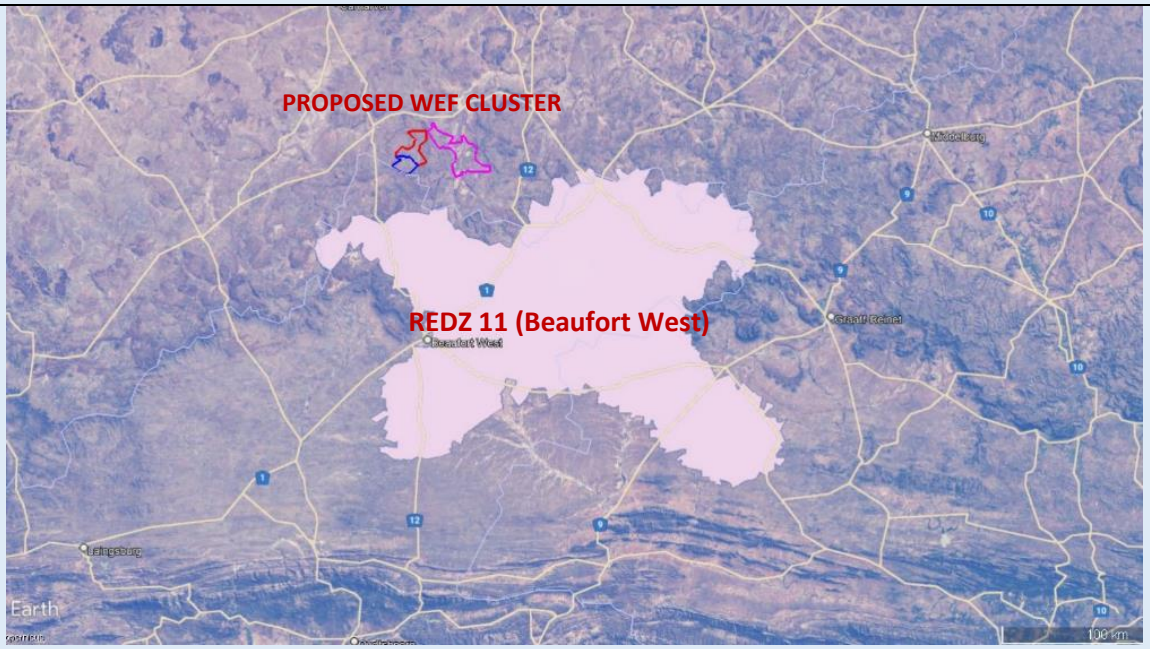


Figure 7: Proposed WEF locations in relation to the closest REDZ (Beaufort West).

12. Will any person's rights be negatively affected by the proposed activity/ies?	~~YES~~	**NO**	Please explain

The Constitution Act (Act No. 108 Of 1996)

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

(a) To an environment that is not harmful to their health or well-being.

(b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:

(i) Prevent pollution and ecological degradation.

(ii) Promote conservation.

(iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Relevance To the Proposed Soutrivier South WEF and OHL

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

13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	~~YES~~	**NO**	Please explain
One of the land use management tools available to control expansion both geographically and temporally is the creation of urban edges. In South Africa, provincial and local planning authorities employ an urban edge as a "policy tool" to control urban expansion and encourage densification. It is a line drawn to govern, steer, and regulate the outer reaches of urban growth. An urban edge is intended to set boundaries beyond which urban expansion should not take place. However, the advantages of better land use management, such as the protection of agricultural and natural resources, balance out the negative effects of using urban boundaries to control expansion and protect the environment, such as the manipulation of the real estate market. Although the proposed Soutrivier South WEF and OHL site is outside the urban edge and is not deemed to be situated on agricultural land with high potential, preventative measures must be considered to ensure that farmers are able to continue using their land as livestock grazing as far as possible.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	**YES**	~~NO~~	Please explain
The National Infrastructure Plan that was adopted in 2012 together with the New Growth Path, which sets a goal of five million new jobs by 2020, identifies structural problems in the economy and points to opportunities in specific sectors and markets or "jobs drivers" resulted in the establishment of the Presidential Infrastructure Coordinating Committee (PICC) which in turn resulted in the development of 18 Strategic Infrastructure Projects (SIPS). SIPS relevant to renewable energy include: SIP 8: Green energy in support of the South African economy • Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010). SIP 9: Electricity generation to support socio-economic development • Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.			
15. What will the benefits be to society in general and to the local communities?			Please explain
Soutrivier South WEF intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established in order to ensure that funds are channelled to these social development schemes. The need and desirability of the proposed Soutrivier South WEF project can be demonstrated in the following main areas: • Move to green energy due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources;			

- Security of electricity supply, where over the last few years, South Africa has been adversely impacted by interruptions in the supply of electricity; and
- Stimulation of the green economy where there is a high potential for new business opportunities and job creation.

The above main drivers, for renewable energy projects, are supported by the following International, National and Provincial (Northern Cape Province) policy documents.

16. Any other need and desirability considerations related to the proposed activity?	Please explain

The 1992 United Nations Framework Convention On Climate Change (UNFCCC)

The UNFCCC is a framework convention which was adopted at the 1992 Rio Earth Summit. South Africa signed the UNFCCC in 1993 and ratified it in August 1997. The stated purpose of the UNFCCC is to, "achieve… stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system", and to thereby prevent human-induced climate change by reducing the production of greenhouse gases defined as, "those gaseous constituents of the atmosphere both natural and anthropogenic, that absorb and re-emit infrared radiation".

Relevance To the Proposed Soutrivier South WEF and OHL

The UNFCCC is relevant in that the proposed Soutrivier South WEF and OHL project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity. South Africa has committed to reducing emissions to demonstrate its commitment to meeting international obligations.

The Kyoto Protocol (2002)

The Kyoto Protocol is a protocol to the UNFCCC which was initially adopted for use on the 11th of December 1997 in Kyoto, Japan, and which entered into force on the 16th of February 2005 (UNFCCC, 2009). The Kyoto Protocol is the chief instrument for tackling climate change. The major feature of the Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. This amounts to an average of 5% against 1990 levels over the five-year period 2008-2011. The major distinction between the Protocol and the Convention is that, "while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to do so".

Relevance To the Proposed Soutrivier South WEF and OHL

The Kyoto Protocol is relevant in that the proposed Soutrivier South WEF and OHL project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity and will assist South Africa to begin demonstrating its commitment to meeting international obligations in terms of reducing its emissions.

National Development Plan (2011)

The National Development Plan (NDP) (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes twelve (12) key focus areas, those relevant to the current proposed WEF being:

- An economy that will create more jobs.
- Improving infrastructure.
- Transition to a low carbon economy.

Relevance To the Proposed Soutrivier South WEF and OHL

The proposed Soutrivier South WEF and OHL will contribute towards additional energy capacity in South Africa and will contribute towards a reduction in greenhouse gas emissions.

SECTOR	TARGET
Electrical infrastructure	South Africa needs an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, implying new build of about 40,000 MW. About 20,000 MW of this capacity should come from renewable sources.
Transition to a low carbon economy	Achieve the peak, plateau and decline greenhouse gas emissions trajectory by 2025. About 20,000 MW of renewable energy capacity should be constructed by 2030.

National Climate Change Response White Paper (2012)

The White Paper indicates that Government regards climate change as one of the greatest threats to sustainable development in South Africa and commits the country to making a fair contribution to the global effort to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system.

The White Paper also identifies various strategies in order to achieve its climate change response objectives, including:

- The prioritisation of mitigation interventions that significantly contribute to an eventual decline emission trajectory from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

The White Paper provides numerous specific actions for various Key Mitigation Sectors including renewable energy. The following selected strategies (amongst others) must be implemented by South Africa in order to achieve its climate change response objectives:

- The prioritisation of mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34% and 42% respectively below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

Relevance To the Proposed Soutrivier South WEF and OHL

The proposed Soutrivier South WEF and OHL project will provide an alternative to fossil fuel-derived electricity and will contribute to climate change mitigation.

White Paper On Renewable Energy Policy (2003)

The White Paper on the Renewable Energy Policy (2003) commits the South African Government support for the development, demonstration and implementation of renewable energy sources for both small and large scale applications. It sets out the policy principles, goals and objectives to achieve, "An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation".

Relevance To the Proposed Soutrivier South WEF and OHL

The proposed Soutrivier South WEF is consistent with the White Paper and the objectives therein to develop an economy in which renewable energy has a significant market share and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.

Integrated Energy Plan for The Republic Of South Africa (2003)

The former Department of Minerals and Energy (DME) commissioned the Integrated Energy Plan (IEP) in response to the requirements of the National Energy Policy in order to provide a framework by which specific energy policies, development decisions and energy supply trade-offs could be made on a project-by-project basis. The framework is intended to create a balance between energy demand and resource availability so as to provide low-cost electricity for social and economic development, while taking into account health, safety and environmental parameters.

In addition to the above, the IEP recognised the following:-

- South Africa is likely to be reliant on coal for at least the next 20 years as the predominant source of energy.
- New electricity generation will remain predominantly coal based but with the potential for hydro, natural gas, renewables and nuclear capacity.
- Need to diversify energy supply through increased use of natural gas and new and renewable energies.
- The promotion of the use of energy efficiency management and technologies.
- The need to ensure environmental considerations in energy supply, transformation and end use.
- The promotion of universal access to clean and affordable energy, with the emphasis on household energy supply being coordinated with provincial and local integrated development programme.
- The need to introduce policy, legislation and regulations for the promotion of renewable energy and energy efficiency measures and mandatory provision of energy data.
- The need to undertake integrated energy planning on an on-going basis.

Relevance To the Proposed Soutrivier South WEF and OHL

The Soutrivier South WEF and OHL is in line with the IEP with regards to diversification of energy supply and the promotion of universal access to clean energy.

Integrated Resource Plan for Electricity 2010-2030 (Revision 2, 2011)

The Integrated Resource Plan (IRP, 2010) for South Africa was initiated by the DoE and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

- Reducing carbon emissions.
- New technology uncertainties such as costs, operability and lead time to build.
- Water usage.
- Localisation and job creation.
- Southern African regional development and integration.
- Security of supply.

The Policy-Adjusted IRP includes recent developments with respect to prices and allocates 17 800 MW for renewables, of the total 42 600 GW (including both renewables and non-renewables) new-build up to 2030 allocated as follows:

- Wind at 8 400 MW.
- Concentrated solar power at 1 000 MW.
- Photovoltaic at 8 400 MW.

Relevance To the Proposed Soutrivier South WEF and OHL

The Soutrivier South WEF and OHL is in line with the IRP for electricity and will contribute towards finding an appropriate balance between the various stakeholders as per the IRP2011.

Integrated Resource Plan for Electricity 2010-2030 (Revision 3, 2019)

The Integrated Resource Plan (IRP, 2019) for South Africa was initiated by the DoE and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

- Reducing carbon emissions;
- New technology uncertainties such as costs, operability and lead time to build;
- Water usage;
- Localisation and job creation;
- Southern African regional development and integration; and
- Security of supply.

The IRP is an electricity infrastructure development plan based on the least-cost electricity supply and demand balance, taking into account security of supply and the environment through the minimisation of negative emission and water use. It is important because it is South Africa's plan for the procurement of generation capacity up to 2030. The last such plan was the Integrated Resource Plan 2010 (IRP 2010) promulgated in March 2011, and such plans are intended to be updated every two years.

Relevance To the Proposed Soutrivier South WEF and OHL

The proposed Soutrivier South WEF and OHL is in line with the draft IRP 2019 with respect to the energy mix and movement to a low carbon economy up to 2030 and beyond.

17. How does the project fit into the National Development Plan for 2030?	Please explain

The National Development Plan (NDP) (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes twelve (12) key focus areas, those relevant to the current proposed project being:

- An economy that will create more jobs.
- Improving infrastructure.
- Transition to a low carbon economy.

SECTOR	TARGET
Electrical infrastructure	• South Africa needs an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, implying new build of about 40,000 MW. • About 20,000 MW of this capacity should come from renewable sources.
Transition to a low carbon economy	• Achieve the peak, plateau and decline greenhouse gas emissions trajectory by 2025. • About 20,000 MW of renewable energy capacity should be constructed by 2030.

Relevance To the Proposed Soutrivier South WEF and OHL

The proposed Soutrivier South WEF and OHL will contribute towards additional energy capacity in South Africa and will contribute towards a reduction in greenhouse gas emissions.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

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

A key aspect of the NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. Section 2 of NEMA contains principles (see Table 4-1) relevant to the proposed WEF project, and this associated OHL, and likely to be utilised in the process of decision making by DFFE.

Table 3:NEMA Environmental Management Principles

(2)	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3)	Development must be socially, environmentally and economically sustainable.
(4)(a)	Sustainable development requires the consideration of all relevant factors including the following: i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
(4)(j)	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(4)(p)	The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(4)(r)	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with these

principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

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

- Employees who refuse to perform environmentally hazardous work, or whistle blowers, are protected in terms of NEMA.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The National Environmental Management Act (NEMA, Act No. 107 of 1998), Section 2, states that Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

Relevance To the Proposed Soutrivier South WEF and OHL

- The WEF and OHL developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts.
- The WEF and OHL developer must be mindful of the principles, broad liability and implications of causing damage to the environment.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (Act No. 107 Of 1998 and Subsequent Amendments)	• The WEF and OHL developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts. • The WEF and OHL developer must be mindful of the principles, broad liability and implications of causing damage to the environment.	Department of Forestry, Fisheries and the Environment (DFFE)	2017

National Environment Management: Biodiversity Act (No. 10 Of 2004)	• The WEF and OHL developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity. • The WEF and OHL developer must assess the impacts of the proposed development on endangered ecosystems. • The WEF and OHL developer may not remove or damage any protected species without a permit. • The WEF and OHL developer must ensure that the site is cleared of alien vegetation using appropriate means (AIS Regulations, Government Notice R. 598 of the 1st of April 2014 are applicable).	Department of Forestry, Fisheries and the Environment (DFFE)	2004
National Environmental Management: Air Quality Act (NEM:AQA, Act No. 39 of 2004)	• Although no major air quality issues are expected, the WEF and OHL developer needs to be mindful of the Act as it also relates to potential dust generation during construction, etc.	Department of Forestry, Fisheries and the Environment (DFFE)	2004
National Forests Act (No. 84 Of 1998)	• If any protected trees or indigenous forest in terms of this Act occur on site, the WEF and OHL developer will require a licence from the Department of Forestry, Fisheries and the Environment (DFFE) to perform any of the above-listed activities.	Department of Forestry, Fisheries and the Environment (DFFE)	1998
National Heritage Resources Act (No. 25 Of 1999)	• SAHRA must be informed of the project and EIA process. • A Heritage Impact Assessment (HIA) must be undertaken by a suitably qualified specialist. • No person may alter or demolish any structure or part of a structure, which is older than 60 years or	South African Heritage Resources Agency	1999

	disturb any archaeological or paleontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority. • No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.		
Electricity Regulation Act (No. 4 Of 2006)	• The proposed WEF and OHL is in line with the call of the Electricity Regulation Act as it has the potential to improve energy security of supply through diversification.	National Energy Regulator of South Africa (NERSA)	2006
Occupational Health and Safety Act (No. 85 Of 1993)	• The WEF and OHL developer must be mindful of the principles and broad liability and implications contained in the OHSA and mitigate any potential impacts.	Department of Employment and Labour	1993
National Water Act (NWA, Act No. 36 of 1998)	• There may be certain instances where the WEF and OHL developer may need to obtain approval in terms of the Water Act. • Please note that General Authorisations (GAs) and WULAs are only authorised to be submitted to DWS once a wind energy facility has been granted preferred bidder status. Should Soutrivier South WEF be granted preferred bidder status then WULAs will be submitted for consideration by the DWS.	Department of Water and Sanitation	1998
Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983)	• The proposed Soutrivier South WEF and OHL site is not deemed to be situated on high agricultural land with high potential. Preventative	Northern Cape Department of Agriculture, Environmental Affairs,	1983

	measures must be considered as part of the EMPr to ensure that farmers are able to continue using their land as livestock grazing as far as possible.	Rural Development and Land Reform	
Subdivision of Agricultural Land Act (Act No. 70 of 1970)	• Approval will be required from the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform for any activities on the land zoned for agriculture and any proposed rezoning or sub-divisions of agricultural land.	Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	1970
Mineral and Petroleum Resources Development Act (MPRDA, Act No. 28 of 2002)	• Any activities associated with the WEF and OHL requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMRE for either a mining permit or mining licence. • The Soutrivier South WEF and OHL must apply to the Minister of Mineral Resources for approval to use the land for the purposes of the WEF. • The DMRE has aligned its authorisation process with that of the DFFE, and from August 2015, all applications for mining activities require an Environmental Impact Assessment, as per the EIA Regulations.	Department of Mineral Resources	2002
National Road Traffic Act (NRTA, Act No. 93 of 1996)	• All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed wind farm, inclusive of the OHL.	Department of Transport	1996
National Veld and Forest Fire Act (No. 101 Of 1998)	• The proposed Soutrivier South WEF and OHL must register as a member of the	Department of Forestry, Fisheries and the Environment (DFFE)	1998

	fire protection association in the area. • The proposed Soutrivier South WEF and OHL will be required to take all practicable measures to ensure that fire breaks are prepared and maintained according to the specifications contained in Chapter 4 Section 12 – 14. • The proposed Soutrivier South WEF and OHL must have the appropriate equipment, protective clothing and trained personnel for extinguishing fires.		
Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations	• Specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters.	Department of Forestry, Fisheries and the Environment (DFFE)	
Telecommunication Act (1966)	• Adhere to requirements with regard to potential impacts on signal reception.	Independent Communications Authority of South Africa	1996
Northern Cape Nature Conservation Act No. 9 Of 2009	• Species of special concern which require permits for removal. Schedules 1 to 3 list protected and endangered plant and animal species.	Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	2009
Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013)	• Provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act	Department of Rural Development and Land Reform (DRDLR)	2013
Land Use Planning Ordinance (LUPO) Ordinance 15 of 1985	• Land Rezoning Permit	Local Municipality	1985

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**	~~NO~~
If YES, what estimated quantity will be produced per month?	18 m^3	

How will the construction solid waste be disposed of (describe)?

Waste from construction activities e.g. excess concrete and cement mixture, empty paint containers, oil containers, etc., could cause pollution of ground and surface water when they come into contact with run-off water.

- A Waste Management Plan for the project must be developed and implemented in the construction phase.
- A Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The Waste Management Plan must be explained to all employees as part of the environmental induction training.
- All construction materials must be stored in a central and secure location with controlled access with an appropriate impermeable surface.
- The recommendations of the Stormwater Management Plan must be implemented to mitigate the impacts of run-off water on pollution.

Where will the construction solid waste be disposed of (describe)?

All waste must be disposed of at an appropriately licensed landfill site.

Will the activity produce solid waste during its operational phase?	~~YES~~	**NO**
If YES, what estimated quantity will be produced per month?	~~m~~^{3}	

How will the solid waste be disposed of (describe)?

A Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The Waste Management Plan must be implemented throughout the operational phase.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Ubuntu municipality has three unregistered landfill sites that situated are in the main urban centres of Richmond, Loxton and Victoria West. The sites are managed by the Municipality but due to financial and personal constraints the sites have a history of mismanagement (Integrated Waste Management Plan Ubuntu LM 2017). As part of the ongoing upgrading of services the LM has conducted feasibility studies for the construction of a new landfill site in Victoria West and Loxton along with the intention of upgrading the current existing sites.

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	~~YES~~	**NO**

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	~~YES~~	**NO**

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	~~YES~~	**NO**
If YES, what estimated quantity will be produced per month?	~~m^3~~	
Will the activity produce any effluent that will be treated and/or disposed of on site?	~~YES~~	**NO**

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	~~YES~~	**NO**

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	~~YES~~	**NO**
If YES, is it controlled by any legislation of any sphere of government?	~~YES~~	**NO**

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

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

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

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

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

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	~~YES~~	**NO**

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	**YES**	~~NO~~
If YES, is it controlled by any legislation of any sphere of government?	**YES**	~~NO~~

Describe the noise in terms of type and level:

The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters.

Construction activity would result in noise, disturbance and other impacts that result from traffic movement and general construction activities. The construction of roads, turbine hard-stands, roads and laydown areas will result in elevated levels of both noise and activity.

The proposed Soutrivier South OHL will not produce noise during operation.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

~~Municipal~~	~~Water board~~	~~Groundwater~~	~~River, stream, dam or lake~~	**Other**	~~The activity will not use water~~

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	~~litres~~	
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	**YES**	~~NO~~
If YES, please provide proof that the application has been submitted to the Department of Water Affairs.		

Please note that General Authorisations (GAs) and WULAs are only submitted to DWS for authorisation once a wind energy facility has been granted preferred bidder status. Should Soutrivier South WEF be granted preferred bidder status then WULAs will be submitted for consideration by the DWS.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

None

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

None

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): **A**

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? **YES** ~~NO~~

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Northern Cape Province
District Municipality	Pixley Ka Seme District Municipality
Local Municipality	Ubuntu Local Municipality
Ward Number(s)	Ward 3
Farm name and number	Farm 197
Portion number	RE/197
SG Code	C08000000000019700000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agriculture

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? **YES** ~~NO~~

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Figure 8: Soutrivier South OHL elevation profile West to East

Alternative S1:

Flat	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

Alternative S2 (if any):

~~Flat~~	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

Alternative S3 (if any):

~~Flat~~	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	**x**
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain		2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Dolomite, sinkhole or doline areas	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Seasonally wet soils (often close to water bodies)	**YES**	~~NO~~	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Dispersive soils (soils that dissolve in water)	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Soils with high clay content (clay fraction more than 40%)	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~

Any other unstable soil or geological feature	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~
An area sensitive to erosion	~~YES~~	**NO**	~~YES~~	~~NO~~	~~YES~~	~~NO~~

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition~~E~~	~~Natural veld with scattered aliens~~~~E~~	~~Natural veld with heavy alien infestation~~~~E~~	~~Veld dominated by alien species~~~~E~~	~~Gardens~~
~~Sport field~~	~~Cultivated land~~	~~Paved surface~~	~~Building or other structure~~	~~Bare soil~~

If any of the boxes marked with an "~~E~~ "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

The greater Nama-Karoo Biome of which the project area forms part of, is the third largest biome in South Africa, covering approximately 20.5% of the country. It stretches across the central plateau of the western half of the country. It is classified as semi-arid with the majority of vegetation being deciduous plants, low shrubs and grasses.

The Pixley Ka Seme District Municipality is located towards the Eastern extent of the Nama- Karoo Biome and is in itself a unique biodiversity area. The area around the project site is mostly rural and these areas are dominated by natural vegetation that, although classified as hardy due to the limited rainfall that supports it, can be sensitive and slow to recover and rehabilitate if not managed suitably.

Nama-Karoo covers 87% of the area in the Pixley Ka Seme District and forms the transition area between the Cape flora area to the south and the tropical savanna areas in the north. Many of the plant species of the Nama-Karoo also occur in the savanna, grassland, succulent Karoo, and fynbos biomes.

Mucina and Rutherford (2006) developed the National Vegetation map as part of a South African National Biodiversity Institute (SANBI) funded project. According to the SANBI Vegetation Map of the Soutrivier South OHL site and surrounding areas, the project area falls within the Upper Karoo Hardeveld and Eastern Upper Karoo.

<u>Upper Karoo Hardeveld</u>
This vegetation type is found throughout the Northern, Western and Eastern Cape Provinces and is characterised by discrete areas of slopes and ridges. This unit is generally found between 1 000–1 900 masl. The Steep slopes of these koppies and ridges are often covered with large boulders and stones which supports sparse dwarf Karoo scrub along with drought-tolerant grasses of genera such as Aristida, Eragrostis and Stipagrostis. (Mucina and Rutherford, 2006) Upper Karoo Hardeveld is

classified as LEAST THREATENED with a conservation target of 21%. There is only approximately 3% statutorily conserved in Karoo National Park and Karoo Nature Reserve. While this is one of the richer floras found within the Nama Karoo Biome its only forms a small part of the project site.

Eastern Upper Karoo

The Eastern Upper Karoo vegetation type covers the entire project site and consists of flats and gently sloping plains. These areas are often interspersed with the koppies and ridges of the Upper Karoo Hardeveld as described above. The flora is dominated by dwarf microphyllous shrubs with typical white grasses of the genera Aristida and Eragrostis. Grass cover is seasonal and becomes more prominent after heavy rainfall (generally from late autumn to summer). This vegetation type is considered LEAST THREATENED with a conservation target of 21%. There are however statuary conservation targets within a number of National Parks and protected areas.

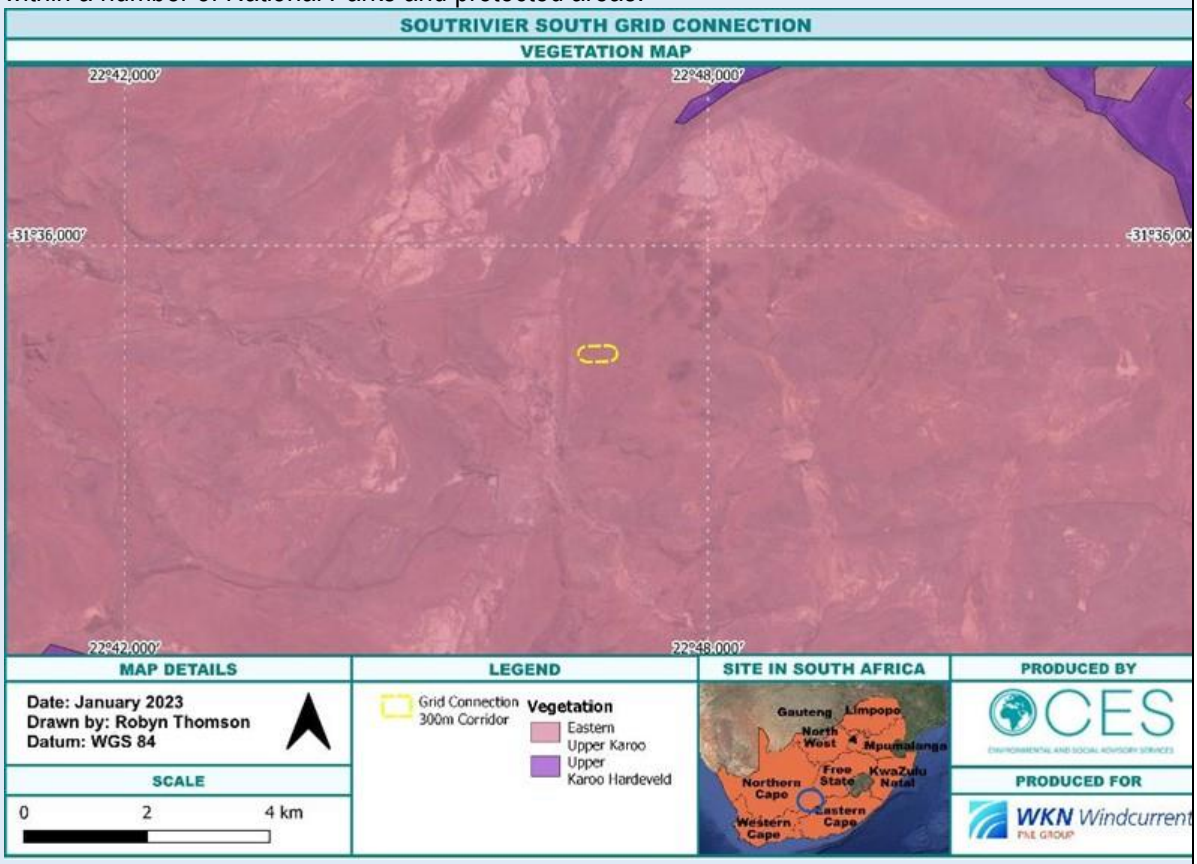


Figure 9: SANBI Vegetation Map of the Soutrivier South OHL site and surrounding areas.

Northern Cape Critical Biodiversity Areas

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. The CBAs for each province have been compiled based on extensive biological data as well as input from key stakeholders. While the CBAs are a high-level reflection of the conditions expected it is imperative that the actual status of the environment be determined. The project area is comprised of CBA 1 and CBA 2.

Critical Biodiversity Area 1 (CBA 1)

CBA 1 designated areas are those that have been identified as priority areas to be retained in order to meet conservation targets. The land use guidelines for CBA 1 designated areas recommend no further development. The designation may not necessarily be based on the condition of the habitat, species composition, ecological connectivity or overall ecological value since it is largely based on a statistical analysis process.

Critical Biodiversity Area 2 (CBA 2)
As for above, however these areas are deemed to be degraded but deemed priority areas. The land use recommendations for CBA 2 designated areas are broadly speaking restore and maintain to meet conservation targets. Since available area within the site boundaries that is not categorised as CBA 1 or CBA 2 is limited and inadequate, the most suitable or least risky area for utilisation will be the CBA 2 designated areas.

It is the conclusion of this terrestrial biodiversity assessment that the proposed activity can be constructed within acceptable terrestrial biodiversity impact limits providing the recommended mitigation actions are adhered to.

The implementation of the management actions relating to flora and fauna as well erosion and stormwater management and post construction rehabilitation, including weed and alien invasive plant management, will minimise biodiversity impacts to acceptable levels. Habitat mapping has largely allowed the more sensitive areas (such as dolerite ridges, riverine and alluvial areas) to be avoided.

Due to the nature of the activity, the terrestrial biodiversity impacts will be permanent for the turbine footprints, substations and access roads, but temporary for the laydown areas, construction camps, OHL and jeep tracks. Portions of the site that are disturbed temporarily during construction will likely revegetate to a pre-construction state with correct stripping and replacement of topsoil. Grassy or weedy vegetation generally will rehabilitate naturally without specific techniques on completion, provided stripped topsoil is not left for a significant time period before replacement. Areas to be used for temporary laydown/construction areas must be sited to avoid any of the high sensitivity and No-Go areas as outlined in this report.

No infrastructure having a sizable footprint (i.e. substation) is located within any High or Very high sensitivity areas. A few OHL pylons and jeep tracks within these areas is unavoidable and unlikely to be significant.

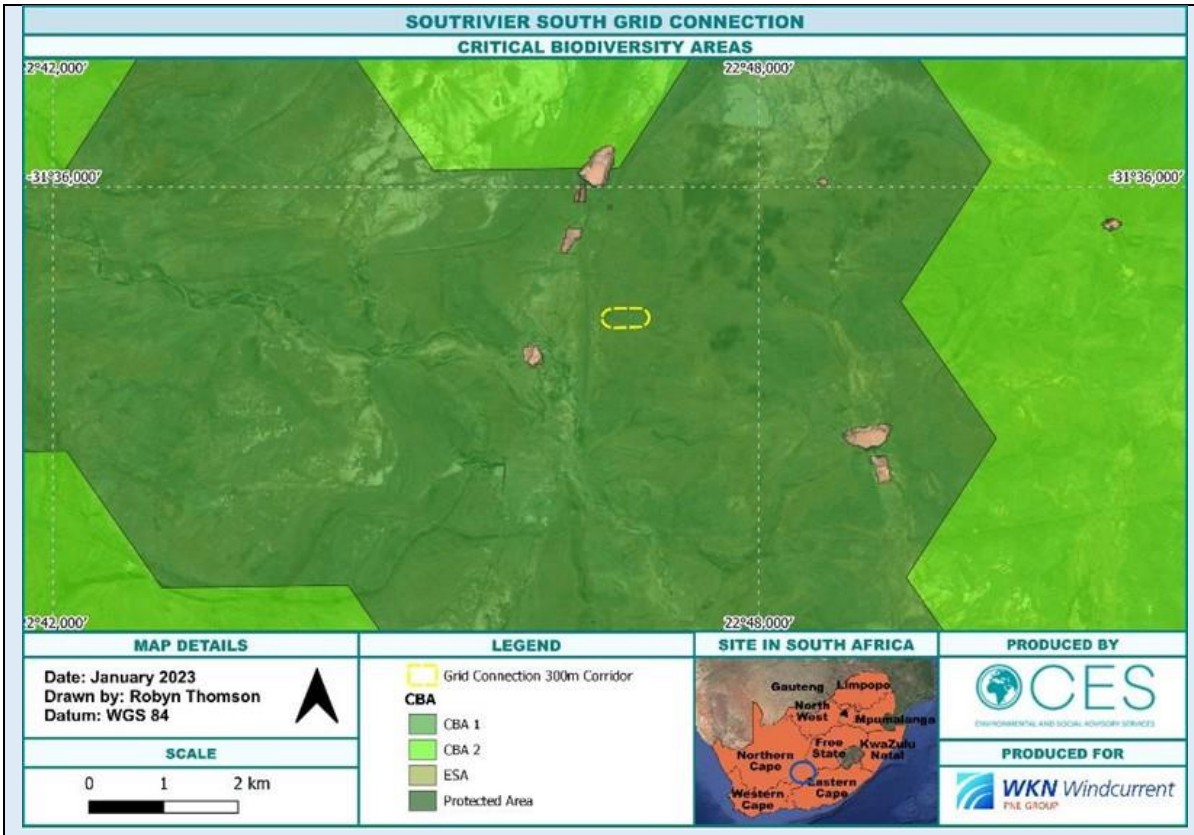


Figure 10:CBA Map of the proposed Soutrivier South OHL site and surrounding areas.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	~~YES~~	**NO**	~~UNSURE~~
Non-Perennial River	**YES**	~~NO~~	~~UNSURE~~
Permanent Wetland	~~YES~~	**NO**	~~UNSURE~~
Seasonal Wetland	~~YES~~	**NO**	~~UNSURE~~
Artificial Wetland	**YES**	~~NO~~	~~UNSURE~~
Estuarine / Lagoonal wetland	~~YES~~	~~NO~~	~~UNSURE~~

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

According to the desktop assessment, no wetlands are present within 500 m of the project boundary. No rivers are found to occur within 32 m of the project area, and no drainage lines will be impacted by the proposed Soutrivier South OHL.

However, due to the typically arid conditions of the region, additional indicators, as provided by Day et al.(2010) were utilised. Whilst the presence of "vegetation typically adapted to life in saturated soil" under "normal circumstances" is the key determinant in the definition of a wetland according to the National Water Act, 1998 (Act 36 of 1998), such features are not always present in wetlands in arid

to semi-arid environments such as the Northern Cape (based on experience within the region). The general surrounding landscape in terms of the freshwater features identified within the general investigation area and vegetation type of the local area was noted to be uniform, presenting a transition between upper foothill to lower foothill drainage systems connected to larger river systems downstream. The freshwater features identified during the site assessment were thus categorised according to their dominant characteristics, primarily topography, vegetation and soil characteristics.

The freshwater features identified to be traversed by the proposed powerline comprise of smaller drainage lines and minor tributaries (that drain the surrounding hilltops), and larger tributaries and rivers that are positioned within the lower gradient; these freshwater features can be best described as fluvial features associated with the Sout, Kookfonteinspruit, Tierhoekspruit, Stilfonteinspruit and Brak River systems. Most of these freshwater features are episodic (drainage lines and minor tributaries) to ephemeral (larger tributaries and rivers) with relatively scarce rainfall events causing short-lived periods of flow. No wetlands were identified to be traversed by the proposed powerline, nor were any identified within the investigation areas.

Artificial impoundments were also identified within the investigation area, including instream artificial impoundments associated with the identified freshwater features. However, these were not assessed due their artificial nature.

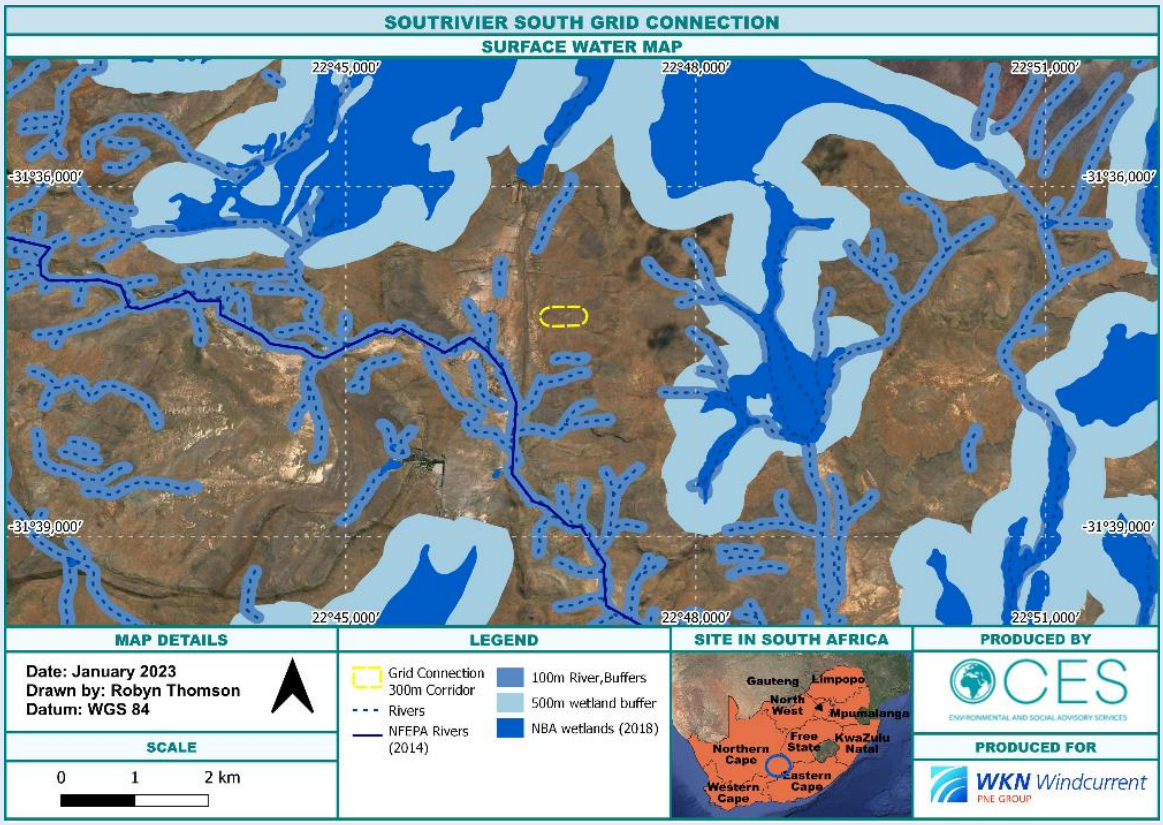


Figure 11: Surface Water Map of the Soutrivier South OHL site and surrounding areas.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	~~Dam or reservoir~~	~~Polo fields~~
~~Low density residential~~	~~Hospital/medical centre~~	~~Filling station~~ ~~H~~
~~Medium density residential~~	~~School~~	~~Landfill or waste treatment site~~
~~High density residential~~	~~Tertiary education facility~~	~~Plantation~~
~~Informal residential~~	~~Church~~	**Agriculture**
~~Retail commercial & warehousing~~	~~Old age home~~	**River, stream or wetland**
~~Light industrial~~	~~Sewage treatment plant~~ ~~A~~	~~Nature conservation area~~
~~Medium industrial~~ ~~AN~~	~~Train station or shunting yard~~ ~~N~~	~~Mountain, Koppie or ridge~~
~~Heavy industrial~~ ~~AN~~	~~Railway line~~ ~~N~~	~~Museum~~
~~Power station~~	~~Major road (4 lanes or more)~~ ~~N~~	~~Historical building~~
~~Office/consulting room~~	~~Airport~~ ~~N~~	~~Protected Area~~
~~Military or police base/station/compound~~	~~Harbour~~	~~Graveyard~~
~~Spoil heap or slimes dam~~ ~~A~~	~~Sport facilities~~	~~Archaeological site~~
~~Quarry, sand or borrow pit~~	~~Golf course~~	~~Other land uses (describe)~~

Agricultural land directly occupied by the development infrastructure will become restricted for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime. The small and widely distributed nature of the agricultural footprint of the facility means that only an insignificant proportion of the available agricultural land is impacted in this way. The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential.

Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads. Soil erosion is completely preventable. The storm water management that will be an inherent part of the road engineering on site and standard, best practice erosion control measures recommended and included in the EMPr, are likely to be effective in preventing soil erosion. Loss of topsoil can result from poor topsoil management during construction related excavations.

Disturbances of soil leading to potential impacts to the freshwater feature(s) and increased sediment runoff from the construction site to the freshwater feature(s), in turn leading to altered freshwater habitat. Altered runoff patterns, leading to increased erosion and sedimentation of the receiving freshwater features down gradient of the development. Dust pollution during construction which may impact on water quality (if surface water is present).

If any of the boxes marked with an "N "are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	**YES**	~~NO~~
Core area of a protected area?	~~YES~~	**NO**
Buffer area of a protected area?	~~YES~~	**NO**
Planned expansion area of an existing protected area?	~~YES~~	**NO**
Existing offset area associated with a previous Environmental Authorisation?	~~YES~~	**NO**
Buffer area of the SKA?	~~YES~~	**NO**

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	~~YES~~	**NO**
	~~Uncertain~~	

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

HERITAGE IMPACT ASSESSMENT

Conclusion & Specialist Statement:

It is the opinion of the Specialist that the proposed Soutrivier South OHL connection will have a low negative cumulative impact on the heritage value of the area for the following reasons:

- The low frequency of significant archaeological resources documented in the project area and in its immediate surroundings implies low-severity short and long-term impacts on the heritage landscape.
- The significance of the landscape in terms of its heritage is bound not to change during the course of construction, operation and decommissioning of the project.
- It should be noted that archaeological knowledge and the initiation of research projects into significant archaeological sites often result from Heritage Impact Assessments conducted for developments.
- Provided that significant archaeological sites are conserved and that appropriate heritage mitigation and management procedures are followed, the cumulative impact of development can be positive.

Impacts:
In terms of heritage potential, archaeological resources are abundant in the surroundings of Victoria West where the project landscape holds the entire range of the Stone Age sequence including ESA, MSA and LSA materials. In addition, the landscape includes a Colonial frontier including signs of historical farming and battlegrounds.

Mitigation Measures:
Cognisant of the above impacts, the following recommendations are made based on general observations in the proposed Soutrivier South OHL Project area:

- Stone Age remains occur abundantly in the project landscape where locally available raw material for the manufacture of stone tools is available in the geological setting. Most of the artefacts are probably Middle Stone Age (MSA) lithics such as blades, scrapers, chunks and cores produced on quartzite. Single possible Later Stone Age (LSA) microlithic tools were noted. Stone artefact scatters are usually located in areas with fluvial gravels along drainage lines, pans and within decomposing calcretes, rocky outcrops or ridges. Despite the high number of observations of artefacts and high densities in places, these resources are common and representative of similar scatters across widespread areas of the Karoo. The widespread but ephemeral scatters are often of low heritage value due to temporally mixed contexts and the frequent absence of faunal, organic and other cultural remains which is scattered over thousands of square kilometres of the Karoo. The Stone Age localities are not conservation-worthy and even though the resources may be destroyed during construction, the impact is inconsequential.
- Information on the layout of civil services such as access roads were made available to specialists at an advanced stage of this assessment and not all of these proposed access road alignments could be included in site investigations. It is recommended that a suitably qualified archaeologist be appointed during the Construction Phase to monitor vegetation clearing and excavation activities for the possible occurrence of archaeological material remains and features in these areas.

Considering the localised nature of heritage remains, the general monitoring of the development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.

PALAEONTOLOGICAL IMPACT ASSESSMENT

Conclusion & Specialist Statement:
The palaeontological heritage of the region between Loxton and Victoria West is currently poorly known. On the basis of desktop studies as well as a 9-day palaeontological site visit to the combined renewable energy cluster project area the geological and hence palaeontological context of all the Victoria West Cluster WEF and SEF project areas is very similar. The following conclusions and recommendations therefore apply equally to each of the component renewable energy projects:

- The renewable energy project area is underlain by potentially fossiliferous continental (fluvial / lacustrine) sediments assigned to the Lower Beaufort Group (Abrahamskraal and Teekloof Formations) of Middle to Late Permian age. Provisional palaeosensitivity mapping by the DFFE Screening Tool suggests that the majority of the area is of Very High Sensitivity. However, desktop studies as well as a recent 9-day palaeontological site visit to the combined renewable energy cluster project area show that, in practice, fossil sites (rare tetrapod skeletal remains, trackways and burrows, invertebrate burrows, plant material) are very scarce here while the majority are of limited scientific and conservation value. The scarcity of fossils here is in large part due to the very

poor levels of bedrock exposure - especially as regards potentially fossiliferous mudrock facies - as well as extensive regional thermal metamorphism of the Beaufort Group sediments by igneous intrusions. It is concluded that the palaeosensitivity of the project area is generally Low but with significant potential for unrecorded, largely unpredictable sites of high scientific and conservation value. The provisional palaeosensitivity mapping by the DFFE Screening Tool is accordingly contested in this report.

- None of the known fossil sites of scientific or conservation value lies within or close to the footprint of the proposed renewable energy facility (see palaeontological site data and maps in Appendix 1). Furthermore, most of the recorded sites will be protected within standard ecological buffer zones along drainage lines and no mitigation is recommended in their regard. Given the potential for additional but unrecorded fossil sites of scientific value within the project area, a specialist palaeontological heritage walk-down of the authorized project footprint is recommended in the Pre-Construction Phase. The Chance Fossil Finds Protocol tabulated in Appendix 2 (PIA) should be implemented during the Construction Phase. Recommended Mitigation and Management of palaeontological heritage for all of the Victoria West Cluster renewable energy projects is summarized in tabular form in Appendix 3 (PIA).

The proposed renewable energy project is not fatally flawed and there are no objections in terms of palaeontological heritage to its receiving environmental authorization. The recommended palaeontological heritage mitigation outlined below as well as summarized in the Chance Fossil Finds Protocol appended to this report (Appendix 2, PIA) should be included within the EMPr for the development.

Impacts:

Palaeontological heritage impacts due to the proposed renewable energy project are anticipated to be Low (Negative), both before and following mitigation (Table 1, PIA). A substantial and worthwhile reduction in impact significance is expected where previously unrecorded fossil sites of high scientific value are identified and mitigated in the Pre-Construction or Construction Phase. This analysis applies to the Construction Phase; significant further impacts during the Operational and De-commissioning Phases are not anticipated.

Anticipated cumulative impacts on local palaeontological heritage due to the various Victoria West WEF and SEF projects in the context of existing or proposed renewable energy projects between Loxton and Victoria West are anticipated to be Low (Negative) and to fall within acceptable limits. This assessment is based largely on the paucity of significant fossil sites recorded hitherto within the combined cluster project area and assumes that the proposed Pre-Construction and Construction Phase mitigation measures recommended for all these projects are implemented in full.

Mitigation Measures:

Despite the scarcity of recorded fossil sites in the region, the potential for further, unrecorded palaeontological sites of high scientific and conservation value within the renewable energy project area cannot be excluded. These sites are best identified and mitigated through (1) a specialist palaeontological heritage walk-down of the authorized WEF and SEF footprints in the Pre-Construction Phase and (2) the application of a Chance Fossil Finds Protocol by the ECO / ESO during the Construction Phase (See Appendix 2, PIA) which should be incorporated into the EMPrs for the development. The qualified palaeontologist responsible for mitigation work will need to apply for a Fossil Collection Permit for the Northern Cape from SAHRA. Fossil material collected must be curated, together with pertinent collection data, within an approved repository (e.g. museum or university collection). Minimum standards for PIA reports have been compiled by Heritage Western Cape (2021) and SAHRA (2013). Recommended Mitigation and Management Measures regarding palaeontological

heritage within the Victoria West Cluster project areas are summarized in tabular form in Appendix 3, PIA.

Will any building or structure older than 60 years be affected in any way?	~~YES~~	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	~~YES~~	**NO**

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Employment status refers to whether a person is employed, unemployed or not economically active. The official unemployment rate thus gives the number of unemployed as a percentage of the labour force. The labour force in its turn is the part of the 15–64-year population that's ready to work and excludes persons not economically active (scholars, housewives, pensioners, disabled) and discouraged work-seekers. It is worth noting that, in South Africa, high unemployment coincides with low economic growth.

The Northern Cape Province has an overall unemployment level of 32.4 % and youth unemployment level of 42.4%. (Regional Profile Youth Employment Northern Cape 2015). This is considerably higher than the overall official unemployment rate for South Africa which is at 25.5%.

The Pixley Ka Seme DM has an unemployment rate of 28.3% with a youthful unemployment rate (15yrs-34yrs) of 35.4%. The Ubuntu Local Municipality has an overall unemployment rate of 29.1 % as of 2011. This is down from the 34.1% recorded in 2011. While the youthful unemployment rate is at 34.8%, down from 41.5% in 2001. (Ubuntu Municipality IDP 2022/2023).

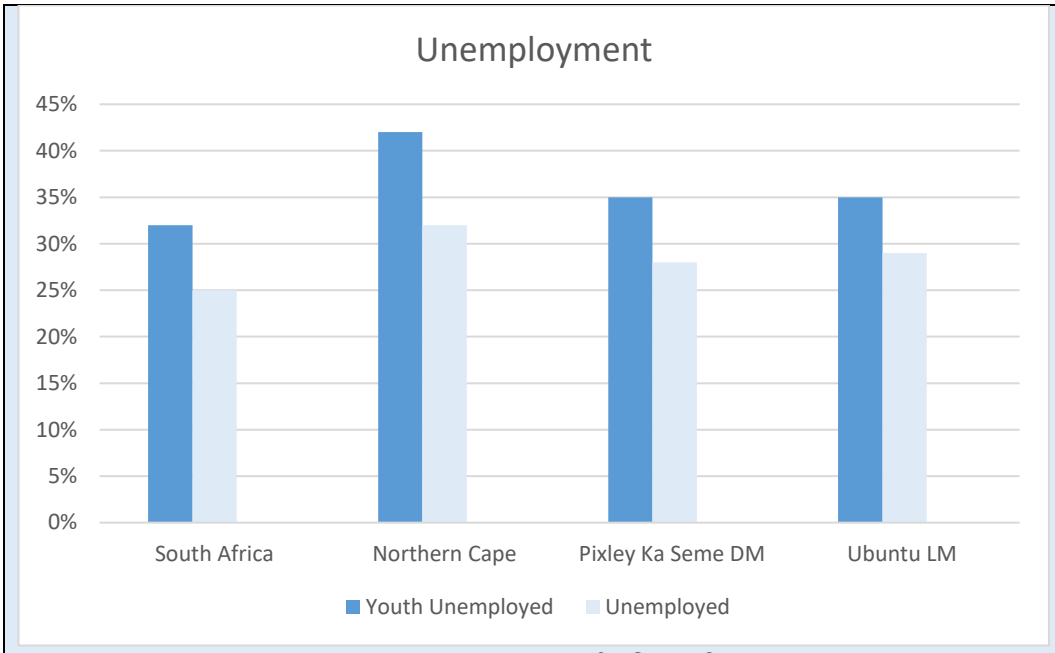
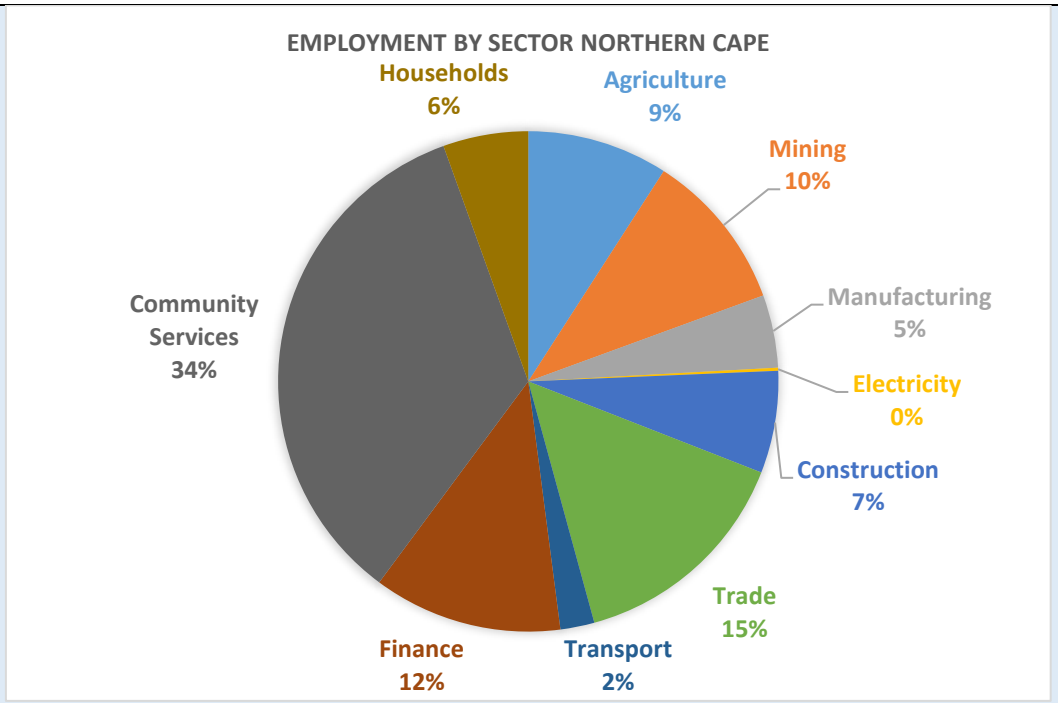


Figure 12: Youth Unemployment Percentage of RSA, NC, DM and LM

Economic profile of local municipality:

The Northern Cape has the smallest population and economy of any of the provinces. With 1.2 million residents, the Northern Cape accounted for only 2% of South Africa's population in 2014/2015, and contributed a similar share of the GDP. As of 2020 the largest sector for employment in the Northern Cape Province was the community and social services sector which accounts for 34.3% of the labour market in the Province. Thereafter, most employment opportunities were offered within the trade sector (14.8%), finance (12.2%) and mining (10%). Utilities accounted for the smallest share of people employed along with transport. (NC Socio Economic Review and Outlook 2021).

Pixley Ka Seme DM's major employers are community and social services (32%), trade (18%), which includes retail and tourism, followed by Agriculture (15%). Electricity/Utilities account for 1% of total employment in the District (NC Socio Economic Review and Outlook 2021).



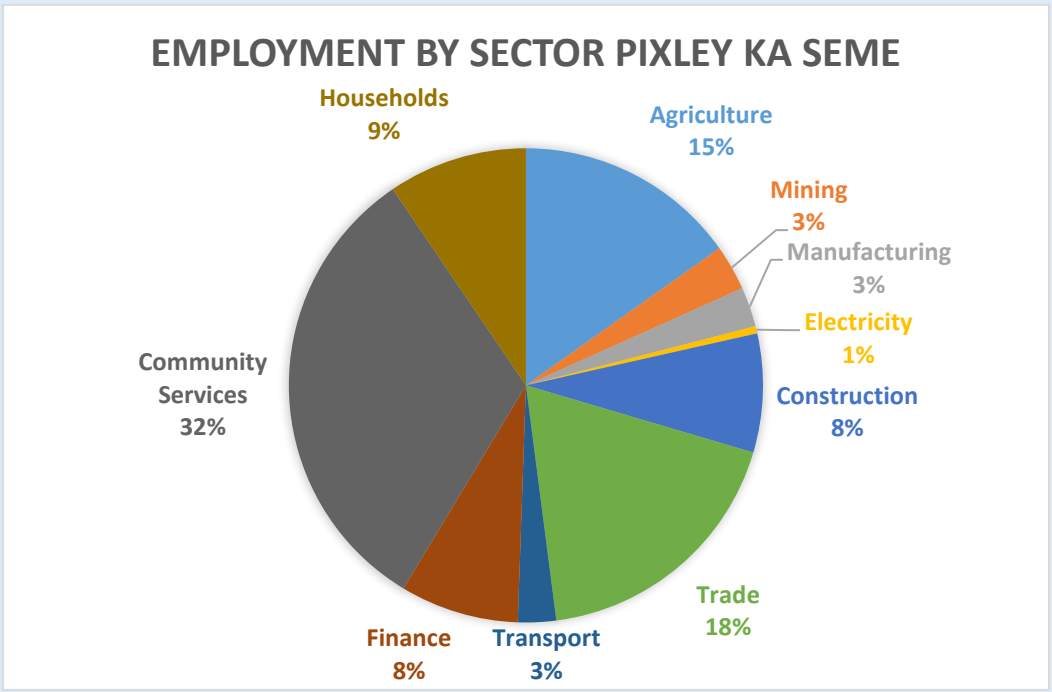


Figure 13:Employment Sectors of the Northern Cape and Pixley Ka Seme DM (NC Socio Economic Review and Outlook 2021).

Unlike the Greater Province and District, Ubuntu LM's economic sectors are dominated by trade and Agriculture. Construction, transport and finance are the next largest contributors.

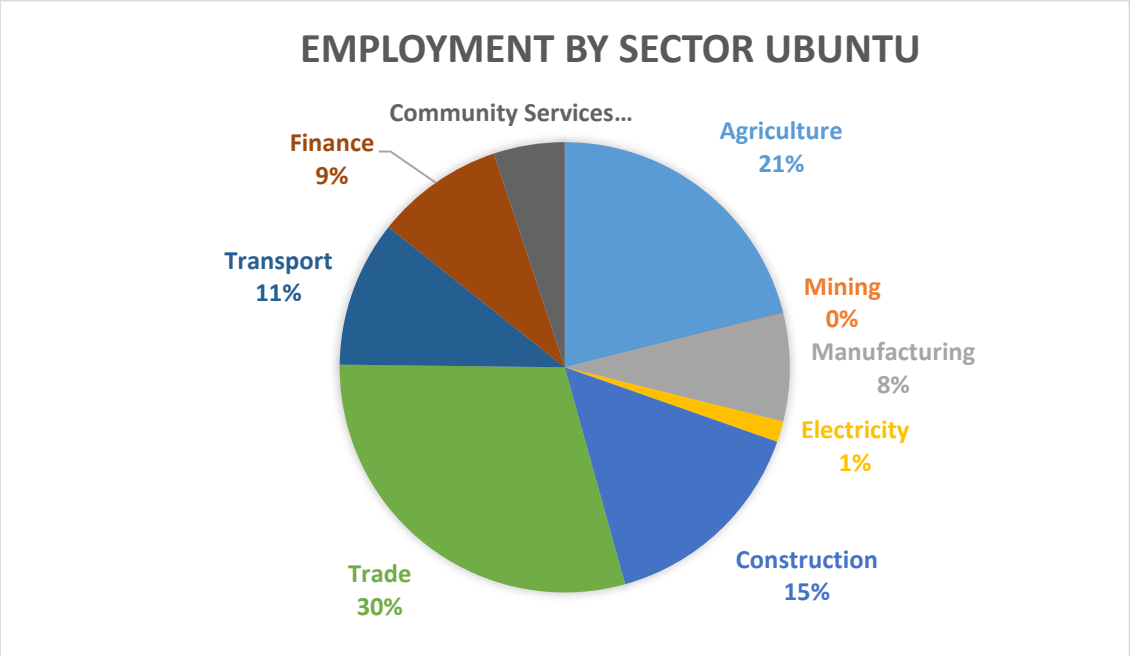


Figure 14:Economic Sectors of Ubuntu LM.

Economic Development:

As of 2018 the Pixley Ka Seme DM has a GDP of R 12.3 billion which is up from R 6.71 billion in 2008. The DM contributed 12.46% to the Northern Cape Province GDP of R 98.6 billion in 2018 increasing in the share of the Northern Cape from 12.27% in 2008. Overall, the Pixley ka Seme District Municipality contributes 0.25% to the GDP of South Africa which had a total GDP of R 4.87 trillion in 2018 (as measured in nominal or current prices). It is expected that Pixley ka Seme District Municipality will grow at an average annual rate of 0.15% from 2018 to 2023. The average annual growth rate of Northern Cape Province and South Africa is expected to grow at -0.03% and 1.50% respectively. The Pixley Ka Seme District Development Model 2018 identified three main sectors with regards to the main drivers of the economy which are discussed below.

A) Primary Sector

The primary sector consists of two broad economic sectors namely the mining and the agricultural. Between 2008 and 2018, the agriculture sector experienced the highest positive growth with an average growth rate of 14.3%. The mining sector reached its highest point of growth of 8.7% in 2013. The agricultural sector experienced the lowest growth for the period during 2011 at -12.6%, while the mining sector reaching its lowest point of growth in 2009 at -11.8%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period.

B) Secondary Sector

The secondary sector consists of three broad economic sectors namely the manufacturing, electricity, and the construction sector. In 2010 the manufacturing sector experienced the highest positive growth with a growth rate of 7.6%. The construction sector reached it s highest growth in 2009 at 11.8%. The electricity sector experienced the highest growth in 2018 at 2% while it recorded the lowest growth of -5.7% in 2013.

C) Tertiary Sector

The tertiary sector consists of four broad economic sectors namely the trade, transport, finance and the community services sector. The trade sector experienced the highest positive growth in 2010 with a growth rate of 4.3% while the transport sector reached its highest point of growth in 2008 at 3.9%. The finance sector experienced the highest growth rate in 2008 when it grew by 5.9%. With regards to the community services sector the highest positive growth was experienced in 2008 with 6.6%.

Independent Power Production Projects:

The Northern Cape is in a very favourable position with regards to being able to contribute to South Africa's renewable energy development. According to The Green Document as of 2018 the Northern Cape is host to 59 of the country's 112 Independent Power Producers, the most out of all the provinces.

Of the 59 projects in the Northern Cape, Photovoltaic Solar contributes approximately 43% with wind only marginally less at 40%. The remaining 17% is contributed by Concentrated Solar Power. The combined projects are responsible for a total of 3621 MW online (this excludes projects that are in early operations) with 5 592Gwh generated. (IPP Quarterly Report, December 2016). In addition to renewable energy power production and the offset of CO2 emissions, far-reaching socio-economic advantages manifest. These include procurement, enterprise development, employment creation, local equity and socio-economic development for local communities.

The IPP Quarterly Report for Northern Cape Province states that the committed procurement spent in the Province, during both construction and production, amounts to R 134.1 billion which equates to 66% of the country total. Of this, R44.7 billion (33%) has been realised. Employment remains a top priority in the Northern Cape as with the rest of South Africa. IPP investments within the Province alone have contributed to new employment opportunities for SA citizens estimated at more than 68 000 job years over the construction and operational life of the projects. This is 60% out of the total country when it comes to IPP generated job opportunities and again highlights the strategic position of the Northern Cape with regards to Renewable energy projects.

Socio-economic development (SED) and economic development (ED) expenditure under the IPPPP are focused on education and skills development, social welfare, healthcare, general administration, and enterprise development. An important focus of the IPP is to ensure that the build programme secures sustainable value for the country and enables local communities to benefit directly from the investments attracted into the area. This falls under the Socio-economic development (SED) contributions. These are focussed in five main categories; namely, education and skills development, social welfare, healthcare, general administration, and enterprise development.

Level of education:

Persons with no schooling are defined as people who never received any form of formal education. This implies illiteracy in most cases and would limit the person to perform manual labour. The importance of education is emphasized, as the education levels of a population is directly linked with that population's level of employability.

There have been positive improvements on district and local level, with the decrease in the percentage of the population that has not received schooling. A high level of dropouts, especially at primary education level, remains.

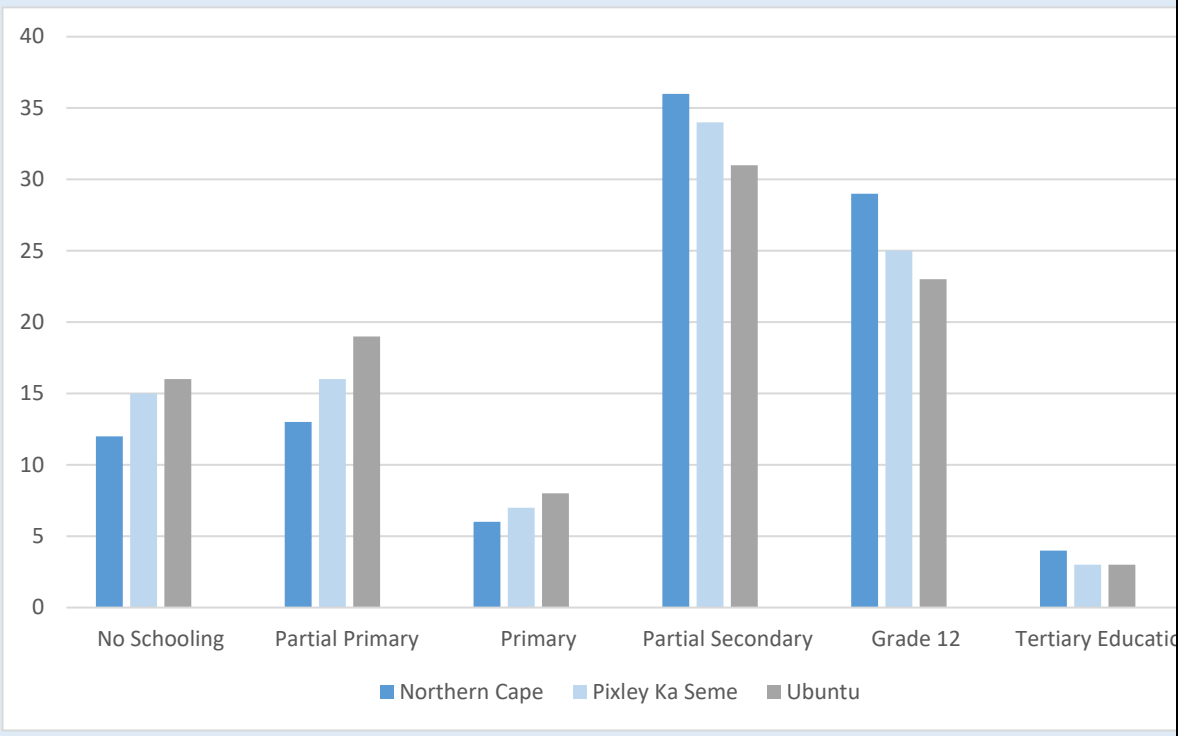


Figure 15: Education Levels in the Province, DM and LM.

In the Ubuntu LM, Census 2011 statistics show that the level of people with no education decreased from 30.6% to 16.4%. The number of Matriculants has also increased from 12.2% to 18.7%. While this is a positive trend the number of people with no education and people without a Grade 12 certificate remains a concern.

There are 12 Primary Schools, 3 High Schools, 7 Pre-schools and no Tertiary Education facilities within the Ubuntu LM. Although the latest census showed that the proportion of citizens with No Education had dropped between 2001 and 2011 the latest IDP has identified the high level of illiteracy as an ongoing issue. This is in part due to the relative lack of education facilities (as well as the lack of teachers). A push to recruit additional teachers as well as to develop additional education facilities has been proposed.

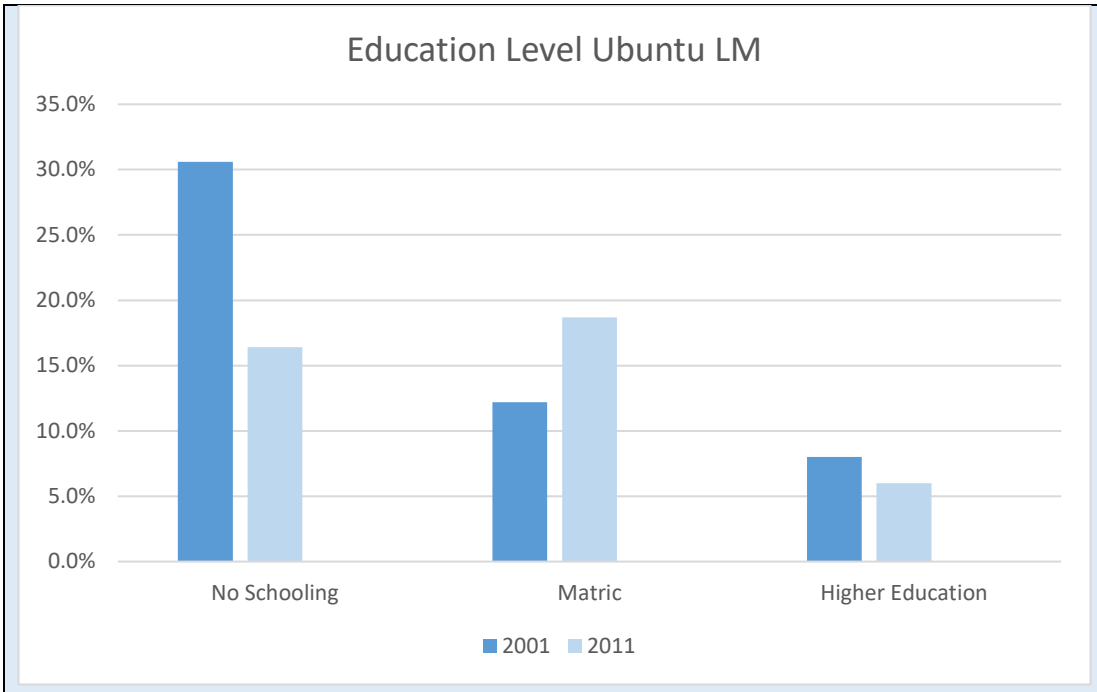


Figure 16: Education Levels in the Ubuntu Municipality 2001 and 2011.

Conversely, the number of people completing secondary school and receiving a tertiary education has actually decreased by a small margin.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	**R 5 million**	
What is the expected yearly income that will be generated by or as a result of the activity?	**R 500 million**	
Will the activity contribute to service infrastructure?	**YES**	~~NO~~
Is the activity a public amenity?	~~YES~~	**NO**
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	**22**	
What is the expected value of the employment opportunities during the development and construction phase?	**R 20 million (construction phase) R 1 million/annum (operational phase)**	
What percentage of this will accrue to previously disadvantaged individuals?	**40-60%**	
How many permanent new employment opportunities will be created during the operational phase of the activity?	**2**	
What is the expected current value of the employment opportunities during the first 10 years?	**Construction, plus eight (8) years operation = R28 million**	
What percentage of this will accrue to previously disadvantaged individuals?	**40-60%**	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	~~Ecological Support Area (ESA)~~	~~Other Natural Area (ONA)~~	~~No Natural Area Remaining (NNR)~~	<u>NORTHERN CAPE CRITICAL BIODIVERSITY AREAS</u> Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. The CBAs for each province have been compiled based on extensive biological data as well as input from key stakeholders. While the CBAs are a high-level reflection of the conditions expected it is imperative that the actual status of the environment be determined. <u>Critical Biodiversity Area 1 (CBA 1)</u> – CBA 1 designated areas are those that have been identified as priority areas to be retained in order to meet conservation targets. The land use guidelines for CBA 1 designated areas recommend no further development. The designation may not necessarily be based on the condition of the habitat, species composition, ecological connectivity or overall

				ecological value since it is largely based on a statistical analysis process. Critical Biodiversity Area 2 (CBA 2) – As for above, however these areas are deemed to be degraded but deemed priority areas. The land use recommendations for CBA 2 designated areas are broadly speaking restore and maintain to meet conservation targets. Since available area within the site boundaries that is not categorised as CBA 1 or CBA 2 is limited and inadequate, the most suitable or least risky area for utilisation will be the CBA 2 designated areas.

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	98%	The following habitats have been differentiated in the vegetation mapping, which are described in more detail below (component in bold are present on this specific component (Soutrivier Central grid connection): 1. **Karroid** – present on slopes and valleys having sandstone and mudstone derived, mostly sandy soils, most prominent vegetation community within the project area. Can be differentiated into a grassy and shrubby form at opposite end of a spectrum. 2. **Hardeveld** – resent on elevated Doleritic mountaintops, some elements extend into lower Dolerite koppies or Mpesas. 3. **Alluvial** – poorly vegetated areas occurring in flat poorly drained areas, lower lying and in upper plateaus. 4. **Riverine** – riparian and vegetation band surrounding watercourses where lower zone vegetation tends to be poorly developed and upper zone more vigorous compared to surrounding vegetation matrix. **Wetland/Pan** defined wetland or pans on flat poorly drained areas.
Near Natural	0%	

(includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	2%	Includes all cultivated areas (lands) and other transformed areas including dwellings and residences, roads and other infrastructure. Roads and tracks have not been delineated in the vegetation mapping.

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	~~Critical~~ ~~Endangered~~ ~~Vulnerable~~ Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
		YES	~~NO~~	~~UNSURE~~	~~YES~~	**NO**	~~YES~~	**NO**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Within the broad vegetation unit(s) expected on the site (Eastern Upper Karoo and Upper Karoo Hardeveld), several distinct communities can be differentiated, although the species composition is largely similar across the communities, being distinguishable by significant differences in the respective dominance of these species and biophysical characteristics. In general, low lying (valley bottom) sandy areas are characterised by abundance of grasses such as *Aristida congesta, Aristida diffusa, Sporobolus fimbriatus, Stipagrostis ciliata, Chloris virgata, Digitaria eriantha, Fingerhuthia africana, Heteropogon contortus* and *Themeda triandra*. Several shrub and herbaceous species are present but are generally sparse, but these shrubs become abundant in rocky areas such as on slopes and rocky benches, with the grasses becoming sparse. These include *Eriocephalus ericoides, Chrysocoma ciliata, Diospyros austro-africana, Euclea crispa, Rhus spp., Grewia occidentalis, Gymnosporia polyacantha, Asparagus suaveolens, Euryops empetrifolius, Felicia filifolia* and several *Helichrysum spp*.

While trees are not common it is noted that small (usually 2 –3 meters) trees including *Diospyros austro-africana, Euclea crispa subsp. Ovata and Rhus spp*. do occur, predominantly around watercourses (riparian) but also scattered across the landscape, sometimes associated with low hills. Such scattered trees, being sparse are likely to provide roosting and nesting sites for a range of species. Numerous other species including geophytic and succulent species are represented within the landscape, but composition varies across the landscape and also with altitude and substrate. Several common species are found to have a widespread distribution across the area, but others were noted to be localised often comprising a few individuals. Such species are not common and although specific identification is not complete at this preliminary stage, they are not expected to pose any significant risk to the project. Should any be found to be of elevated conservation concern, they may or may not overlap with a few turbine footprints, which may require some adjustment to layouts but is unlikely to pose a risk at a project level.

A series of overview photographs of each of the communities and/or features representative of the site are provided in the Terrestrial Biodiversity Assessment. Generally, the landscape is comprised of a series of elevated plateaus across the site that have stepped or benched slopes merging the flat bottomlands that are drained by a complex network of watercourses. Surrounding the watercourses, where flatter conditions permit, extensive sandy alluvial pans are present with low vegetation cover. These areas appear to have standing water present for limited periods after rainfall, hence they function to some extent as wetlands/pans. In addition, the upland plateaus are sometimes also flat to slightly bowl-shaped and also have alluvial pans present. The aquatic assessment will assess the aquatic sensitivity further, however in terms of terrestrial biodiversity, these alluvial pan areas will serve as important habitat for faunal species, in particular after rainfall for the short period while water is present.

The broader landscape is further intersected by numerous dolerite dykes, some of which form linear narrow inselberg ridges as well as single or clustered mesas (koppies). Most of these koppies tend to have large boulders on the top and it was noted that most have evidence of habitation by the Rock Hyrax/Dassie (*Procavia sp.*) and Red Rock Rabbit (*Pronolagus sp.*), neither being under threat. Vegetation on these koppies is notably infested with several weed species of the type having sticky seeds, most likely spread by the rabbit and rock hyrax. Vegetation is an intermediate type between Eastern Upper Karoo and Upper Karoo Hardeveld. The more extensive and elevated dolerite areas have more typical Upper Karoo Hardeveld, most being in the area surrounding the site, but extending into the site on the northern boundary of the Taaibos site and the eastern edge of the Soutrivier site. These steep mountainous areas are likely not suitable for the proposed activity.

While composition is somewhat uniform in term of species composition, there is variation across the site dependant on elevation and substrate. In general, the hills and slopes are rockier while the bottomland plains and flatter plateaus and have deeper sandy soils. Where vegetation is sparse, it is usually an indicator of temporary standing water after rainfall, giving such areas alluvial pan characteristics. While the aquatic specialist will define the aquatic processes and value, such areas are none the less important as water source areas for fauna so any impacts should be kept to the minimum as far as possible.

The following habitats have been differentiated in the vegetation mapping, which are described in more detail in the Terrestrial Biodiversity Assessment:
1.Karroid – present on slopes and valleys having sandstone and mudstone derived, mostly sandy soils, most prominent vegetation community within the project area can be differentiated into a grassy and shrubby form at opposite end of a spectrum.
2.Hardeveld – resent on elevated Doleritic mountaintops, some elements extend into lower Dolerite koppies or Mpesas.
3.Alluvial – poorly vegetated areas occurring in flat poorly drained areas, lower lying and in upper plateaus.
4.Riverine – riparian and vegetation band surrounding watercourses where lower zone vegetation tends to be poorly developed and upper zone more vigorous compared to surrounding vegetation matrix.
5.Wetland/Pan - defined wetland or pans on flat poorly drained areas.
6.Dam–man made impoundments or artificial wetlands.
7.Cultivated/Transformed – areas used currently or historically for crops and/or other hardened surfaces (roads, residences, etc.).

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	**TO BE INSERTED AFTER PPP**	
Date published		
Site notice position	**Latitude**	**Longitude**
Date placed		

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

PLEASE NOTE THAT DUE TO THE POPIA ACT, AND THE LIST BEING POPULATED BY THE EAP, ONLY FARM NAMES AND STAKEHOLDER NAMES ARE VISIBLE, NO PERSONAL INFORMATION WILL BE SHARED UNTIL CORRESPONDENCE HAS BEEN CIRULATED DURING PPP.

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
WEF LANDOWNERS		
[redacted]	RE/261	[redacted]
	RE/250	
	RE/209	
	RE/208	
	RE/199	
	RE/199	
	RE/197	
	RE/196	
	RE/195	
	RE/148	
	RE/147	
	RE/145	
	6/158	
	4/158	
	4/145	
	3/200	
	3/158	
	2/212	
	2/208	
	2/200	
	2/199	
	1/250	
	1/211	

	1/201	
	1/200	
	1/197	
GRID CONNECTION LANDOWNERS		
	RE/3	
	RE/265	
	RE/265	
	RE/249	
	RE/248	
	RE/232	
	RE/231	
	RE/229	
	RE/228	
	RE/222	
	RE/220	
	RE/213	
	RE/2	
	RE/199	
	RE/197	
	RE/195	
	RE/1	
	7/222	
	7/220	
	5/222	
	4/222	
	3/248	
	3/158	
	2/212	
	10/248	
	1/265	
	1/222	
	1/221	
	1/219	
	1/211	
	1/200	
SURROUNDING LANDOWNERS		
	RE/8	
	RE/6	
	RE/273	
	RE/269	
	RE/262	
	RE/249	
	RE/213	
	RE/212	
	RE/205	
	RE/194	
	RE/158	
	RE/152	

	RE/148
	RE/147
	7/151
	6/151
	5/207
	4/208
	4/207
	4/158
	4/151
	3/212
	3/205
	3/200
	3/145
	3/134
	2/212
	2/211
	2/208
	2/205
	2/204
	2/200
	1/208
	1/207
	1/200
	1/153

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

THE ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES WILL BE UPDATED IN THIS REPORT AND WILL DETAIL THE MAIN ISSUES RECEIVED AND THE RESPONSES THERE TO. THIS REPORT WILL BE INCLUDED IN THE FINAL BAR AND INCLUDES RESPONSES TO COMMENTS RECEIVED THROUGHOUT THE PROCESS.

Summary of main issues raised by I&APs	Summary of response from EAP

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

PLEASE NOTE THAT DUE TO THE POPIA ACT, AND THE LIST BEING POPULATED BY THE EAP, ONLY FARM NAMES AND STAKEHOLDER NAMES ARE VISIBLE, NO PERSONAL INFORMATION WILL BE SHARED UNTIL CORRESPONDENCE HAS BEEN CIRULATED DURING PPP.

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Forestry, Fisheries and the Environment (DFFE)					
Department of Forestry, Fisheries and the Environment (DFFE): Biodiversity & Conservation					
Department of Nature Conservation and Environmental Affairs (Northern Cape)					
Department of Water & Sanitation DWS (Northern Cape)					
Department of Mineral Resources (DMR)					
Northern Cape Tourism					
Department of Energy					
Eskom					
Eskom: Renewable Energy					
Pixley Ka Seme District Municipality: Environmental Officer					

Ubuntu Local Municipality: Acting Municipal Manager	[redacted]
Ubuntu LM Ward 5 Councillor	
Ubuntu LM Ward 6 Councillor	
SALGA Northern Cape	
South African Heritage Resources Agency (SAHRA)	
Telkom	
Sentech	
Vodacom	
MTN	
Cell C	
Civil Aviation Authority (CAA)	
Air Traffic and Navigation Services (ATNS)	
Roads (SANRAL/Public Works)	
BirdLife South Africa	
BirdLife South Africa: Birds and Renewable Energy Manager	
BirdLife South Africa: Policy & Advocacy Manager	
Endangered Wildlife Trust: CEO	
Endangered Wildlife Trust: EIA	
Endangered Wildlife Trust: Head of Conservation Science	
Endangered Wildlife Trust: Wildlife & Energy Programme	
SA Weather Service	
SARAO/SKA	
The South African Bat Assessment	

Association (SABAA)	[redacted]

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

PLANNING & DESIGN PHASE

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
ENVIRONMENTAL LEGAL AND POLICY COMPLIANCE	***Direct impacts: Failure to adhere to existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, guidelines and legislation. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.***	LOW-	*Ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy.* *These must include (but not restricted to):* ▪ *Local and District Spatial Development Frameworks* ▪ *Local Municipal bylaws* *In addition, planning for the construction and operation of the proposed energy facility must consider available best practice guidelines.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact would be high as there are a range of renewable energy facilities proposed within the greater area. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
STORMWATER MANAGEMENT AND EROSION	~~***Direct impacts:***~~		▲ *Structures must be located at least 32m away from identified drainage lines.* ▲ *A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of water flow.* ▲ *The plan must also include management mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by considering the applicability of contouring, etc.* ▲ *An Erosion Management Plan must be designed and implemented to ensure minimal impact.*
	Indirect impacts: The introduction of roads and impermeable areas could increase rates of run-off and therefore the risk of localised flooding.	LOW-	
	Cumulative impacts: Cumulative impact would be moderate as there are a range of activities, including roads, which contribute to erosion at localised levels. However, these activities are not prevalent in the area.	LOW-	
MANAGEMENT OF GENERAL WASTE	***Direct impacts: Inappropriate planning for management and disposal of waste e.g. storage disposal could result in surface and ground water contamination.***	LOW-	▲ *Develop and implement a Waste Management Plan for handling on site waste.* ▲ *Designate an appropriate area where waste can be stored before disposal.* ▲ *General Waste must be disposed of at a registered landfill site.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be high should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
	~~***Direct impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
SCHEDULING OF CONSTRUCTION	***Indirect impacts: Construction scheduling that does not take into account the seasonal requirements of the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts such as excessive sediment mobilization, etc.***	LOW-	*Wherever possible, construction activities must be undertaken during the driest part of the year to minimize downstream sedimentation due to excavation, etc.* *When not possible, suitable stream diversions structures must be used to ensure that rivers/streams are not negatively impacted by construction activity.*
	Cumulative impacts: Cumulative impact would be high should the Taaibos and Soutrivier WEF clusters be constructed at the same time. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
No-go option			
ENVIRONMENTAL LEGAL AND POLICY --- COMPLIANCE STORMWATER MANAGEMENT AND EROSION --- MANAGEMENT OF GENERAL WASTE --- SCHEDULING OF CONSTRUCTION	~~***Direct impacts:***~~		No-go alternative would result in no impact related to the proposed activities as the site does not currently experience issues regarding the proposed activities.
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

CONSTRUCTION PHASE – GENERAL IMPACTS

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
NUISANCE DUST	***Direct impacts: Dust is likely to be a potential nuisance due to the construction activities.***	LOW-	*Fugitive/nuisance dust must be reduced by implementing one of or a combination of the following:* *Damping down of un-surfaced and un-vegetated areas;* *Retention of vegetation where possible;* *Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;* *A speed limit of 40km/h must not be exceeded on dirt roads;* *Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact would be moderate should the Taaibos and Soutrivier WEF clusters be constructed during the same period. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard..	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
FIRE	***Direct impacts: Risk of runaway fires from construction activities related to having people on site, such as cooking, smoking or burning of vegetation might lead to the burning of surrounding vegetation.***	MODERATE-	*There must be no burning of construction waste or debris onsite.* *Cooking and burning of vegetation is not permitted on site.* *Smoking on site must be confined to a designated area in the vicinity of the site office which must be equipped with the necessary fire extinguishers.* *Develop and implement a Fire Management Plan.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact would be moderate should the Taaibos and Soutrivier WEF clusters be constructed during the same period. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE-	
STORMWATER MANAGEMENT	***Direct impacts: Sediment is likely to be created during construction. This could be washed off into the nearby drainage line e.g. during the excavation of foundations, the laying of access roads within the site, digging of cable runs and soil stripping and stockpiling to create foundations and temporary areas of hard-standing, such as the construction camp.***	LOW-	*Develop and implement a Waste Management Plan for handling on site waste.* *Designate an appropriate area where waste can be stored before disposal.* *General Waste must be disposed of at a registered landfill site.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact would be high should the Taaibos and Soutrivier WEF clusters be constructed during the same period. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	the EMPrs will be prepared to the same standard.		
DEGRADATION OF DRAINAGE LINES FROM EARTHWORKS	***Direct impacts: Unplanned construction activities or earthworks that occur close to onsite drainage lines could cause adverse impacts such as soil erosion, siltation, and blockage of the drainage line.***	LOW-	*There must be no earthworks, apart from roadworks inclusive of culverts, within 32m of the drainage lines to avoid contamination of water sources.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact would be high as there are a range of activities, including roads, substations, overhead lines and neighbouring WEFs which could contribute to the degradation of drainage lines at localised levels if not properly managed during construction. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
MANAGEMENT OF GENERAL WASTE	***Direct impacts: Littering by construction workers could cause surface and ground water pollution.***	LOW-	*A Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The Waste Management Plan must be explained to all employees as part of the environmental induction training.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be high should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
HAZARDOUS SUBSTANCES	***Direct impacts: Onsite maintenance of construction***	LOW-	*The storage of fuels and hazardous materials must be located away*

Activity	Impact summary	Significance	Proposed mitigation
	vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities.		*from sensitive water resources.* • *All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area.* • *The recommendations of the Stormwater Management Plan and the Waste Management Plan must be implemented during construction.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact would be null as no other new activities, which include the use of hazardous substances are planned for this site (localised impact)	LOW-	
MANAGEMENT OF CONSTRUCTION WASTE	***Direct impacts: Waste from construction activities e.g.excess concrete and cement mixture, empty paint containers, oil containers, etc., could cause pollution of ground and surface water when they come into contact with run-off water.***	LOW-	• A Waste Management Plan for the project must be developed and implemented in the construction phase. • All waste must be disposed of at an appropriately licensed landfill site. • All construction materials must be stored in a central andsecure location with controlled access with an appropriate impermeable surface. • The recommendations of the Stormwater Management Plan must be implemented to mitigate the impacts of run-off water on pollution.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard	LOW-	
WATER QUALITY	***Direct impacts: Wet concrete is highly alkaline. This could result in flash kills of macroinvertebrates and fish species in the vicinity. Soil***	LOW-	• No concrete mixing will take place within 32m of any watercourse.

Activity	Impact summary	Significance	Proposed mitigation
	erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water. Soil erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water.		▲ The concrete batching plant must be clearly demarcated, and no sprawl must be tolerated.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be high should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
INFILLING/ EXCAVATION IN A WATERCOURSE	***~~Direct impacts:~~***		▲ Stockpiled excavated material must not be stored within 32m of a watercourse. ▲ Stockpile areas must be suitably bunded to prevent waterborne erosion of exposed soils where there is a likelihood that the soils will be washed into a watercourse. ▲ Materials used for infilling must be suitably stabilized to ensure that scour and erosion of the existing
	Indirect impacts: Excavated material stockpiles may increase sediment loads in watercourses during rainfall events. Materials used for the infilling of watercourses in order to construct water crossings may not be compatible with the surrounding bed/banks, etc., which couldchange the characteristics of the watercourse	LOW-	
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associatedinfrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard		bed/banks is exacerbated
DISPOSAL OF SPOIL MATERIAL	***Direct impacts: Incorrect disposal of subsoil/spoil material could result in significant loss of a useful resource.***	LOW-	▲ Subsoil cannot be disposed of onsite without the appropriate Waste License in terms of the NEMA: Waste Act. ▲ Spoil could be used to rehabilitate open borrow pits or erosion features. ▲ Disposal of spoil material to a registered landfill mustbe the last option. ▲ No spoil stockpiles will be allowed to remain onsite once construction activities have ceased
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
No-go option			
FIRE	***No-go alternative would still retain a fire risk as fires are a natural occurrence.***	MODERATE-	N/A
STORMWATER MANAGEMENT	***No-go alternative would still present a level of stormwater runoff and erosion due to current farming activities and existing impermeable surfaces.***	LOW-	N/A
NUISANCE DUST DEGRADATION OF DRAINAGE LINES FROM EARTHWORKS MANAGEMENT OF GENERAL WASTE HAZARDOUS SUBSTANCES MANAGEMENT OF CONSTRUCTION WASTE WATER QUALITY INFILLING/ EXCAVATION IN A WATERCOURSE DISPOSAL OF SPOIL MATERIAL	~~***Direct impacts:***~~ ~~***Indirect impacts:***~~ ~~***Cumulative impacts:***~~	N/A	No-go alternative would result in no impact related to the proposed activities as the site does not currently experience issues regarding the proposed activities

CONSTRUCTION PHASE – SPECIALIST IMPACTS

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
AGRICULTURAL IMPACT ASSESSMENT			

Activity	Impact summary	Significance	Proposed mitigation
OCCUPATION OF LAND	***Direct impacts: Agricultural land directly occupied by the development infrastructure will become restricted for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime. The small and widely distributed nature of the agricultural footprint of the OHL means that only an insignificant proportion of the available agricultural land is impacted in this way.***	LOW-	*The amount of agricultural land loss caused by the project is well within the allowable development limits prescribed by the agricultural protocol to ensure appropriate conservation of agricultural production land. The footprint of the development is approximately eight times smaller than what the development limits allow.*
	~~Indirect impacts:~~		
	Cumulative impacts: The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential.	LOW-	
SOIL EROSION AND DEGRADATION	***Direct impacts: Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads. Soil erosion is completely preventable. The storm water management that will be an inherent part of the road engineering on site and standard, best practice erosion control measures recommended and included in the EMPr, are likely to be effective in***	LOW-	*The risk of a loss of agricultural potential by soil degradation can effectively be mitigated for renewable energy developments.* *Mitigation measures to prevent soil degradation are all inherent in the project design and / or are standard, best-practice for construction sites.* *A system of storm water management, which will prevent erosion, will be an*

Activity	Impact summary	Significance	Proposed mitigation
	preventing soil erosion. Loss of topsoil can result from poor topsoil management during construction related excavations.		*inherent part of the road engineering on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.* • *Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil*
	~~Indirect impacts:~~		
	Cumulative impacts: The risk for each individual development is low and the cumulative risk is also low as it can be effectively mitigated for renewable energy developments.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			over the entire surface.
AQUATIC IMPACT ASSESSMENT			
CONSTRUCTION PHASE – IMPACT ASSESSMENT OF SITE PREPARATION ACTIVITIES PRIOR TO THE CONSTRUCTION OF THE POWERLINE: Vehicular movement (transportation of construction materials)	***Direct impacts: Transportation of construction materials can result in disturbances to soil, and increased risk of sedimentation/erosion; Soil contamination and potential oil and hydrocarbon spills originating from construction vehicles; and Soil compaction leading to increased runoff and erosion within the vicinity of the freshwater feature(s).***	LOW-	▲ *It is strongly recommended that the proposed powerline support structures be located outside of the freshwater features and at least 32 m (as far as possible/feasible) from the delineated edge of a freshwater feature – this in itself is considered a mitigation measure, which entails no direct negative impacts from occurring to the freshwater features. Should the following mitigation measures (pertaining to the construction of the proposed powerline) be applied, a Low risk significance can be expected;* ▲ *It is imperative that all construction works (with specific mention of potential upgrading of any road crossings) be undertaken during the driest period of the year when the flow is very low in the freshwater features;* ▲ *Due to the accessibility of the sites, no unnecessary crossing of the freshwater features may be permitted and*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
CONSTRUCTION PHASE – IMPACT ASSESSMENT OF SITE PREPARATION ACTIVITIES PRIOR TO THE CONSTRUCTION OF THE POWERLINE: Construction of camp/contractor laydown and storage area	***Direct impacts: Exposure of soil, leading to increased runoff, and erosion, and thus increased sedimentation of the receiving freshwater features; Increased sedimentation of the freshwater feature(s), leading to smothering of vegetation associated with freshwater features; Dust pollution during construction which may***	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	impact on water quality; and Proliferation of alien and/or invasive vegetation as a result of disturbances		*it is strongly recommended that the calculated the delineated freshwater features be considered a no-go area. This will limit edge effects, erosion and sedimentation of the freshwater features during the construction phase;* • *The reaches of the freshwater features where no activities are planned (i.e., where no support structures or spanning of the powerline over the freshwater features is planned) must be considered no-go areas;* • *Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the freshwater features and their associated 32 m NEMA Zone of Regulation (ZoR);* • *Clearing of powerline servitudes of vegetation. Technically, only a very limited width strip of woody vegetation above a minimum clearance height needs to be cleared, all lower woody vegetation and other herbaceous vegetation must remain and not be cleared. Clearing of*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard	LOW-	
CONSTRUCTION PHASE – IMPACT ASSESSMENT OF SITE PREPARATION ACTIVITIES PRIOR TO THE CONSTRUCTION OF THE POWERLINE: Removal of vegetation and associated disturbances to soil	***Direct impacts: Earthworks could be potential sources of sediment, which may be transported as runoff into the downstream freshwater ecosystems; Disturbances of soil leading to potential impacts to the freshwater feature(s) and increased sediment runoff from the construction site to the freshwater feature(s), in turn leading to altered freshwater habitat; Altered runoff patterns, leading to increased erosion and sedimentation of the receiving freshwater features down gradient of the development; Dust pollution during construction which may impact on water quality (if surface water is present).***	LOW-	
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.		*the entire width of the servitude through freshwater features must not occur. Keep woody vegetation below the minimum clearance height, and no indiscriminate removal of vegetation within the servitude must occur. This is considered feasible for the freshwater features identified to be associated with the proposed powerline as they are mostly characterised by low growing shrub and graminoid vegetation species;* • *Removed vegetation outside the delineated freshwater features must be stockpiled outside of the delineated boundary of a freshwater feature. The footprint areas and height of these stockpiles must be kept to a minimum; and* • *The removed (indigenous) vegetation must be reinstated after the construction phase. However, alien/invasive vegetation species present and removed must not be reinstated but must be disposed of at a registered garden refuse site and may*

Activity	Impact summary	Significance	Proposed mitigation
			not be burned or mulched on site.
INSTALLATION OF THE SUPPORT STRUCTURES (FURTHER THAN 32 M BUT WITHIN 100 M OF THE DELINEATED FRESHWATER FEATURES) AND SPANNING OF THE PROPOSED POWERLINE: Excavation of foundation pits for the support structures leading to stockpiling of soil	***Direct impacts: Earthworks could be potential sources of sediment, which may be transported as runoff into the downstream freshwater areas; Disturbances of soil leading to potential impacts to freshwater vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater habitat; Altered runoff patterns, leading to increased erosion and sedimentation of the receiving freshwater features down gradient of the development; Dust pollution during construction which may impact on water quality (if surface water is present).***	LOW-	*Stringing of the line (i.e., pulling the cables into place) needs to be done manually across the lower foothill tributary and must not entail the movement of machinery across the feature, unless as part of an approved existing access track / road across the feature;* • *The construction footprint and period must be kept as small and as short as possible, respectively; and construction activities within the delineated freshwater features must be avoided;* • *Only a 5 m zone of disturbance / construction right of way must be permitted to be disturbed. This 5 m construction right of way will limit construction vehicles/personnel to disturb the surrounding area to freshwater features, should the support structures be located in close proximity to a freshwater feature;* • *Protect exposed stockpiles (if necessary) from wind and limit the time in which the stockpiled soil is exposed, by covering with a suitable geotextile*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
INSTALLATION OF THE SUPPORT STRUCTURES (FURTHER THAN 32 M BUT WITHIN 100 M OF THE DELINEATED	***Direct impacts: Potential contamination of surface water (if present). Earthworks could be potential sources of sediment, which may be transported as runoff into***	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
FRESHWATER FEATURES) AND SPANNING OF THE PROPOSED POWERLINE: Potential movement of construction equipment and personnel within the freshwater features	***the downstream freshwater areas; Disturbances of soil leading to potential impacts to freshwater vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater habitat; Altered runoff patterns, leading to increased erosion and sedimentation of the receiving freshwater features down gradient of the development; Dust pollution during construction which may impact on water quality (if surface water is present).***		*such as hessian sheeting;* • *Excavation of foundation pits for the support structures may result in loose sediments within the landscape, specifically if works are undertaken during a period of rainfall (if applicable);* • *During excavation activities, soil must be stockpiled upgradient of the excavated area. Mixture of the lower and upper layers of the excavated soil must be kept to a minimum. This soil must be used to backfill the pits (support structures), immediately after installation of the support structures and/or other infrastructure;* • *Material used as bedding material (at the bottom of the excavated foundation pit) must be stockpiled outside of the 32m NEMA ZoR and as close as possible to the support structures footprint area. Once the pit has been excavated, the bedding material must directly be placed within the foundation pit, rather than stockpiling it*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
INSTALLATION OF THE SUPPORT STRUCTURES (FURTHER THAN 32 M BUT WITHIN 100 M OF THE DELINEATED FRESHWATER FEATURES) AND SPANNING OF THE PROPOSED POWERLINE: Mixing and casting of	***Direct impacts: Potential contamination of surface water (if present).***	LOW-	
	~~Indirect impacts:~~		
	Cumulative impacts: should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
concrete for foundations			*alongside the foundation pit;* • *The bedding layer (such as clean gravel) must be spread evenly and compacted uniformly to the required density using a hand tamper (one man operator) in order to minimise the use of large machinery within the freshwater feature or within close proximity to a freshwater feature;* • *When the powerline is strung between the support structures, no vehicles may indiscriminately drive through the freshwater features, use must be made of the existing access roads.* *Control measures for concrete mixing on site:* • *No mixed concrete may be deposited outside of the designated construction footprint;* • *As far as possible, concrete mixing must be restricted to the batching plant. Additionally, batter/ dagga board mixing trays and impermeable sumps must be provided, onto which any mixed concrete can be deposited while it awaits placing; and* • *Concrete spilled outside of the*

Activity	Impact summary	Significance	Proposed mitigation
			demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. *With regards to backfilling of the concrete encasing:* • *Soil removed for excavating the foundation pit must be used as backfill material;* • *All excavated pits must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion. Conversely, areas compacted as a result of construction activities must be loosened to natural soil compaction levels;* • *Any remaining soil following the completion of backfilling of the pits are to be spread out thinly surrounding the installed support structures (outside of the delineated freshwater features) to aid in the natural reclamation process; and* • *The construction footprint must be limited to the foundation pit area associated with the support structures and recommended 5 m construction buffer (to allow for the*

Activity	Impact summary	Significance	Proposed mitigation
			stockpiling and movement of personnel). The area must be rehabilitated after the completion of the construction phase, including revegetation thereof with indigenous vegetation. In addition, alien vegetation eradication of the footprint area must be undertaken where applicable. Hydroseeding of disturbed areas is recommended.
ACCESS ROUTE "JEEP-TRACK": SOIL COMPACTION FOR THE ACCESS ROUTE AND ASSOCIATED DISTURBANCES OF SOIL WITHIN THE VICINITY OF THE CUMULATIVE IMPACT	***Direct impacts: Soil compaction for the access route; Disturbances of soil resulting in altered runoff patterns within the vicinity of the freshwater features; and Altered runoff patterns, leading to increased erosion and sedimentation of freshwater habitat.***	LOW-	▲ All footprint areas must remain as small as possible and vegetation clearing to be limited to what is absolutely essential; ▲ No vegetation clearing must take place in the freshwater features; and ▲ No formal paving must be used for the access route. In situ compaction of soil for the "jeep-track" as proposed is preferred.
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard	LOW-	
CUMULATIVE IMPACT	~~***Direct impacts:***~~		▲ With management and mitigation
	~~***Indirect impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Direct and indirect impacts identified within the assessed freshwater features can predominantly be attributed to informal road crossings leading to limited alien and invasive species establishment. Considering that the proposed powerline support structures and substation will be located outside the assessed freshwater features (thus avoiding direct negative impacts), increased vehicular movement and infrastructure in the surrounding landscape may result in indirect edge effects. Such edge effects may have cumulative impacts to the freshwater features, with specific mention of alien and invasive species establishment and increased sediment loads.	LOW-	measures implemented during the construction phase and monitoring of support structures and substation for any erosion during the operational phase, the direct and indirect negative impacts can be reduced, thus cumulative impact on the larger catchment can, therefore, be considered low/limited.
AVIFAUNAL IMPACT ASSESSMENT			
DISPLACEMENT THROUGH DISTURBANCE	***Direct impacts: Disturbance can negatively affect all avifauna on an individual or population level by increasing stress, decreasing food and habitat availability, causing displacement into potentially less suitable neighbouring environments, and ultimately potentially decreasing reproductive success (Frid & Drill 2002, Percival 2005, Birdlife SA 2017, Bennun et al. 2021). This is particularly true for***	LOW-	▲ Disturbance can be managed and mitigated at the design stage by avoiding important nesting, roosting and foraging areas of sensitive species during site selection and layout design. ▲ In order to ensure no SCCs are breeding within the proposed disturbance footprint prior to the commencement of construction or decommissioning

Activity	Impact summary	Significance	Proposed mitigation
	resident breeding species, some of which are shy, secretive and not habituated to human activities. For this project, disturbance is of particular concern due to the confirmed occurrence of the SCC Ludwig's Bustard, Verreaux's Eagle, Blue Crane, Karoo Korhaan, Lanner Falcon and Secretarybird, which are all locally breeding residents. ***The impact of disturbance on avifauna is negative and would affect the PAOI for the duration of all phases. Some disturbance is definite to occur, but the impact will cease with the completion of the phases and is reversible. Avifauna could continue to be present on site but in a modified manner, if for example breeding SCC are affected.***		activities, a walkthrough of the site must be conducted, as close as possible prior to the commencement of activities. • The impact management actions and outcomes as per Table 11 must be included in the EMPr for the proposed development.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
	Direct impacts: Any transformation of	LOW-	• With implementation of an alignment that

Activity	Impact summary	Significance	Proposed mitigation
DISPLACEMENT THROUGH HABITAT LOSS	***vegetation leads to habitat loss for avian species utilising that vegetation, causing displacement into areas which are potentially less suitable or already occupied by competing individuals or species (Frid & Dill 2002, Percival 2005, Dwyer et al. 2018). The clearing of vegetation will be required for the servitude road and pylon foundations and associated infrastructure. Pylons also represent potential new nesting, roosting and perching habitat for a variety of species, which would be lost with decommissioning. For some of these, in particular Martial Eagle and Verreaux's Eagle this will however be a higher risk environment than their natural substrate, due to the associated risk of collisions and electrocutions.*** ***The impact of habitat loss on avifauna is negative and would affect the site directly and surrounding areas indirectly through displacement. Therefore, the spatial extent of the impact is rated as the study area. Habitat loss is definite to occur and may impact SCC. Reversibility is considered to be possible with rehabilitation to some degree for the construction phase. The impact will persist for the lifetime of the facility and***		avoids all SCC breeding sites, and an avifaunal pre-construction walkthrough the severity and likelihood can be reduced. The total development footprint would be relatively small. • Mitigation of habitat loss from construction of the development is only marginally possible by retaining as much of the indigenous vegetation as possible, and minimising the footprint of all associated infrastructure, including buildings, electrical infrastructure and the width and length of roads. • Pylons should be made unattractive for nesting birds by installing anti-perch and anti-nesting devices. Before decommissioning an avifaunal walkthrough must identify any active nesting and breeding sites of SCC, that could have established throughout the lifetime of the development, which must be protected until the breeding has concluded.

Activity	Impact summary	Significance	Proposed mitigation
	is therefore rated as long-term. The habitat is of Least Concern, with much equivalent habitat remaining in surrounding areas, but the resource will be partly lost. The severity of habitat loss for SCC is potentially severe if habitat loss occurs within breeding areas. ***During the lifetime of the facility some avian species may use the OHPL and infrastructure as a perching, roosting or nesting locality. Decommissioning therefore potentially results in habitat loss for these individuals, and can affect breeding success. The affected species are likely to be SCC.***		▲ The impact management actions and outcomes as per Table 11 must be included in the EMPr for the proposed development.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
HERITAGE IMPACT ASSESSMENT			
LOSS OF HERITAGE RESOURCES: STONE AGE OCCURANCES	***Direct impacts: Construction activities pose the greatest threat to tangible heritage resources within the cultural landscape and it is often during this Phase***	LOW-	Stone Age remains occur abundantly in the project landscape where locally available raw material for the manufacture of stone tools is available in the geological setting. Most of

Activity	Impact summary	Significance	Proposed mitigation
	that heritage sites are lost. Previously undetected cultural (archaeological) layers are usually superficial, subsoil layers and that makes them easily vulnerable to destruction and the likelihood for encountering additional cultural heritage sites as the land clearing process commences, or during construction of infrastructure should be considered.		the artefacts are probably Middle Stone Age (MSA) lithics such as blades, scrapers, chunks and cores produced on quartzite. Single possible Later Stone Age (LSA) microlithic tools were noted. Stone artefact scatters are usually located in areas with fluvial gravels along drainage lines, pans and within decomposing calcretes, rocky outcrops or ridges. Despite the high number of observations of artefacts and high densities in places, these resources are common and representative of similar scatters across widespread areas of the Karoo. The widespread but ephemeral scatters are often of low heritage value due to temporally mixed contexts and the frequent absence of faunal, organic and other cultural remains which is scattered over thousands of square kilometres of the Karoo. The Stone Age localities are not conservation-worthy and even though the resources may be destroyed during construction, the impact is inconsequential. Information on the layout of civil services such as access roads were made available to specialists at an advanced stage of this assessment and not all of these proposed access road alignments could be

Activity	Impact summary	Significance	Proposed mitigation
			included in site investigations. It is recommended that a suitably qualified archaeologist be appointed during the Construction Phase to monitor vegetation clearing and excavation activities for the possible occurrence of archaeological material remains and features in these areas. Considering the localised nature of heritage remains, the general monitoring of the development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.
	~~***Indirect impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: The low frequency of significant archaeological resources documented in the project area and in its immediate surroundings implies low-severity short and long-term impacts on the heritage landscape.	LOW-	The significance of the landscape in terms of its heritage is bound not to change during the course of construction, operation and decommissioning of the project. It should be noted that archaeological knowledge and the initiation of research projects into significant archaeological sites often result from Heritage Impact Assessments conducted for developments. Provided that significant archaeological sites are conserved and that appropriate heritage mitigation and management procedures are followed, the cumulative impact of development can be positive.
PALAEONTOLOGICAL IMPACT ASSESSMENT			
LOSS OF PALAEONTOLOGICAL HERITAGE RESOURCES	***Direct impacts: Disturbance, damage, destruction or sealing-in of legally protected, scientifically valuable fossil remains preserved at or beneath the ground surface within the development footprint, especially during ground clearance or bedrock excavations during the Construction Phase.***	LOW-	Impact severity can be effectively (albeit only partially) mitigated through: • Pre-construction walk-down of authorized project footprint by specialist palaeontologist in the Pre-Construction Phase • Ongoing monitoring for fossil remains of all substantial bedrock excavations and surface clearance activities by ECO during Construction Phase, with safeguarding and reporting of new palaeontological finds (notably fossil vertebrate bones & teeth) to SAHRA

Activity	Impact summary	Significance	Proposed mitigation
			for possible specialist mitigation (See appended Chance Fossil Finds Protocol). Low Negative impact may also be partially offset by professional recording and collection of new fossil finds, which may be a compensatory positive outcome.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	Anticipated cumulative impacts on local palaeontological heritage fall within acceptable limits based largely on the paucity of significant fossil sites recorded hitherto within the combined cluster project area and assumes that the proposed Pre-Construction and Construction Phase mitigation measures recommended for all these projects are implemented in full.
RIVERINE RABBIT IMPACT ASSESSMENT			
LOSS OF HABITAT	***Direct impacts: The construction of roads, turbine hard-stands, roads and laydown areas will result in the destruction of vegetation and top-soil within areas of potential Riverine Rabbit habitat. No turbines should be constructed in riparian zones demarcated as High sensitivity, or their associated buffers. Furthermore, the developer should strive to reduce the amount of roads intersecting these riparian zones. If these***	LOW-	*Turbines and pylons should be located outside of the buffers around riverine habitat* *An ECO must be employed to demarcate areas for use during construction, and to ensure that the construction activities remain within the designated area and that no unauthorised activities occur outside of the construction footprint*

Activity	Impact summary	Significance	Proposed mitigation
	measures are correctly implemented the total extent of habitat loss is likely to be low, and the resulting impact on the species from habitat loss would also be low.		• *Avoid road development traversing riparian areas, where possible*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
DISTURBANCE THROUGH CONSTRUCTION NOISE	***Direct impacts: The construction of roads, turbine hard-stands, roads and laydown areas will result in elevated levels of both noise and activity, which may displace potential Riverine Rabbits out of the AoI. Mitigation should include minimizing noise and educating workers. If done, the potential displacement of the species from home range is likely to be very low. As there are limited areas of potentially suitable Riverine Rabbit on the site, this would be a largely minimalised, thus requiring minimal mitigation.***	LOW-	• *An ECO must be employed to demarcate areas for use during construction, and to ensure that the construction activities remain within the designated area and that no unauthorised activities occur outside of the construction footprint* • *Traffic and loud machinery should be prohibited during the early hours of the morning (04:00 –*

Activity	Impact summary	Significance	Proposed mitigation
	~~***Indirect impacts:***~~		*09:00) and early evening (18:00 – 22:00)* *Any trenches built must have slopes that allow any dispersing rabbits that fall in to escape and must be backfilled*
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
MORTALITY FROM ROADKILL OR BUSHMEAT HUNTING	***Direct impacts: Roadkill is a significant source of mortality for Riverine Rabbits across their range. The probability of vehicle-related mortality in and around the AoI will increase with the added traffic, particularly during the construction phase. This would potentially occur within the site as well as on the nearby larger public roads (such as the R381). During operation, however, this potential impact would be significantly reduced. As Riverine Rabbit activity is 'crepuscular' (i.e., highest between dusk and dawn), traffic during these periods should be curtailed. In addition, speed limits (<40km) in all areas of potential conflict (i.e. High sensitivity) should be implemented to reduce collision risk. Finally, a limitation of roads within the drainage***	LOW-	• *Prohibit all employees from hunting* • *Prohibit open fires* • *Prohibit any domestic carnivores (e.g. dogs) from entering the site with employees* • *An ECO must be employed to demarcate areas for use during construction, and to ensure that the construction activities remain within the designated area and that no unauthorised activities occur outside of the construction footprint* • *Avoid road development traversing riparian areas, where possible* • *Speed restrictions for all project vehicles (40km/h is recommended) should be in place to reduce road kills of*

Activity	Impact summary	Significance	Proposed mitigation
	habitat within the AoI should be considered. ***Bushmeat hunting and active interference with Riverine Rabbits by construction employees may also result in reduced Riverine Rabbit occurrence within the AoI. All employees should be educated thoroughly on the potential impact of hunting in the AoI, and encouraged to report any sightings of the species during construction to their line managers.***		*rabbits killed on the project roads. Traffic should be reduced during the early hours of the morning (04:00 – 09:00) and early evening (18:00 – 22:00)* • *Any contractor employed for development work must ensure that no rabbit or hare species are disturbed, trapped, hunted or killed by them and their team during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
SOCIO-ECONOMIC IMPACT ASSESSMENT			
TEMPORARY EMPLOYMENT	***Direct impacts: During the construction phase, there will be temporary employment associated with the project. It has been established that approximately 50 employment opportunities will become available over the 8-month construction period. Of these about 55%***	SOME BENEFITS	• *Maximise local employment and local content (the Project's direct sending area) through the Preferential Procurement Plan and Contractor Services Management Plan (CSMP) for all*

Activity	Impact summary	Significance	Proposed mitigation
	will be allocated to unskilled, 30% to semi-skilled and 15% to skilled workers. Semi- and lower skilled workers are usually required to perform electrical and civil duties (site clearing, excavation and casting of concrete foundations, stormwater reticulation, trenching, access roads, cable installations, structural steelwork, buildings, fencing, etc.); whereas higher skilled professionals entail Project Managers, Engineers, Environmental Control Officers and so forth. In addition to direct employment, the construction phase will have a positive spin-off effect on the economy (local, regional and national) through procurement of goods and services, with indirect and induced employment creation as result.		*contractors that are used.* • *Involve the Ubuntu LM and PKSDM from the early processes (from financial close already if possible). Determine their existing processes with regards to a labour desk and streamline employment processes between the various stakeholders.* • *Appoint a Community Employer Relations Officer / CLO. Communicate with communities through this one channel to ensure transparency, limit unrealistic expectations and to avoid conflict.*
	~~Indirect impacts:~~		
	Cumulative impacts: ***Cumulative impact, on a localised scale, would be HIGH should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.***	HIGH+	

Activity	Impact summary	Significance	Proposed mitigation
INDUCED LOCAL ECONOMIC IMPACTS	***Direct impacts: Expenditure during construction and the increase in household earnings due to temporary employment result in various induced economic impacts and spin-offs for the local and regional economies, such as:*** ***Business opportunities for the service and manufacturing industries (locally and nationally), e.g. transport, Personal Protective Equipment, maintenance work, general consumables, civil works;*** • ***Wages that are spent locally and a general improvement of income levels with higher spending benefits and spin-offs for local businesses, retail, sales, leisure and hospitality, real estate, etc.;*** • ***Local accommodation facilities that house the workers sourced from outside the direct Project sending area and spin-offs for the tourism industry.*** ***Since at least 20% of the South African workforce has to be residents from local communities a large portion of these induced impacts will manifest locally. Definite positive impacts of 'low significance' will manifest.***	LOW+	• *Maximise the Project's local content as far as possible.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a	LOW+	

Activity	Impact summary	Significance	Proposed mitigation
	localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.		
TRAINING / SKILLS DEVELOPMENT	***Direct impacts: An important outcome of training and skills development is that it increases the employability of a region's workforce, resulting in enhanced economic opportunities and thus addressing poverty alleviation over the medium to long term. During the construction phase the following training initiatives would usually take place:*** • ***On-site training so that workers can safely perform their duties; and*** • ***Training by contractors to maintain their own BBEEE level, such as health and safety legislation training, first aid, fire-fighting, construction skills, basic electrical training, quality management, legal compliance or business skills.*** ***Consultation with the affected local and district***	MODERATE+	• *Where feasible, the Developer should:* • *Make the skill requirements clear to the municipalities in advance and do a skills analysis of the available labour force.* • *Implement a SMME skills development programme and do certification (training on how to tender, understanding contracts, basic business skills, etc.) at least 4 months prior inviting SMMEs to tender and involve the relevant LED Units in the programmes.* • *Do a Value-chain analysis of services required (directly and indirectly related to construction) and communicate this to local and district municipalities in advance so that they are prepared and equipped to take part in the tender process.*

Activity	Impact summary	Significance	Proposed mitigation
	municipalities however identified a great need for training and capacity building as most of the workers and SMME's on their databases are poorly educated with limited skills. These constraints result in gaps between the Developers' requirements and the local communities' / SMME's abilities to provide the required services. It would thus be to the advantage of the Project if on-the-job training is implemented, especially for unskilled workers.		• *Require larger contractors to work with small SMMEs to train and transfer skills and include this in their respective CSMP's.* • *Implement on-the-job training for unskilled workers.* • *Capacitate the local government structures by involving them as early as possible in the Project; remain transparent throughout the processes.* • *Negotiate a MoU with the municipalities so that each role-player is clearly aware of its roles, responsibilities and timelines in the Project processes.* *Establish an EMC or similar Forum for the duration of construction to aid communication and transparency. Members of the EMC / Forum to meet on a quarterly basis to discuss issues that may arise during the course of the construction period (if feasible).*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	
EMPLOYMENT EQUITY	***Direct impacts: Statistics obtained from the IP4 overview (DMRE, December 2021) indicate that during the construction phases, Black South African citizens, Youths and rural local communities have primarily been the***	MODERATE+	• *Obtain inputs from the local and district municipalities on the contents of the Procurement strategy and Employment Equity Plan to be implemented.* • *Set targets for the employment of Youth,*

Activity	Impact summary	Significance	Proposed mitigation
	beneficiaries of RE projects, as they respectively represent 81%, 44% and 48% of total job opportunities created by IPP's to date. However, woman and the disabled could still be significantly empowered as they represent a mere 10% and 0.4% of total jobs created. Pre-mitigation positive impacts of employment equity will hold benefits of 'low overall significance' if only the DMRE's minimum requirements are implemented. With mitigation, the intensity of the impact will increase, and the overall significance can be increased to hold 'moderate benefits'.		*women and the disabled in the respective CSMPs.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	
IMPACTS ASSOCIATED WITH AN INFLUX OF JOBSEEKERS / TEMPORARY	***Direct impacts: Negative impacts that could manifest for local communities and the local and district municipalities due to an influx of***	LOW-	▲ *Employment / Temporary construction workers:* ▲ *Clearly identify the beneficiary communities / labour*

Activity	Impact summary	Significance	Proposed mitigation
CONSTRUCTION WORKERS	***jobseekers / temporary construction workers include:*** ***Conflict between locals and 'outsiders' if the outside labour force receives preference;*** ***Conflict due to cultural differences;*** - ***Increase in the size and number of informal settlements and additional pressure on local government for housing and related services;*** - ***Increase in the unemployment rate if jobseekers and/or workers do no return to their places of residence post construction;*** - ***Unwanted pregnancies, an increase in HIV/AIDS and other sexually transmitted diseases (STDs) and additional pressure on health care services;*** - ***An increase in single parent households and a subsequent reliance on social grants;*** - ***An increase in drug and alcohol abuse and other social issues should unemployment levels increase.*** ***Poor conduct of construction workers and inadequate management of the construction site could result in health and safety risks for landowners that include:***		*sending area and compile the employment strategy in collaboration with the affected municipalities' LED Units.* - *Contractually oblige contractors and sub-contractors to only source labour through the labour desk / job registration database and make this known to the target communities.* - *Work through limited communication channels (e.g. Ward Councillors and the Employer Relations Officer / CLO).* - *Be vigilant not to raise unrealistic expectations amongst the local communities and workers with regards to employment, skills requirements, local procurement and so forth. Ensure transparency through the Ward Councillors, CLO and the EMC / Forum.* - *No recruitment of temporary workers at the access to the construction site.* - *As part of their Social Management Plan's (SMP's), contractors to provide a transport and housing plan: (i) no workers are allowed to be housed on site or in informal*

Activity	Impact summary	Significance	Proposed mitigation
	Unauthorized access / trespassing resulting in theft, stock poaching, safety and security issues as well as potential damage to the veld and natural grazing; ***Fire hazards at the construction site and the possibility of fires spreading and damaging surrounding farmland and infrastructure;*** ***Pollution problems, flies, rodents and pests and possible contamination of water resources (insufficient sanitation facilities, littering and refuse) and so forth.*** ***In terms of security, landowners and community members could easily consider this construction project as the catalyst should local crime levels and stock theft increase and affect their quality of life. Landowners in and around the study area describe their environment as extremely safe and peaceful with minimal / low levels of crime.*** ***Impacts that relate to an influx of construction workers would increase if contractors and sub-contractors refrain from using the labour desk and prefer to bring in their own workforce. The Developer's commitment to maximize local labour, design the recruitment***		*housing / settlements; (ii) allow workers that do not live nearby time to return to their families at regular intervals or over weekends.* *No workers to remain on site after shifts.* *It is also recommended that the Developer embarks on a Social Awareness Campaign for the workforce that focuses on sexual health, unwanted pregnancies and related social issues.* *Security, safety and environmental health:* *24-hour security, demarcate and fence the construction site (if possible), material stores to be secured, access control and no trespassing of workers outside designated construction areas.* *Join the local community policing forum or similar initiative for the duration of construction.* *Keep the local SAPS, other emergency services, Ward Councillors, landowners and other relevant stakeholders informed about the construction progress and time-lines.* *Develop a Fire / Emergency*

Activity	Impact summary	Significance	Proposed mitigation
	process in conjunction with the municipalities and implement relevant security measures for the duration of construction is thus essential.		*Management Plan in conjunction with affected and neighbouring landowners.* • *Dispose of the various types of waste generated in the appropriate manner at licensed waste landfill sites at regular intervals. Comply with the waste management plan compiled for the construction phase.* • *Display "danger" warning signs and "no public access" signs at all potential accesses, paths and along the periphery of the construction areas in English and the local languages.* • *If water for construction is obtained from a natural water resource, comply with the Water Use Licence conditions for the duration of the construction period.* • *Ensure implementation of the provisions of the Occupational Health and Safety Act No. 85 of 1993 and adhere to the Emergency and Safety plan procedures for the duration of the construction phase.* • *Awareness / community engagement:*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			▲ *Keep open communication channels with the landowners and address any potential issues as a matter of priority.* ▲ *Make contact details of the main contractor and procedures to lodge complaints available to landowners and the local communities through the Ward Councillors and EMC / Forum.* ▲ *Make a complaints register / log book available at the entrance to the construction site and act immediately should issues arise.* ▲ *Consult with surrounding landowners whose livestock, private residences and other infrastructure could be affected by dust, noise and other impacts that result from traffic movement and general construction activities.* ▲ *Where required, draw up a land use management plan with individual landowners to protect livestock and farmland, which addresses restricted access areas, procedures when farm gates are*

Activity	Impact summary	Significance	Proposed mitigation
			opened and closed and so forth. • *Rehabilitate the veld to its original state post construction.*
INTRUSION IMPACTS	***Direct impacts: Intrusion impacts could indirectly impact agricultural land uses, thereby having a negative effect on incomes of landowners, such as:*** □ ***Negligent construction workers that do not close / lock farm gates resulting in animals that go missing and/or mix with animals in different breeding groups / cycles, potentially introducing diseases into herds;*** □ ***Livestock that is killed on access roads if drivers do not adhere to speed limits and traffic rules;*** □ ***Dust that impact the quality of wool and/or dust that settle on grazing land and have an impact on livestock carrying capacity;*** □ ***Possible noise impacts; and*** □ ***Construction activities that hamper the farmers' access to their own farms.*** ***The increase in traffic could result in the degradation of road surfaces and speeding / negligent drivers could cause accidents and fatalities, subsequently placing pressure on local emergency, disaster management and health care services (fire,***	MODERATE-	• *Comply with the EMPr requirements to address any potential noise and dust impacts.* • *Proper planning, management and rehabilitation of all construction sites to forego the visual impacts of the construction activities, as proposed in the VIA (Nuleaf Planning & Environmental, October 2022).* • *Implement all mitigation measures as proposed* • *Discuss construction timelines with landowners so that grazing of livestock can take place away from construction areas.* • *Collaborate with the necessary road management agencies when road closures are required and advertise alternative routes in advance.* • *Impose penalties for reckless drivers as a way to enforce compliance to traffic rules.*

Activity	Impact summary	Significance	Proposed mitigation
	ambulance, police services, etc.). Abnormal vehicles that transport large project infrastructure could also necessitate intermittent road closures.		
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE-	
HEALTH AND SAFETY RISKS FOR WORKERS	***Direct impacts: Health and safety risks for workers and the broader community are possible to manifest. Community health and safety risks are associated with the inflow of workers. The Occupational Health and Safety Act (Act No. 85 of 1993) makes provision for the health and safety of workers at construction sites. These risks are broadly associated with:*** ***• Construction related accidents due to structural safety of Project infrastructure, possibly resulting in fatalities;*** ***• Dust generation and air pollution resulting in respiratory diseases;***	LOW-	*Ensure implementation of the provisions of the Occupational Health and Safety Act (Act No. 85 of 1993) and adhere to the Emergency and Safety plan procedures for the duration of the construction phase.* *Promote good conduct of employees through awareness campaigns. It is also recommended that the Developer embarks on a Social Awareness Campaign for the workforce that focuses on sexual*

Activity	Impact summary	Significance	Proposed mitigation
	• ***High ambient noise levels caused by machinery and construction equipment, resulting in loss of hearing or other similar health issues;*** • ***Dehydration, sunburn and related issues for workers due to unsafe and insufficient drinking water and high temperatures during summer months; and*** • ***An increase in HIV/AIDS and other STDs due to prostitution activities and temporary sexual relationships with local women and unwanted pregnancies that place further pressure on Basic Health Care Services.***		*health, unwanted pregnancies and related social issues.* *Contractors to provide a housing plan that makes provision for workers that do not live nearby to return to their families at regular intervals or over weekends.* *Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated.* *Provide sufficient ablution facilities (chemical/portable toilets, etc.) at strategic locations that are cleaned regularly.* *Keep the local police, emergency and ambulance services informed of construction times and progress.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE-	
TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT			
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS	***Direct impacts: Permanent or temporary loss of indigenous vegetation cover because of site clearing. Site clearing***	LOW-	*Blanket clearing of vegetation must be limited to the site. No clearing outside of required footprint*

Activity	Impact summary	Significance	Proposed mitigation
VEGETATION	***before construction will result in the blanket clearing of vegetation within the affected footprint.***		*required for construction to take place.* • *Topsoil must be striped and stockpiled separately during site preparation and replaced on completion where revegetation will take place.* *Any site camps and laydown areas requiring clearing must be located within already disturbed areas as far as possible, or away from watercourses, alluvial areas and other sensitive features (rocky outcrops).*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FLORA SPECIES	***Direct impacts: Loss of flora species of special concern during pre-construction site clearing activities. Several special of concern are known from surrounding areas, which could be destroyed during site preparation.***	LOW-	• *A flora search and rescue is recommended before commencement.* *Respective permits to be obtained beforehand.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	will be prepared to the same standard.		
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS ALIEN INVASIVE SPECIES	***Direct impacts: Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established.***	LOW-	▲ *Alien trees and weeds must be removed from the site as per CARA/ NEMBA requirements.* ▲ *A suitable weed and alien invasive plant management plan to be implemented in construction and operation phases.* ▲ *After clearing and construction is completed, an appropriate cover crop may be required, should natural re-establishment of grasses not take place in a timely manner, such as along road verges. This will also minimise dust*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS EROSION	***Direct impacts: Susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion***	LOW-	▲ *Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once*

Activity	Impact summary	Significance	Proposed mitigation
	after completion of the activity		*construction is completed.* • *Topsoil must be stripped and stockpiled separately and replaced on completion.* *If natural vegetation re-establishment does not occur, a suitable grass must be applied.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS ECOLOGICAL PROCESSES	***Direct impacts: Disturbances to ecological processes: Activity may result in disturbances to ecological processes such as fragmentation (road, etc).***	LOW-	• *Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL	***Direct impacts: Aquatic and Riparian processes:***	LOW-	• *Suitable structures to be constructed at*

Activity	Impact summary	Significance	Proposed mitigation
BIODIVERSITY IMPACTS AQUATIC AND RIPARIAN PROCESSES	***Diversion and increased velocity of surface water flows – Changes to the hydrological regime and increased potential for erosion. Impact of changes to water quality. Loss of riparian vegetation / aquatic habitat. Loss of species of special concern.***		*watercourse crossings that do not alter flows.* • *Stormwater discharge into watercourses to be protected against erosion.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL HABITAT	***Direct impacts: Loss of Faunal Habitat: Activity may result in the loss of habitat for faunal species, which could result in disturbance and displacement of faunal species.***	LOW-	• *Blanket clearing of vegetation must be limited to the construction footprint required.* • *Rocky outcrop areas and Riverine Rabbit Habitat to be avoided as far as possible.* • *It is important that clearing activities are kept to the minimum and take place in a phased manner, where applicable. This allows any smaller animal species to move into safe areas and*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.		*prevents wind and water erosion of the cleared areas.*
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL PROCESSES	***Direct impacts: Impacts to faunal processes because of the activity such as erection of barriers to movement.***	LOW-	▲ *The habitats and microhabitats present on the project site are not unique and are widespread in the general area, hence the local impact associated with the footprint would be of low significance if mitigation measures are adhered to.* ▲ *Small mammals within the habitat on and around the affected area are generally mobile and likely to be transient to the area. They will most likely vacate the area once construction commences. As with all construction sites there is a latent risk that there will be some accidental mortalities. Specific measures are made to reduce this risk. The risk of species of special concern is low, and it is unlikely that there will be any impact to populations of such species because of the activity.* ▲ *Reptiles such as lizards are less mobile compared to*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			mammals, and some mortalities could arise. It is recommended that a faunal search and rescue be conducted before construction commences, although experience has shown that there could still be some mortalities as these species are mobile and may thus move onto site once construction is underway. A retile handler should be on call for such circumstances. • *Should any amphibian migrations occur between wetland areas during construction, appropriate measures (including temporarily suspending works in the affected area) should be implemented*
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL SPECIES	***Direct impacts: Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.***	LOW-	• *A pre-commencement faunal search and rescue is recommended.* • *Respective permits to be obtained beforehand.* • *No animals are to be harmed or killed during the course of operations.* • *Workers are NOT allowed to snare any faunal species.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.		
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: HABITAT LOSS, DEGRADATION AND FRAGMENTATION	***Direct impacts: The development may fragment an already highly fragmented landscape which may create barriers to geneflow where subpopulations are disconnected and isolated. Roads and fences can affect the quality and quantity of available habitat, most notably through fragmentation, creating barriers to animal movement. Erosion from construction may degrade the habitat and direct loss of habitat will occur due to necessity of access roads.***	LOW-	*Minimising the project footprint by utilising existing roads and disturbed areas as much as technically possible.* *Locate developments away from identified sensitive habitats, this includes no go zones and buffer zones for turbine pads, electrical substations and housing facilities as well as construction laydown areas.* *Implementing adequate dust control and erosion control.* *Careful planning of road layout to minimise the length of roads traversing through riverine habitats and rocky ridges that have been identified as Very high or high sensitivity which may create barriers and fragment habitats.* *Establish wildlife passes, where artificial barriers are found; this particularly refers to physical*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			barriers such as roads and fences. • *Develop and implement a site-specific spill management plan.*
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: MORTALITY FROM ROAD COLLISION	***Direct impacts: There is an increased collision risk from increased traffic levels at the site and in the general area. This impact is likely to be of highest concern during construction but is also expected during the operational phase. Roads and roadsides may attract SCC such as Riverine Rabbits and Karoo Dwarf Tortoises due to verge edge enhancement of vegetation and roads may be used to facilitate movement, thus further increasing collision risks. Access roads that traverse riverine habitats require careful planning and monitoring to reduce risk of rabbit mortality.***	LOW-	• *Careful planning of roads to minimise the length that traverses through riverine and rocky habitats that have been identified as Very high or high sensitivity.* • *Use existing roads as much as possible.* • *Roadkill monitoring program on both internal and external public roads targeting sensitive habitats and wildlife corridors. Roadkill Monitoring programs must be initiated at pre-construction phase and continued during construction and post-construction as well as conducted over different seasons.* • *Pre-construction road planning to identify target sites for wildlife crossing structures which should be considered during the EIA process and with pre-construction roadkill monitoring findings. Wildlife crossing structures must be made in consultation with road planner, construction manager and wildlife biologist. This is generally more cost*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			effective than retro fixing existing roads. • *Assess efficiency of roadkill mitigation approaches via a post-implementation roadkill monitoring program.* • *Implementation of speed limits on both internal access WEF roads (40km/h) as well as external public roads (60km/h).* • *Reduced speed limits of 30km/h where roads (both internal and external) cross High and Very high sensitivity areas identified; including riverine habitat, koppies and ecotones which may harbour sensitive species and generally have higher species diversity and abundance* • *Wildlife warning signage and speed reduction measures where roads cross High and Very high sensitivity areas.* • *Education and awareness campaigns on SCC and their habitat must form part of staff induction procedures to help increase awareness, respect and responsibility towards the environment for all staff and contractors.* • *Inductions on safe wildlife passing and driving to reduce*

Activity	Impact summary	Significance	Proposed mitigation
			possible injury and roadkill alongside roads. • *There is higher risk of collision when animals are more active which is typically from late afternoon to early morning. During these times a low speed limit (30km/h) needs to be implemented. Night-time driving should be avoided as much as possible but if necessary, speed needs to be reduced significantly to avoid collisions. Lagomorph species (hares and rabbits) often freeze in headlights and require headlights to be momentarily turned off to allow the animal to move off the road.* • *Reduced speeds also need to be implemented during reduced visibility such as misty conditions that have been observed on the site.* • *Induction must include reporting of any vehicle/wildlife collision or found roadkill to the appointed Roadkill monitoring personnel.* • *Search and rescue of slow-moving species, specifically Karoo Dwarf Tortoises, during the construction phase.*

Activity	Impact summary	Significance	Proposed mitigation
			IUCN guidelines for translocation of sensitive species should be consulted. Tortoises will need to be carefully relocated and provided shelter and water-rich food as well as monitoring of threatened species to ensure of their survival. Should a subpopulation be found further consultations with a herpetologist will be required for appropriated mitigation.
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: CUMULATIVE IMPACT	***Direct impacts: The cumulative impact is of concern, given the fact that the renewable-energy industry is rapidly expanding in South Africa. The local fauna is already impacted and threatened by past and current land use and the combination of these existing anthropogenic impacts with planned developments may impact the local fauna with unexpectedly large effects. Cumulative effects can also result where the construction phase occurs at several locations simultaneously or if a new project begins construction immediately following the completion of another. Cumulative effects can cause a small localized effect (which may have a limited effect on its own) to have a significant impact on population level***	LOW-	▲ *It is important to evaluate the consequences of each development before the next is begun.* ▲ *Use a precautionary approach and aim to minimise negative effects even when the effects are not fully known.* ▲ *Ensure the construction phase is done in as short a period as possible and avoid breeding season, typically in the spring after good rains.* ▲ *Construction needs to be done during daytime, avoiding noise and disturbance when faunal communities are most likely active, particularly where the construction is in proximity to their*

Activity	Impact summary	Significance	Proposed mitigation
	as there may be thresholds where the cumulative effects increase disproportionally		*habitat. Sensitive habitats near construction will need to be clearly marked.* • *Relating construction phase of the development with neighbouring developments and farming activity to ensure construction does not begin immediately after the completion of another or simultaneously.* • *The developer instigates a proactive mitigation measure by initiating a multi-stakeholder dialogue at a workshop to clarify these concerns and how they might be taken forward and co-funded. The aim of this mitigation is to reduce current impacts that threaten the survival of SCC populations. We recommend a biodiversity wildlife corridor approach whereby protecting sensitive habitats is made a priority. This may include species refuge areas where no form of indiscriminate wildlife killing/snaring is allowed, no or highly reduced livestock grazing, and no pest control including locust spraying is carried out.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			▲ *Poaching and the use of hunting dogs at site is prohibited.*
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: CASCADING IMPACT ACROSS TROPHIC LEVELS	***Direct impacts: The effect of the wind farm on one species may have indirect cascading effects (knock on effect) on other species within the same community due to ecological relations to one another. This means that an effect on one species may in turn affect many others within the same ecosystem. Cascading effects may be complex and unpredictable as it may be the result of different types of interactions including competition, predation, parasitism, or symbiosis***.	LOW-	▲ *Initiate a general Fauna Biodiversity Monitoring program* ▲ *A Fauna Biodiversity program must be initiated pre-construction to have baseline population status and monitoring must be ongoing post-construction to identify any changes in occupancy in certain species' population which may in turn indirectly impact other fauna populations.* ▲ *We recommend the use of multiple monitoring methods including and not limited to; camera trapping in diverse habitats, targeted camera trapping for SCC; small mammal monitoring with the use of Sherman traps; the use of Conservation Scent Detection Dog teams to assist in detecting SCC.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
No-go option			
	~~***Direct impacts:***~~	N/A	No-go alternative would result in no impact related to the proposed activities as the site does not currently experience issues regarding the proposed activities
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

OPERATIONAL PHASE – GENERAL IMPACTS

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
INCREASED STORMWATER RUN-OFF	***Direct impacts: Failure to maintain the stormwater system could increase the risk of surface water damage to the landscape and vegetation from increased rates of run-off and therefore the risk of localised flooding and increased sheet erosion downstream due to the presence of roads and impermeable areas of hard standing.***	LOW-	- *Recommendations of the Stormwater Management Plan and Erosion Management Plan must be implemented*
	~~***Indirect impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Cumulative impact would be high should the Taaibos and Soutrivier WEF clusters be constructed at the same time. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
WASTE MANAGEMENT	***Direct impacts: There could be littering by maintenance workers and security personnel on site***	LOW-	• A Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The Waste Management Plan must be implemented throughout the operational phase
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters operational timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developerand the EMPrs will be prepared to the same standard.	LOW-	
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
No-go option			
INCREASED STORMWATER RUN-OFF WASTE MANAGEMENT	~~***Direct impacts:***~~	N/A	
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

OPERATIONAL PHASE – SPECIALIST IMPACTS

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
AGRICULTURAL IMPACT ASSESSMENT			
OCCUPATION OF LAND	***Direct impacts: Agricultural land directly occupied by the OHL infrastructure will become restricted for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime. The small and widely distributed nature of the agricultural footprint of the facility means that only an insignificant proportion of the available agricultural land is impacted in this way. Furthermore, all agricultural activities can continue completely unhindered underneath the power line. This is because its direct, permanent, physical footprint that has any***	LOW-	*The land is of limited land capability and is not suitable for crop production, the amount of agricultural land loss is well within the allowable development limits prescribed by the agricultural protocol, and that the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations and improved security against stock theft and crime, as well as wider, societal benefits. Furthermore, all agricultural activities that are viable in this environment, can continue completely unhindered underneath the power line and there*

Activity	Impact summary	Significance	Proposed mitigation
	potential to interfere with agriculture (pylon bases and servitude track, where it is needed), is insignificantly small.		*will therefore be no loss of agricultural production potential underneath it.*
	~~Indirect impacts:~~		
	Cumulative impacts: The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential.	LOW-	
SOIL EROSION AND DEGRADATION	***Direct impacts: Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads. Soil erosion is completely preventable. The storm water management that will be an inherent part of the road engineering on site and standard, best practice erosion control measures recommended and included in the EMPr, are likely to be effective in preventing soil erosion. Loss of topsoil can result from poor topsoil management during construction related excavations.***	LOW-	▲ *Mitigation measures to prevent soil degradation are all inherent in the project design and / or are standard, best-practice for construction sites.* ▲ ▲ *A system of storm water management, which will prevent erosion, will be an inherent part of the road engineering on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.* ▲ *Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the OHL construction timelines overlap. However, it is	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	important to note that the OHL infrastructure (including the OHLs) are proposed by the same developer and the EMPrs will be prepared to the same standard.		*separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire surface.*
INCREASED FINANCIAL SECURITY FOR FARMING OPERATIONS	***Direct impacts:***	LOW+	
	~~Indirect impacts:~~		
	Cumulative impacts:	LOW+	
IMPROVED SECURITY AGAINST STOCK THEFT AND OTHER CRIME	***Direct impacts:***	LOW+	
	~~Indirect impacts:~~		
	Cumulative impacts:	LOW+	
AQUATIC IMPACT ASSESSMENT			
OPERATION AND MAINTENANCE OF THE POWERLINE ENTAILING POTENTIAL INDISCRIMINATE MOVEMENT OF MAINTENANCE VEHICLES WITHIN CLOSE PROXIMITY TO THE FRESHWATER FEATURES	***Direct impacts: Potential indiscriminate movement of maintenance vehicles within close proximity of the freshwater features. Disturbance to soil and ongoing erosion as a result of periodic maintenance activities;***	LOW-	▲ Mitigation measures to prevent soil degradation are all inherent in the project design and / or are standard, best-practice for construction sites. ▲ A system of storm water management, which will prevent erosion, will be an inherent part of the road engineering on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier OHL timelines overlap, which is likely. However, it is important to note that the OHL infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
OPERATION AND MAINTENANCE OF THE POWERLINE ENTAILING POTENTIAL INDISCRIMINATE MOVEMENT OF MAINTENANCE VEHICLES WITHIN CLOSE PROXIMITY TO THE FRESHWATER FEATURES	***Direct impacts: Increased risk of sedimentation and/or hydrocarbons entering the freshwater features via stormwater runoff from the access roads. Altered water quality (if surface water is present) as a result of increased availability of pollutants.***	LOW-	erosion from occurring there. • Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire surface
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier OHL timelines overlap, which is likely. However, it is important to note that the OHL infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
CUMULATIVE IMPACT	***~~Direct impacts:~~***		• *With management and mitigation measures implemented during the construction phase and monitoring of support structures and substation for any erosion during the operational phase, the direct and indirect negative impacts can be reduced, thus cumulative impact on*
	~~Indirect impacts:~~		
	Cumulative impacts: Direct and indirect impacts identified within the assessed freshwater features can predominantly be attributed to informal road crossings leading to limited alien and invasive species establishment. Considering that the	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	proposed powerline support structures and substation will be located outside the assessed freshwater features (thus avoiding direct negative impacts), increased vehicular movement and infrastructure in the surrounding landscape may result in indirect edge effects. Such edge effects may have cumulative impacts to the freshwater features, with specific mention of alien and invasive species establishment and increased sediment loads.		*the larger catchment can, therefore, be considered low/limited.*
AVIFAUNAL IMPACT ASSESSMENT			
MORTALITY FROM COLLISIONS WITH POWERLINES	***Direct impacts: Collisions with powerlines is a well-known and increasing threat for many bird species worldwide (Bernardino et al. 2018, Jenkins et al. 2010, Loss et al. 2014). In South Africa, a number of endemic and threatened species are known to be significantly affected by collisions (Taylor et al. 2015, Shaw et al. 2021), including SCC's that have a high probability of occurrence or are known to occur in the PAOI such as Ludwig's Bustard, Blue Crane, Karoo Korhaan, Verreaux's Eagle, Martial Eagle, and Secretarybird. Ludwig's Bustard is particularly prone to collisions and made up 69% of carcasses found under***	MODERATE-	The most widely recommended mitigation measure (Jenkins et al. 2010), apart from burying the powerline, or not building it, is to route the line away from sensitive areas such as water bodies, valley heads, ridge tops, and to (a) keep the line as short as possible, (b) keep the line as low as possible, (c) make the cabling as thick as possible, (d) avoid vertically separated arrays of lines as much as possible, (e) run lines with a similar height and structure in close proximity in a common servitude and (f) keep lines with very different heights and configurations well apart. However, in South Africa, only mitigations that are in line with Eskom's requirements and Technical Standards are in fact implementable in practice.

Activity	Impact summary	Significance	Proposed mitigation
	powerlines in a two year study in the Karoo (Shaw 2013). Karoo Korhaan is also affected, but does not collide as frequently as Ludwig's Bustard, possibly due to their sedentary nature making them familiar with their area and their smaller size increasing their manoeuvrability (Shaw 2013). For raptors, collisions appear to be a less frequent source of mortality compared to electrocutions (Loss et al. 2014, Slater et al. 2020). This is likely due to a combination of their good eyesight, high aspect-ratio wings, and often high flight altitude while engaged in thermal soaring (Bevanger 1998, Martin & Shaw 2010, Janss 2000, Slater et al. 2020). However, power line collisions increase when lines intersect with home ranges or if lines span regularly used flight paths between nesting and foraging grounds (Rollan et al. 2010, APLIC 2012, Slater et al. 2020). For some raptor species collisions with powerlines are a major conservation concern, such as the Bonelli's Eagle in Spain (Rollan et al. 2010). ***The impact of collisions can result in injury or mortality which may, in the worst-case scenario affect a sensitive SCC on***		In order to mitigate collisions with powerlines, line markers such as bird flappers and static bird flight diverters are being widely used with some success and have been shown to alter flight behaviour (Bernardino et al. 2018, Pavón-Jordan et al. 2020). One recent study in South Africa (Shaw et al. 2021) demonstrated a 51% reduction in mortality for all large birds, while reducing collision rates effectively for some species (92% for Blue Crane) and having no effect on others (Ludwig's Bustard). Any proposed powerlines associated with the development should therefore be minimised as much as possible in length and avoid areas identified as of high sensitivity where possible, and avoid all identified no go areas (such as SCC nest buffers). All lines and pylons must be of a bird friendly design, with anti-perching structures installed, and fit with line markers installed along the entire length, in line with current Eskom Technical Standards. A steel monopole pylon structure is preferred over a lattice tower which offers more perching and nesting opportunities, and should be selected wherever technically possible. The impact management actions and outcomes as per Table 11 must be included in the EMPr for the proposed development.

Activity	Impact summary	Significance	Proposed mitigation
	a regional population level. The extend was therefore rated regional, long-term, with low reversibility and potentially severe consequence. The impact is considered likely to occur. Therefore, the significance		
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE-	
MORTALITY FROM ELECTROCUTIONS ON ELECTRICAL INFRASTRUCTURE	***Direct impacts: Normally, energised components on overhead powerlines are not insulated but are elevated to place them safely out of people's reach, which elevates energised wires into places that are also attractive perches for birds (Dwyer et al. 2017). Large birds can be electrocuted or incur electric shock injuries when simultaneously contacting two uninsulated energised components of differing electric potential (phase-to-phase electrocution), or when contacting an uninsulated energised***	LOW-	➢ *Bird electrocutions can easily be prevented with bird-friendly pole design i.e. creating separation between conductors of differing electric potential, by placing insulation over conductors, or by redirecting birds to perch or nest away from conductors (APLIC 2006, Dwyer et al. 2017).* *The impact management actions and outcomes as per Table 11 must be included in the EMPr for the proposed development.*

Activity	Impact summary	Significance	Proposed mitigation
	component and a path to ground (phase-to-ground- electrocution) (Guil et al. 2015, Dwyer 2006, APLIC 2006, Lehman et al. 2007, Dwyer et al. 2017, Mojica et al. 2018, Slater et al. 2020). Because electrocutions result from birds bridging air-gaps, larger birds with larger wingspans, such as Martial Eagle, are disproportionately affected (Slater et al. 2020). For the proposed project electrocutions could also occur at the switching station infrastructure. ***Electrocution results in injury or mortality which may, in the worst case scenario affect a sensitive SCC on a regional population level. The extend was therefore rated regional, long-term, with low reversibility and potentially severe. The probability of occurrence is rated as definite without mitigation.***		
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same	MODERATE-	

Activity	Impact summary	Significance	Proposed mitigation
	developer and the EMPrs will be prepared to the same standard.		
CUMULATIVE IMPACTS	***Direct impacts: Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.*** ***Cumulative impacts assessed include the combination of all the impacts discussed above for this project, which may be higher than the sum of impacts, as well as the associated three Soutrivier WEF and Solar PV Facilities and associated OHPLs, and all known past, present and proposed projects in an area of 30 km surrounding the proposed development. In addition to the Soutrivier projects two WEFs are proposed within this radius: the Taaibos North WEF and associated OHPL, and the Taaibos South WEF and associated OHPL. All of these facilities are to ultimately connect to the Gamma MTS. All of these***	MODERATE-	*The only real mitigation possible in order to minimise cumulative impacts, beyond minimising impacts for each project separately during the EIA process, is for the Competent Authority to ensure only projects are authorised that are practically mitigatable to an acceptable level, and that do not lead to unacceptable negative impacts, including cumulative impacts, and to ensure the correct implementation of authorised Environmental Management Programmes through compliance audits and enforcement.* *The impact management actions and outcomes as per Table 11 must be included in the EMPr for the proposed development.*

Activity	Impact summary	Significance	Proposed mitigation
	projects have the same shared OHPL from the Soutrivier South collector substation, which lowers the cumulative impact. ***The impacts of the cumulative projects will be negative by making a larger area of avifaunal karoo scrub habitat unavailable and of higher risk for SCC flying between Victoria West and Loxton.*** ***There is also a potential for an increased barrier effect being created by the combination of these projects, which would be a negative, regional, long-term impact. As these projects are not located on any major flyways, making the probability of this occurring unlikely.*** ***The contribution of the Soutrivier South OHPL to the cumulative impact in a 30 km radius is considered to be low, i.e. the cumulative impact significance rating will remain unchanged regardless of the Soutrivier South OHPL being constructed or not.***		
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line	MODERATE-	

Activity	Impact summary	Significance	Proposed mitigation
	construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.		
HERITAGE IMPACT ASSESSMENT			
LOSS OF HERITAGE RESOURCES: STONE AGE OCCURANCES	***Direct impacts: impact on previously undetected archaeological sites, human burials and the cultural landscape might occur as a result of operational activities (site access, movement, maintenance, trespassing, natural elements, hazards etc).***	LOW-	It is understood that no new areas will be disturbed and/or impacted during the operations phase of the project and the risk and severity of heritage impacts should decrease once the projects activate. Furthermore, the majority of sites of archaeological and heritage significance would have been recorded and/or assessed in preceding phases.
	~~Indirect impacts:~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: The low frequency of significant archaeological resources documented in the project area and in its immediate surroundings implies low-severity short and long-term impacts on the heritage landscape	LOW- AND LOW+	The significance of the landscape in terms of its heritage is bound not to change during the course of construction, operation and decommissioning of the project. It should be noted that archaeological knowledge and the initiation of research projects into significant archaeological sites often result from Heritage Impact Assessments conducted for developments. Provided that significant archaeological sites are conserved and that appropriate heritage mitigation and management procedures are followed, the cumulative impact of development can be positive.
PALAENTOLOGICAL IMPACT ASSESSMENT			
None identified by specialist			
RIVERINE RABBIT IMPACT ASSESSMENT			
DEGRADATION OF HABITAT BY EROSION	***Direct impacts: The construction of roads, turbine hard-stands, roads and laydown areas etc. will result in the destruction of currently intact vegetation, which may lead indirectly to soils being exposed and facilitating erosion. Erosion leads to river degradation through increased runoff and siltation processes. If erosion control is implemented, the resulting impact from***	LOW -	Implement a Site Erosion Management and Control Plan to prevent erosion from high-lying areas impacting downstream ecosystems

Activity	Impact summary	Significance	Proposed mitigation
	erosion and would also be low.		
	Indirect impacts: The construction of roads, turbine hard-stands, roads and laydown areas etc. will result in the destruction of currently intact vegetation, which may lead indirectly to soils being exposed and facilitating erosion. Erosion leads to river degradation through increased runoff and siltation processes. If erosion control is implemented, the resulting impact from erosion and would also be low.	LOW -	
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters operational timelines overlap, which is likely. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW -	
SOCIO-ECONOMIC IMPACT ASSESSMENT			
NEW EMPLOYMENT AND ECONOMIC IMPACTS	***Direct impacts: Direct and indirect employment opportunities will manifest during the operational lifespan of the Project and result in an increase in household earnings and improved livelihoods for the***	MODERATE+	*Maximise local employment and procurement (from the local and district municipalities) wherever possible.* *Coordinate the effort to obtain temporary employment, service*

Activity	Impact summary	Significance	Proposed mitigation
	affected households through salaries and wages. ***In additional to employment, economic impacts will manifest for the local and national economies through the manufacturing and services industries. Furthermore, agricultural land will be rezoned for renewable energy purposes, thereby increasing farm values and resulting in higher payable taxes for the local municipality.*** ***Induced economic impacts will realise locally and regionally through employment and procurement and as a result more benefits for retail sales, leisure and hospitality, real estate, etc. will occur as more money circulates in the local economy.***		*providers, SMME's etc. required for maintenance work, with the municipal LED Units.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	

Activity	Impact summary	Significance	Proposed mitigation
SOCIO-ECONOMIC CONTRIBUTION / COMMUNITY DEVELOPMENT	***Direct impacts: A needs assessment will be done with the affected parties (municipalities, beneficiary communities, etc.) to identify suitable projects for SED and ED, which is usually aligned with IDP and LED priorities. Once the identified beneficiaries have been evaluated according to stringent evaluation criteria a contract is entered with them for the specified duration of the projects. Monitoring is done to ensure that the projects deliver as per their proposals.*** ***The IPP is required to report quarterly to the DMRE's Independent Power Producer Office (IPPO), which allows the IPPO to monitor use of SED and ED funds as committed by the Project (approximately 2.1% of revenue), as well as monitor the impact such contributions have on the communities through funding of existing projects and enterprises.*** ***Consultation with municipal stakeholders for this Project and for previous RE projects in other provinces identified the need for:*** ***More transparency during the annual monitoring processes so that it is clear for municipalities whether the budget allocated***	MODERATE+	▲ Involve the local and district municipalities' LED Units in all processes when SED and ED projects and suitable candidates for projects and/or training programmes are identified. ▲ Make gender and Youth issues a specific outcome of the needs analysis to ensure that these groups are targeted. ▲ In conjunction with other IPP's in the region or in the RE corridor / RE Zone set up and establish a Forum (or similar structure) to coordinate community development initiatives. Meet on a quarterly basis to provide feedback and ensure transparency. ▲ Ensure further transparency and effective information sharing through industry associated websites, emailed newsletters, municipal noticeboards, information events and meetings and existing community channels used by the various wards. ▲ Become involved in local initiatives that address existing backlogs, such as the establishment and training of an Emergency Unit / Response Team for fire

Activity	Impact summary	Significance	Proposed mitigation
	towards SED and ED has been used adequately; • ***A greater commitment to link with the LED initiatives already identified in the IDP;*** • ***Coordination between SED and ED initiatives of the various RE projects in the region through a central Forum or similar structure so that initiatives are not duplicated. This will also enable the implementation of larger projects that will have a greater impact for the region.***		prevention and emergencies (e.g. with volunteers such as farmers), hospital support (e.g. equipment, training of staff where there are staff shortages, etc.) and so forth to ensure that real community based needs are met. • Link with existing NGO's and pre-established projects but make it a requirement (and set targets) for the establishment of new community-driven development processes and for NGO's to assist in skills transfer to these new groups and processes.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	
TRAINING / SKILLS DEVELOPMENT / CAPACITY BUILDING	***Direct impacts: Training and skills development initiatives during operations are likely to occur in the following ways:*** ***Formal and on-the-job training for permanent and temporary***	MODERATE+	• Identify existing NGO's to assist in training and skills transfer to communities and Officials. • Link with existing training workshops and programmes for SMME development that are

Activity	Impact summary	Significance	Proposed mitigation
	employees to allow them to perform their tasks safely and adequately; - ***Training / education programmes through ED contributions;*** - ***Offering of bursaries and internships;*** - ***Skills development and capacity building of municipal Officials during the negotiation processes and stakeholder relations.*** - ***The implementation and operation of RE projects require local government involvement to assist with managing stakeholder and community relations. This poses various challenges, as there might be shortfalls in terms of capacity and management experience within the municipalities. Emphasis is therefore again placed on the involvement of local government throughout operations to enable the Officials to gain experience and develop skills that will be to the advantage of the Project as well as for the municipalities over the long-term.***		done by municipal LED Units. - In collaboration with other IPPs operational in the region, establish a SMME "Village" and training centre to coordinate training efforts of SMMEs and individuals. Link with bigger institutions such as Universities and Further Education and Training (FET) institutes to increase the impact of training and skills development in the region.
	~~***Indirect impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Cumulative impact, on a localised scale, would be LOW should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	
IMPACTS ON SENSE OF PLACE	***Direct impacts: The Project is located in an area with low crime levels and has an overall feeling of solitude and stillness. The social impact associated with the long-term impact on the sense of place for this OHL project would thus relate to a potential change in the landscape character, intrusion impacts and any changes to the safety and social surroundings of community members.***	MODERATE-	▲ Implement an effective Land Use Management programme in collaboration with the landowners. ▲ Implement all mitigation and management measures as proposed ▲ Rehabilitate the veld to its original state post the operational phase.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs	MODERATE-	

Activity	Impact summary	Significance	Proposed mitigation
	will be prepared to the same standard.		
CONTRIBUTION TO NATIONAL POWER SUPPLY	***Direct impacts: The Project is located in an area with low crime levels and has an overall feeling of solitude and stillness. The social impact associated with the long-term impact on the sense of place for this OHL project would thus relate to a potential change in the landscape character, intrusion impacts and any changes to the safety and social surroundings of community members.***	MODERATE+	▲ Implement an effective Land Use Management programme in collaboration with the landowners. ▲ Implement all mitigation and management measures as proposed ▲ Rehabilitate the veld to its original state post the operational phase.
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	MODERATE+	
TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT			
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS VEGETATION	***Direct impacts: The proposed Soutrivier South WEF will generate electricity and enhance the reliability and stability of supply that would contribute to economic development in the country as a whole.***	LOW-	None suggested.

Activity	Impact summary	Significance	Proposed mitigation
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Overhead Line construction timelines overlap. However, it is important to note that the Overhead Line infrastructure is proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FLORA SPECIES	***Direct impacts: Loss of flora species of special concern during pre-construction site clearing activities. Several special of concern are known from surrounding areas, which could be destroyed during site preparation.***	LOW-	*A flora search and rescue is recommended before commencement.* *Respective permits to be obtained beforehand.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL	***Direct impacts: Susceptibility of post construction disturbed***	LOW-	*Alien trees and weeds must be removed from*

Activity	Impact summary	Significance	Proposed mitigation
BIODIVERSITY IMPACTS ALIEN INVASIVE SPECIES	***areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established.***		*the site as per CARA/ NEMBA requirements.* • *A suitable weed and alien invasive plant management plan to be implemented in construction and operation phases.* *After clearing and construction is completed, an appropriate cover crop may be required, should natural re-establishment of grasses not take place in a timely manner, such as along road verges. This will also minimise dust.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS EROSION	***Direct impacts: Susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity.***	LOW-	• *Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed.* • *Topsoil must be stripped and stockpiled separately and replaced on completion.*
	~~Indirect impacts:~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	▲ *If natural vegetation re-establishment does not occur, a suitable grass must be applied.*
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS ECOLOGICAL PROCESSES	***Direct impacts: Disturbances to ecological processes: Activity may result in disturbances to ecological processes such as fragmentation (road, etc).***	LOW-	*Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS	***Direct impacts: Aquatic and Riparian processes: Diversion and increased velocity of surface water flows – Changes to the hydrological regime and***	LOW-	▲ *Suitable structures to be constructed at watercourse crossings that do not alter flows.* ▲ *Stormwater discharge into watercourses to be*

Activity	Impact summary	Significance	Proposed mitigation
AQUATIC AND RIPARIAN PROCESSES	***increased potential for erosion. Impact of changes to water quality. Loss of riparian vegetation / aquatic habitat. Loss of species of special concern.***		*protected against erosion.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL HABITAT	***Direct impacts: Loss of Faunal Habitat: Activity may result in the loss of habitat for faunal species, which could result in disturbance and displacement of faunal species.***	LOW-	*Blanket clearing of vegetation must be limited to the construction footprint required.* *Rocky outcrop areas and Riverine Rabbit Habitat to be avoided as far as possible.* *It is important that clearing activities are kept to the minimum and take place in a phased manner, where applicable. This allows any smaller animal species to move into safe areas and prevents wind and water erosion of the cleared areas.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	developer and the EMPrs will be prepared to the same standard.		
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL PROCESSES	***Direct impacts: Impacts to faunal processes because of the activity such as erection of barriers to movement.***	LOW-	*The habitats and microhabitats present on the project site are not unique and are widespread in the general area, hence the local impact associated with the footprint would be of low significance if mitigation measures are adhered to.* *Small mammals within the habitat on and around the affected area are generally mobile and likely to be transient to the area. They will most likely vacate the area once construction commences. As with all construction sites there is a latent risk that there will be some accidental mortalities. Specific measures are made to reduce this risk. The risk of species of special concern is low, and it is unlikely that there will be any impact to populations of such species because of the activity.* *Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise. It is recommended that a faunal search and rescue be conducted before construction commences, although experience has shown*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			that there could still be some mortalities as these species are mobile and may thus move onto site once construction is underway. A retile handler should be on call for such circumstances. • *Should any amphibian migrations occur between wetland areas during construction, appropriate measures (including temporarily suspending works in the affected area) should be implemented.*
POTENTIAL TERRESTRIAL BIODIVERSITY IMPACTS FAUNAL SPECIES	***Direct impacts: Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.***	LOW-	• *A pre-commencement faunal search and rescue is recommended.* • *Respective permits to be obtained beforehand.* • *No animals are to be harmed or killed during the course of operations.* • *Workers are NOT allowed to snare any faunal species.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL RISKS TO FAUNA SPECIES	***Direct impacts: The development may***	LOW-	• *Minimising the project footprint by utilising*

Activity	Impact summary	Significance	Proposed mitigation
OF CONSERVATION CONCERN: HABITAT LOSS, DEGRADATION AND FRAGMENTATION	***fragment an already highly fragmented landscape which may create barriers to geneflow where subpopulations are disconnected and isolated. Roads and fences can affect the quality and quantity of available habitat, most notably through fragmentation, creating barriers to animal movement. Erosion from construction may degrade the habitat and direct loss of habitat will occur due to necessity of access roads.***		*existing roads and disturbed areas as much as technically possible.* • *Locate developments away from identified sensitive habitats, this includes no go zones and buffer zones for turbine pads, electrical substations and housing facilities as well as construction laydown areas.* • *Implementing adequate dust control and erosion control.* • *Careful planning of road layout to minimise the length of roads traversing through riverine habitats and rocky ridges that have been identified as Very high or high sensitivity which may create barriers and fragment habitats.* • *Establish wildlife passes, where artificial barriers are found; this particularly refers to physical barriers such as roads and fences.* • *Develop and implement a site-specific spill management plan.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: MORTALITY FROM ROAD COLLISION	***Direct impacts: There is an increased collision risk from increased traffic levels at the site and in the general area. This impact is likely to be of highest concern during construction but is also expected during the operational phase.***	LOW-	• *Careful planning of roads to minimise the length that traverses through riverine and rocky habitats that have been identified as Very high or high sensitivity.* • *Use existing roads as much as possible.* • *Roadkill monitoring*

Activity	Impact summary	Significance	Proposed mitigation
	Roads and roadsides may attract SCC such as Riverine Rabbits and Karoo Dwarf Tortoises due to verge edge enhancement of vegetation and roads may be used to facilitate movement, thus further increasing collision risks. Access roads that traverse riverine habitats require careful planning and monitoring to reduce risk of rabbit mortality.		*program on both internal and external public roads targeting sensitive habitats and wildlife corridors. Roadkill Monitoring programs must be initiated at pre-construction phase and continued during construction and post-construction as well as conducted over different seasons.* • *Pre-construction road planning to identify target sites for wildlife crossing structures which should be considered during the EIA process and with pre-construction roadkill monitoring findings. Wildlife crossing structures must be made in consultation with road planner, construction manager and wildlife biologist. This is generally more cost effective than retro fixing existing roads.* • *Assess efficiency of roadkill mitigation approaches via a post-implementation roadkill monitoring program.* • *Implementation of speed limits on both internal access WEF roads (40km/h) as well as external public roads (60km/h).* • *Reduced speed limits of 30km/h where roads (both internal and external) cross High and Very high*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			sensitivity areas identified; including riverine habitat, koppies and ecotones which may harbour sensitive species and generally have higher species diversity and abundance • *Wildlife warning signage and speed reduction measures where roads cross High and Very high sensitivity areas.* • *Education and awareness campaigns on SCC and their habitat must form part of staff induction procedures to help increase awareness, respect and responsibility towards the environment for all staff and contractors.* • *Inductions on safe wildlife passing and driving to reduce possible injury and roadkill alongside roads.* • *There is higher risk of collision when animals are more active which is typically from late afternoon to early morning. During these times a low speed limit (30km/h) needs to be implemented. Night-time driving should be avoided as much as possible but if necessary, speed needs to be reduced significantly to avoid collisions. Lagomorph species (hares and*

Activity	Impact summary	Significance	Proposed mitigation
			rabbits) often freeze in headlights and require headlights to be momentarily turned off to allow the animal to move off the road. • *Reduced speeds also need to be implemented during reduced visibility such as misty conditions that have been observed on the site.* • *Induction must include reporting of any vehicle/wildlife collision or found roadkill to the appointed Roadkill monitoring personnel.* • *Search and rescue of slow-moving species, specifically Karoo Dwarf Tortoises, during the construction phase. IUCN guidelines for translocation of sensitive species should be consulted. Tortoises will need to be carefully relocated and provided shelter and water-rich food as well as monitoring of threatened species to ensure of their survival. Should a subpopulation be found further consultations with a herpetologist will be required for appropriated mitigation.*
PREDATION FROM POSSIBLE INFLUX OF PIED CROW AND OTHER BIRD OF PREY THAT USE POWERLINE PYLONS FOR NEST SITES	***Direct impacts: Power line infrastructure are often used for nesting sites and may lead to the proliferation of crows in the region (Cunningham et al. 2015). In the past three decades Pied Crow***	LOW-	• *The use of pylon designs that are less favourable for nesting sites* • *The monitoring of powerlines by avifaunal specialists or bird monitors. Nests found*

Activity	Impact summary	Significance	Proposed mitigation
	numbers have increased significantly in South Africa with their spread facilitated by electrical infrastructure (Cunningham et al. 2015; Fincham et al. 2015). A strong relationship has been found between the rate of population increase and density of power line infrastructure in shrubland biomes (Cunningham et al. 2015). This is particularly due to the expansion of power lines in the largely treeless, semi-arid landscapes of the Karoo. Pied Crows are generalist predators, preying on a wide range of species, with evidence of heavy predation pressures on threatened or restricted-range species such as tortoises. The development may thus create increased predation pressures on the Karoo Dwarf Tortoise and several other susceptible vulnerable faunal species of the region. ***The possible artificial increase in Pied Crow abundance (also termed native invaders) may have substantial long-term negative impacts on faunal populations as nest building will occur throughout the operational phase. Furthermore, we currently have very little understanding of the***		*on the powerline should be identified to species level. An adaptive management approach can then be implemented, where identified problematic nests can be removed by maintenance personnel and nest deterrents fitted where needed.* • *The fitting of nest deterrents/discouragers on horizontal and cross beam sections where self-supporting pylons are used.* • *The design of the anti-climb fence must not offer any suitable sites for nests. This can be done by modifying structures so that they are angled downwards to avoid having horizontal platforms. Anti-climb fences must also be set as low as possible on the towers to discourage nesting by Pied Crows.* • *Record prey species below Corvid nests (not limited to powerlines) and use findings to implement culling if required. Targeting culling at individuals that prey on tortoises.* • *Remove available food and water that have been artificially created* ▪ *No open dumpsite and carcass pits – All waste, organic and inorganic, including oil spills, and any existing*

Activity	Impact summary	Significance	Proposed mitigation
	ecological consequences and ecosystem-level implications of these native invaders. It is anticipated that this impact will be most severe in regions where no other power line infrastructures exist, providing nesting sites in an otherwise treeless environment. ***The design of the pylon may influence the opportunities for nesting sites. Pylons which have a lattice structure with horizontal sections provide numerous nesting sites on various levels. Additionally, anti-climb fences are also providing nesting sites for Pied Crows and other species. It is likely that crows (and other birds) will also nest on insulator carriers which can cause electrical problems if conducive materials such as wires are used or if a nest becomes wet during rain. The existing powerlines that run into the Gamma Substation have four different pylon designs and provide an opportunity to assess which design are less favourable for nesting sites. Cross Rope Suspension Towers were found to be less desirable and provide fewer opportunities for nesting sites.***		*agricultural biproduct needs to be environmentally safely disposed of and covered.* ▪ *Avoid using livestock feeding sites to attract corvids and locate away from sensitive habitats.* • *Remove existing artificial nest sites including old broken windmills and telephone/electric poles. This should be done with the advice from an avifaunal specialist*
	~~Indirect impacts:~~		

Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: CUMULATIVE IMPACT	***Direct impacts:***	LOW-	▲ *It is important to evaluate the consequences of each development before the next is begun.* ▲ *Use a precautionary approach and aim to minimise negative effects even when the effects are not fully known.* ▲ *Ensure the construction phase is done in as short a period as possible and avoid breeding season, typically in the spring after good rains.* ▲ *Construction needs to be done during daytime, avoiding noise and disturbance when faunal communities are most likely active, particularly where the construction is in proximity to their habitat. Sensitive habitats near construction will need to be clearly marked.* ▲ *Relating construction phase of the*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
			development with neighbouring developments and farming activity to ensure construction does not begin immediately after the completion of another or simultaneously. • *The developer instigates a proactive mitigation measure by initiating a multi-stakeholder dialogue at a workshop to clarify these concerns and how they might be taken forward and co-funded. The aim of this mitigation is to reduce current impacts that threaten the survival of SCC populations. We recommend a biodiversity wildlife corridor approach whereby protecting sensitive habitats is made a priority. This may include species refuge areas where no form of indiscriminate wildlife killing/snaring is allowed, no or highly reduced livestock grazing, and no pest control including locust spraying is carried out.* • *Poaching and the use of hunting dogs at site is prohibited.*
POTENTIAL RISKS TO FAUNA SPECIES OF CONSERVATION CONCERN: CASCADING IMPACT ACROSS TROPHIC LEVELS	***Direct impacts: The cumulative impact is of concern, given the fact that the renewable-energy industry is rapidly expanding in South Africa. The local fauna is already impacted and***	LOW-	• *Initiate a general Fauna Biodiversity Monitoring program* • *A Fauna Biodiversity program must be initiated pre-construction to have baseline population*

Activity	Impact summary	Significance	Proposed mitigation
	threatened by past and current land use and the combination of these existing anthropogenic impacts with planned developments may impact the local fauna with unexpectedly large effects. Cumulative effects can also result where the construction phase occurs at several locations simultaneously or if a new project begins construction immediately following the completion of another. Cumulative effects can cause a small localized effect (which may have a limited effect on its own) to have a significant impact on population level as there may be thresholds where the cumulative effects increase disproportionally.		*status and monitoring must be ongoing post-construction to identify any changes in occupancy in certain species' population which may in turn indirectly impact other fauna populations.* - *We recommend the use of multiple monitoring methods including and not limited to; camera trapping in diverse habitats, targeted camera trapping for SCC; small mammal monitoring with the use of Sherman traps; the use of Conservation Scent Detection Dog teams to assist in detecting SCC.*
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be low should the Taaibos and Soutrivier WEF clusters construction timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
~~Alternative 2~~			
	~~Direct impacts:~~		

Activity	Impact summary	Significance	Proposed mitigation
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
No-go option			
	~~***Direct impacts:***~~	N/A	No-go alternative would result in no impact related to the proposed activities as the site does not currently experience issues regarding the proposed activities
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

DECOMISSIONING PHASE – GENERAL IMPACTS

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
POLLUTION	***Direct impacts: Littering by construction workers could cause surface and ground water pollution.***	LOW-	*Littering must be avoided, and litter bins must be made available at various strategic points on site.* *Refuse from the decommissioning of the site must be collected on a regular basis and deposited at an appropriate landfill.*
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
	and Soutrivier WEF clusters decommissioning timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.		
	Cumulative impacts: Cumulative impact would be high should the Taaibos and Soutrivier WEF clusters be constructed at the same time. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
	Direct impacts: Onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants, etc. during decommissioning	LOW-	• No storage of fuels and hazardous materials must be permitted near sensitive water resources. All hazardous substances (e.g. diesel, oil drums, etc.) to be stored in a bunded area.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters decommissioning timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
DUST	***Direct impacts: Dust is likely to be a potential nuisance due to the decommissioning activities.***	LOW-	▲ Management of fugitive/nuisance dust could be implemented through the following: ▪Damping down of un-surfaced and un-vegetated areas; ▪Retention of vegetation where possible; ▲ Demolitions and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas; ▪A speed limit of 40km/h must not be exceeded on dirt roads. ▲ Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters decommissioning timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	
SOIL EROSION	***Direct impacts: After the removal of all pylon related structures, the disturbed soils could become exposed, unstable and prone to erosion.***	LOW-	After the removal of all pylon-related structures, the disturbed soils must be re-vegetated to avoid unnecessary soil erosion. This must be based on the Revegetation Plan and the Erosion Management Plan.
	~~Indirect impacts:~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters decommissioning timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW-	

Activity	Impact summary	Significance	Proposed mitigation
LAND-USE	***Direct impacts: Land previously unavailable for certain types of land use will now be available for those uses.***	LOW+	No mitigation necessary
	~~***Indirect impacts:***~~		
	Cumulative impacts: Cumulative impact, on a localised scale, would be moderate should the Taaibos and Soutrivier WEF clusters decommissioning timelines overlap. However, it is important to note that the 5 WEFs and their associated infrastructure are proposed by the same developer and the EMPrs will be prepared to the same standard.	LOW+	
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		

Activity	Impact summary	Significance	Proposed mitigation
No-go option			
POLLUTION DUST	***Direct impacts:***	N/A	No-go alternative would result in no impact related to the proposed activities as the site does not currently experience issues regarding the proposed activities
	Indirect impacts:		
	Cumulative impacts:		

****DUE TO THE FACT THAT NO WIND ENERGY FACILITIES HAVE BEEN DECOMMISSIONED IN SOUTH AFRICA, CES BELIEVES IT RESPONSIBLE TO STIPULATE THAT FUTHER ASSESSMENT IN THE FORM OF A DECOMISSIONING ENVIRONMENTAL MANAGEMENT PROGRAMME BE DRAFTED, IN CONSULTATION WITH SPECIALISTS, WHEN THIS PHASE BECOMES RELEVANT.**

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

169 impacts were identified during the BA process. Of the identified impacts 147 are NEGATIVE and 22 are POSITIVE pre- and post-mitigation. The purpose of the BA process is to ensure that a site and proposed activity are assessed and then mitigated in terms of the mitigation hierarchy.

In terms of the mitigation hierarchy the figures below illustrate the following application.

1) Avoid: Sensitive will be avoided at a pylon placement level in relation to aquatic impacts. Sensitive areas related to avifauna have been avoided as per Chapter 10 of this report (sensitivity analysis) and no critical un-mitigatable impacts remain.
2) Minimise: Most of the impacts are LOW post-mitigation (80%), having been reduced from predominantly MODERATE pre-mitigation.
3) Offset: N/A as no VERY HIGH biodiversity impacts remain post mitigation.

Given the reduction in impact significance (negative impacts) through the mitigation hierarchy and the number of positive impacts associated with the development, the EAP is of the opinion that the environmental, social and economic cost does not outweigh the environmental, social and economic benefit of the proposed Soutrivier South 132kV OHL, associated with the Soutrivier South WEF.

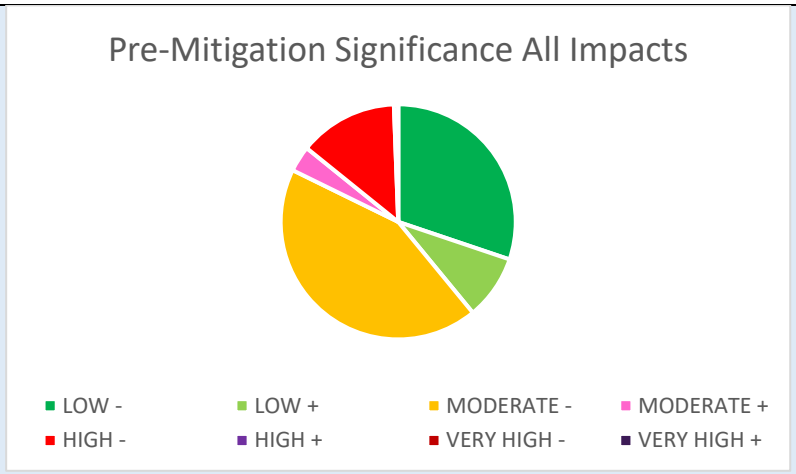


Figure 17: Soutrivier South OHL Full Impact Comparison, Pre-Mitigation

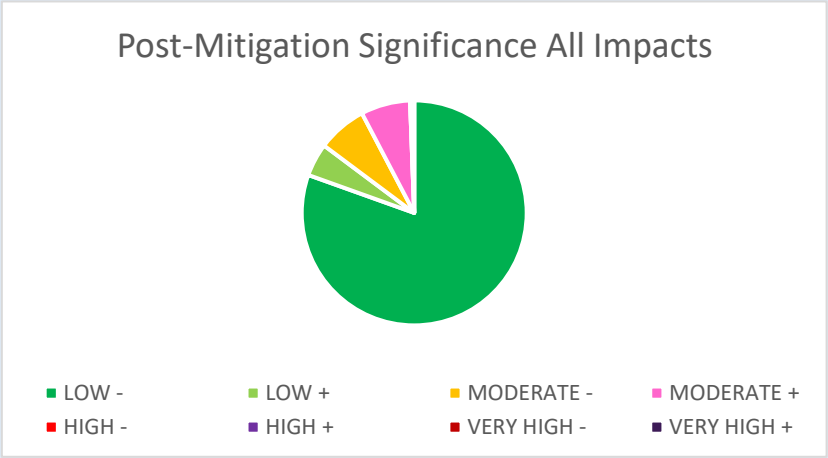


Figure 18: Soutrivier South OHL Full Impact Comparison, Post-Mitigation

Alternative B

Alternative C

No-go alternative (compulsory)

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

The status quo for the proposed Soutrivier South WEF site would include the following:

IMMEDIATE AREA OF THE PROPOSED OHL:

- Livestock grazing (proposed OHL would have a negligible impact);
- Game farming (proposed OHL would have a negligible impact);
- Alien vegetation (proposed OHL would have a positive impact);
- Ecological processes (proposed OHL would have a negative impact)

ADJACENT AREA OF THE PROPOSED OHL:

- Job creation (proposed OHL would have a positive and a negative impact);
- Electricity stabilization (proposed OHL would have a positive impact);

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**YES**	~~NO~~

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

Based on the contents of this report, and all associated documentation, it is the opinion of the EAP that the proposed Soutrivier South 132kV OHL, associated with the Soutrivier South WEF, be authorised on condition that all conditions stipulated below be contained within the EA. The ecological, economic and social trade-offs must be factored in by the department during the decision-making process. It is the opinion of the EAP that site is sensitive from a visual perspective (social), suitable from an ecological perspective (high sensitive areas have been avoided and can be suitably mitigated) and both sensitive and suitable from an economic perspective. Please note that this this list is limited to general recommendations. The specialist recommendations have been included in the EMPr, which must be implemented and adhered to.

<u>Planning and Design Recommendations</u>

The following mitigation measures must be implemented as part of the planning and design phase:

- Project planning must include a plan for traffic control that will be implemented, especially during the construction phase of the development. Consultation with the local Road Traffic Unit in this regard must be done early in the planning phase. The necessary road traffic permits must be obtained for transporting parts, containers, materials and construction equipment to the site.
- Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified, these areas must be upgraded if necessary.
- All hazardous substances such as paints, diesel and cement must be stored in a bunded area with an impermeable surface beneath them.
- Cement mixing must be conducted at a single location which must be centrally located, where practical. This mixing must take place on an impermeable surface, and dried waste cement must be disposed of with building rubble.
- The applicant must ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy. These must include (but not restricted to):
  - Local and District Spatial Development Frameworks
  - Local Municipal bylaws
- In addition, planning for the construction and operation of the proposed energy facility must consider available best practice guidelines, up to date at the proposed time of construction.
- Structures must be located at least 32m away from identified drainage lines.
- A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of water flow.
- The Stormwater Management Plan must also include management mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by considering the applicability of contouring, etc.

- A Waste Management Plan must be developed for handling onsite waste. This plan must designate an appropriate area where waste can be stored before disposal.
- All general waste must be disposed of at a registered landfill site.
- Wherever possible, construction activities must be undertaken during the driest part of the year to minimize downstream sedimentation due to excavation, etc. When not possible, suitable stream diversions structures must be used to ensure that rivers/streams are not negatively impacted by construction activity.

Construction Recommendations

The following mitigation measures must be implemented during the construction phase:

- Fugitive/nuisance dust must be reduced by implementing one of or a combination of the following
  - Damping down of un-surfaced and un-vegetated areas;
  - Retention of vegetation where possible;
  - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;
  - A speed limit of 40km/h must not be exceeded on dirt roads;
- Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
- There must be no burning of construction waste or debris onsite. Cooking is not permitted on site. Smoking on site must be confined to a designated area in the vicinity of the site office which must be equipped with the necessary fire extinguishers.
- The Stormwater Management Plan must be implemented. There must be no earthworks within 32m of the drainage lines to avoid contamination of water sources.
- The Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The plan must be explained to all employees as part of the environmental induction training. All waste must be disposed of at an appropriately licensed landfill site.
- The storage of fuels and hazardous materials must be located away from sensitive water resources. All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area.
- All construction materials must be stored in a central and secure location with controlled access with an appropriate impermeable surface.
- The recommendations of the Stormwater Management Plan must be implemented to mitigate the impacts of run-off water on pollution.
- The concrete batching plant must be clearly demarcated, and no sprawl must be tolerated.
- Stockpiled excavated material must not be stored within 32m of a watercourse.
- Stockpile areas must be suitably bunded to prevent waterborne erosion of exposed soils where there is a likelihood that the soils will be washed into a watercourse.
- Materials used for infilling must be suitably stabilized to ensure that scour and erosion of the existing bed/banks is exacerbated.
- Subsoil cannot be disposed of onsite without the appropriate Waste License in terms of the NEMA: Waste Act. This must be stipulated in the Waste Management Plan.
- Spoil could be used to rehabilitate open borrow pits or erosion features. Disposal of spoil material to a registered landfill must be the last option. No spoil stockpiles will be allowed to remain onsite once construction activities have ceased.

Operational Recommendations

The following mitigation measures must be implemented during the operational phase:

- All project structures and buildings must be maintained.
- All hazardous substances must be stored in appropriately bunded locations.

- Recommendations of the Stormwater Management Plan must be implemented throughout the lifespan of the project.
- Recommendation of the Waste Management Plan, incorporating recycling and waste minimisation, must be implemented throughout the lifespan of the project.

Decommissioning Recommendations

The following mitigation measures must be implemented during the operational phase:

- This section of mitigation measures must be reassessed by a suitably qualified EAP and specialists prior to decommissioning.
- Littering must be avoided, and litter bins must be made available at various strategic points on site. Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill.
- Fugitive/nuisance dust must be reduced by implementing one of or a combination of the following
  - Damping down of un-surfaced and un-vegetated areas;
  - Retention of vegetation where possible;
  - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;
  - A speed limit of 40km/h must not be exceeded on dirt roads;
- Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
- Construction vehicles and machinery must make use of existing infrastructure such as roads as far as possible to minimise disturbance on the receiving environment.
- After the removal of all OHL-related structures, the disturbed soils must be re-vegetated to avoid unnecessary soil erosion.

Based on current available information the OHL structures will be removed as per the above specifications. It is recommended that a new and up-to-date impact assessment is undertaken prior to this process to ensure that the latest relevant guidelines and policy on wind farm decommissioning are factored into the process. Should new technology be available to replace the structures then, depending on the legislation relevant at the time, the EAP recommends a new impact assessment process prior to being able to do so. The DFFE would be required to approve any decommissioning or replacement process.

Is an EMPr attached?	**YES**	~~NO~~

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Dr Alan Carter

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information