




POFADDER WIND FACILITY 2 (PTY) LTD

**Proposed Development of the Pofadder
Wind Energy Facility (WEF) 2 and
Associated Infrastructure near
Pofadder in the Northern Cape Province**

Draft Scoping Report

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KEY PROJECT INFORMATION

Component	Description / Dimensions
Location of site (centre point)	29°17'19.51"S 19°44'45.51"E
Application site area	3100 ha
Turbine development area	Turbine Foundation Area = 45m*32m*30 turbines = 4.4 Ha
SG codes	C03600000000020200000 C03600000000015000003 C03600000000020100000
Export capacity	Up to 200 MW
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 200 m
Rotor diameter	Up to 200 m
Substation Area	Approximately 1.56 ha
O&M building area	Approximately 1 ha
Construction Laydown and Batching Plant	Up to 7 ha
Permanent laydown area	To be determined based on final layout
Gatehouse and Security	Approximately 0.5 ha
Hard stand areas	Approximately 10.8 ha for blade hardstands and 9.5 ha for crane hardstands
Width of internal access roads	Approximately 6 m
Length of internal access roads	Approximately 50 km
Site Access	The main road located within the region is the N14 National Highway which runs from Upington to Springbok and is located 20 km to the north of the site. A minor district road is located 7.2 km to the west (R358), as well as a minor farm access road routing through the proposed development area (east to west). These roads are for farming access and are gravel, usually unsuited for tourist related traffic.
Proximity to grid connection	Approximately 47 km from application site
Height of fencing (for substation)	Approximately 3.5 m high
Type of fencing (for substation)	Galvanized palisade fencing

POFADDER WIND ENERGY FACILITY (WEF) 2

DRAFT SCOPING REPORT

EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

Pofadder Wind Facility 2 (The Applicant) (Pty) Ltd is proposing to construct the Pofadder Wind Energy Facility (WEF) 2 and associated infrastructure approximately 35 km south east of Pofadder in the Kai !Garib Local and Z F Mgcawu District Municipalities, in the Northern Cape. (**Figure 1**) (**DFFE Reference Number: To be Allocated**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 200 megawatt (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the Pofadder WEF 2 and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform) will also be consulted. The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

Two additional WEF's are concurrently being considered on the properties and are assessed by way of separate impact assessment processes contained in the 2014 Environmental Impact Assessment Regulations (GN No. R982, as amended) for listed activities contained Listing Notices 1, 2 and 3 (GN R983, R984 and R985, as amended). These projects are known as Pofadder Wind Energy Facility 1 (**DFFE Reference Number: To be Allocated**) and Pofadder Wind Energy Facility 3 (**DFFE Reference Number: To be Allocated**).

In order to evacuate the energy generated by the WEF's to supplement the national grid, Pofadder Grid (Pty) Ltd is proposing two grid connection alternatives which will be assessed in a separate Integrated Grid BAR (**DFFE Reference Number: To be Allocated**):

The respective WEF's and grid connection infrastructure will require separate Environmental Authorisations (EAs) and are subject to separate Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes respectively. The proposed grid connection infrastructure will be handed over to Eskom once constructed (Eskom grid connection works). The substations will include an Eskom portion (switching station) and an Independent Power Producer (IPP) portion (facility substation) hence the facility substations will be included in the respective WEF EIAs and the Eskom switching stations in the respective associated grid connection infrastructure BA in order to allow for handover to Eskom.

POFADDER WIND ENERGY FACILITY 2 (PTY) LTD

Prepared by:



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Although the respective WEF's and associated grid connection infrastructure (switching stations and overhead power lines) will be assessed separately, it is proposed that a single public participation process be undertaken to consider all of the proposed projects [i.e. three (3) WEF EIAs and one (1) grid connection BA]. This is however dependant on approval from the DFFE. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

APPLICABILITY OF NEMA EIA REGULATIONS, 2014 (AS AMENDED IN 2017)

The following activities are applied for:

Activity No(s):	Relevant Basic Assessment Activities as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended
11 (i)	GN R. 327 (as amended) Item 11: The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.
12 (ii) (a) (c)	GN R. 327 (as amended) Item 12: The development of: ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.
19	GN R. 327 (as amended) 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;
24 (ii)	GN R. 327 (as amended) Item 24: The development of a road - ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.
28 (ii)	GN R. 327 (as amended) Item 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;
48 (i) (a) (c)	GN R. 327 (as amended) Item 48: The expansion of- (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;
56 (ii)	GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (ii) where no reserve exists, where the existing road is wider than 8 metres –

Activity No(s):	Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended
1	GN R. 325 (as amended) Item 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,
15	GN R. 925 (as amended) Item 15: The clearance of an area of 20 hectares or more of indigenous vegetation.
Activity No(s):	Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended
4 g. (ii) (ee)	GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres. g. Northern Cape ii. Outside urban areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
12 (g) (ii)	GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. g. Northern Cape ii. Within critical biodiversity areas identified in bioregional plans;
14 (ii) (a) (c) (g) (ii) (ff)	GN R. 324 (as amended) Item 14: 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; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. g. Northern Cape i. 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;
18 (g) (ii) (ee)	GN R. 324 (as amended) Item 18: The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- g. Northern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.
23 (ii) (a) (c) (g) (ii) (ee)	GN R. 324 (as amended) Item 23: The expansion of— (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion 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;

	<p>excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>g. Northern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>
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DETAILS OF ALTERNATIVES CONSIDERED

No site alternatives have been considered during the EIA process for the proposed development. The placement of wind energy installations is dependent on the factors discussed above, all of which are favourable at the proposed site location. A met mast was installed on the project site and the proposed site has been deemed suitable in terms of wind resource. The proposed project site has topography which is suitable for the development of a WEF. In addition, the proposed project site also has a low agricultural intensity and is easily accessible off the N14 national road and the R358 gravel access road. The site is therefore considered highly suitable for the proposed development of a WEF and no other locations have been considered.

Site layout alternatives will not be comparatively assessed, but rather a single layout will be refined as additional information becomes available throughout the EIA process (e.g. specialist input, additional site surveys, and ongoing stakeholder engagement). For example the bat monitoring scoping report identified the need to relocate seven turbines out of the bat no-go areas, the final layouts will be amended and assessed during the EIR phase.

The development area presented in the Scoping Report has been selected as a practicable option for the Pofadder WEF 2 considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the initial screening studies.

The no-go alternative will result in the current status quo being maintained as far as the avifauna, bats, ecological and the aquatic systems are concerned. The no-go option would therefore eliminate any additional impact on the ecological integrity of the proposed development site. The no-go option would also mean that the social environment is not affected as the status quo remains. This also means that all the positive aspects associated with the project would not materialise. Consequently, there would be no job creation, no revenue streams into the local economy and municipal coffers, and a lost opportunity to enhance the National Grid with a renewable source of energy.

The no-go alternative will not be taken forward to the EIA phase for further assessment.

POTENTIAL IMPACTS IDENTIFIED FOR THE PREFERRED ALTERNATIVE

Planning

Environmental Aspect	Potential Impact during Construction
Visual	<ul style="list-style-type: none"> • Potential visual effect of wind turbines on the rural landscape and on surrounding farmsteads. • Potential shadow flicker caused by wind turbines to nearby receptors (early morning and late afternoon). (Note: Shadow Flicker Impacts are not assessed in this document) • Potential visual clutter of on-site substation/s, operations and maintenance structures (O&M structures) and connecting powerlines. • Potential visual intrusion caused by navigation lighting from turbines and security lighting at substations and O&M structures at night.

Construction

Environmental Aspect	Potential Impact during Construction
Social	<ul style="list-style-type: none"> • Noise • Increase in crime • Increased risk of HIV infections • Influx of construction workers • Hazard exposure • Disruption of daily living patterns • Disruptions to social and community infrastructure • Job creation and skills development • Socio-economic stimulation
Visual	<ul style="list-style-type: none"> • Potential scarring in the landscape caused by earthworks for access roads and assembly platforms, particularly on steeper slopes. • Dust and noise during construction from heavy machinery and truck traffic.
Avifaunal	<ul style="list-style-type: none"> • Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure. • Displacement of priority species due to habitat transformation associated with construction of the wind turbines and associated infrastructure.
Bat	<ul style="list-style-type: none"> • Vegetation clearing for access roads, turbines and their service areas and other infrastructure, as well as noise and dust generated during the construction phase, will indirectly impact bats by removing habitat used for foraging/commuting and through disturbance. • Construction of WEF infrastructure could result in destruction (direct impact) of bat roosts (trees, rock crevices) and disturbance (indirect impact) of bat roosts (trees, buildings, rock crevices) potentially resulting in roost abandonment. Bats may also roost in project infrastructure (e.g., buildings, turbines, road culverts) potentially attracting them to risky locations.
Agricultural	Agricultural Compliance
Aquatic / Freshwater	<p><u>Disturbance to and loss of wetland vegetation</u></p> <p>Construction of infrastructure may lead to direct loss of vegetation, causing a localised or more extensive reduction in the overall extent of vegetation.</p>

Environmental Aspect	Potential Impact during Construction
	<p>Potential consequences include:</p> <ul style="list-style-type: none"> • General loss of habitat for sensitive fauna and flora species; • General reduction in biodiversity; • Reduction in the ability of the wetlands to fulfil their ecological services and functions such as flood attenuation and the enhancement of water quality through the precipitation and storage of nitrates and toxicants; • Disturbance to processes maintaining biodiversity and ecosystem goods and services; and • Exposure of soil to erosion. <p><u>Impact on freshwater resource systems through the possible increase in surface water runoff</u></p> <p>An increase in the surface water budget of the wetlands and watercourses, due to an increase in volume and velocity of surface water flow from the cleared construction areas into the wetlands, may result in the loss of natural wetland/aquatic vegetation and potentially expose the wetland/aquatic soils to erosion.</p> <p>Activities associated with the construction phase may potentially lead to some direct or indirect loss of or damage to the identified wetlands and watercourses. Impacts on these systems will most likely be:</p> <ul style="list-style-type: none"> • Vegetation clearing within the development area may result in an increase in surface water flow and expose areas prone to erosion and these areas may expand / spread into the wetlands. • The eroded material may enter the wetlands and may potentially impact these systems through siltation. <p><u>Impact on localized surface water quality</u></p> <p>Chemical pollutants (hydrocarbons from equipment and vehicles, cleaning fluids, cement etc.) could potentially be washed downslope into the wetlands and potentially affect water quality.</p> <p><u>Loss of habitat for fauna dependent on such habitats</u></p> <p>Fauna species of conservation concern are indirectly affected primarily by a loss of or alteration of habitat and associated resources. Animals are mobile and, in most cases, can move away from a potential threat, unless they are bound to a specific habitat that is also spatially limited, such as isolated, endorheic pans, and will be negatively impacted by a development.</p> <p>For any species, a loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. However, in the case of threatened animal species, loss of a suitable habitat, population, or individuals could lead to a direct change in the conservation status of the species. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations or the habitat that they depend on. Consequences may include:</p> <ul style="list-style-type: none"> • Loss of populations of affected species; • Reduction in area of occupancy of affected species; • Loss of genetic variation within affected species; and • Future extinction debt of a particular species.

Environmental Aspect	Potential Impact during Construction
	There is SCC that may potentially utilized these habitat types.
Heritage	Archaeological Resources Grubbing and excavations for roads, turbines and other infrastructure will directly impact on archaeological sites and artefacts
	Graves <ul style="list-style-type: none"> Grubbing and excavations for roads, turbines and other infrastructure may directly impact on graves
	Cultural landscape and structures <ul style="list-style-type: none"> Introduction of construction equipment and turbines directly alters landscape quality, sense of place and context of structures
Heritage (Palaeontology)	If fossils of scientific value (rare, complete, index fossils) are present they might be destroyed when excavations for foundations commence
Noise	<ul style="list-style-type: none"> Construction equipment and vehicle noise
Terrestrial Ecology	<p><u>Disturbance to and loss of indigenous natural vegetation</u></p> <p>Construction of infrastructure will lead to direct loss of vegetation, causing a localised or more extensive reduction in the overall extent of vegetation. Consequences of the clearing and loss of indigenous semi – to near-natural vegetation occurring may include:</p> <ul style="list-style-type: none"> Increased vulnerability of remaining vegetation to future disturbance, including extreme climatic events; General loss of habitat for sensitive fauna and flora species; Loss in variation within sensitive habitats due to loss of portions of it; General reduction in biodiversity; Increased fragmentation (depending on the location of the impact) and associated reduced viability of species populations; Alteration of the habitat suitable for plant populations by altering surface structure. This will change species composition and associated species interactions; Disturbance to processes maintaining biodiversity and ecosystem goods and services; and Loss of ecosystem goods and services.
	<p><u>Disturbance or loss of threatened/protected plants.</u></p> <p>SCC could potentially occur in the study area. Flora is affected by an overall loss or alteration of habitat and due to its limited ability to extend or change its distribution range.</p> <p>In the case of SCC, a loss of a population or individuals could lead to a direct change in the conservation status of the species, possibly extinction. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations. Consequences of this may include:</p> <ul style="list-style-type: none"> Fragmentation and decline of populations of affected species; Reduction in the area of occupancy of affected species; Loss of genetic variation within affected species; Alteration of the habitat suitable for plant associations by altering of the surface structure. This will change species composition and associated species interactions and species ability to persist; and Future extinction debt of particular species of flora and fauna.

Environmental Aspect	Potential Impact during Construction
	<p>These may all lead to a negative change in conservation status of the affected species, which implies a reduction in the chance of survival of the species.</p> <p><u>Loss of habitat for fauna species of conservation concern</u></p> <p>Fauna species of conservation concern are indirectly affected primarily by a loss of or alteration of habitat and associated resources. Animals are mobile and, in most cases, can move away from a potential threat, unless they are bound to a specific habitat that is also spatially limited and will be negatively impacted by a development. Nevertheless, the proposed development will reduce the extent of habitat available to fauna.</p> <p>For any species, a loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. However, in the case of threatened animal species, loss of a suitable habitat, population, or individuals could lead to a direct change in the conservation status of the species. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations or the habitat that they depend on. Consequences may include:</p> <ul style="list-style-type: none"> • Loss of populations of affected species; • Reduction in area of occupancy of affected species; • Loss of genetic variation within affected species; and • Future extinction debt of a particular species. <p>There are a number of red data species that have been recorded for the wider area within which the study area is located. Their presence and the necessity to keep their habitats intact in the study area needs to be confirmed during a field survey in the EIA phase.</p> <p><u>Disturbance to migration routes and associated impacts to species populations</u></p> <p>Site preparation and construction activities may interfere with the current migration routes of fauna species. This may lead to:</p> <ul style="list-style-type: none"> • Reduced ability of species to move between breeding and foraging grounds, reducing breeding success rates; • Reduced genetic variation due to reduced interaction amongst individuals or populations as a result of fragmentation effects caused by the proposed developments <p><u>Impact on Critical Biodiversity Areas</u></p> <p>Development within the CBAs and ESAs may negatively impact biodiversity and the ecological functioning of these features.</p> <p><u>Establishment and spread of declared weeds and alien invader plants</u></p> <p>Major factors contributing to invasion by alien invader plants include excessive disturbance to vegetation, creating a window of opportunity for the establishment of alien invasive species. In addition, regenerative material of alien invasive species may be introduced to the site by machinery traversing through areas with such plants or materials that may contain regenerative materials of such species. Consequences of the establishment and spread of invasive plants include:</p> <ul style="list-style-type: none"> • Loss of indigenous vegetation; • Change in vegetation structure leading to change in or loss of various habitat characteristics;

Environmental Aspect	Potential Impact during Construction
	<ul style="list-style-type: none"> • Change in plant species composition; • Altered and reduced food resources for fauna; • Change in soil chemical properties; • Loss or disturbance to individuals of rare, endangered, endemic and/or protected species; • Fragmentation of sensitive habitats; • Change in flammability of vegetation, depending on alien species; • Hydrological impacts due to increased transpiration and runoff; • Increased production and associated dispersal potential of alien invasive plants, especially to lower-lying wetland areas, and • Impairment of wetland function.

Operational

Environmental Aspect	Potential Impact during Operation
Social	• Shadow flicker (associated with the energy facility and not the grid infrastructure)
	• Blade glint (associated with the energy facility and not the grid infrastructure)
	• Electromagnetic field and RF interference
	• Hazard exposure
	• Transformation of the sense of place
	• Job creation and skills development
	• Socio-economic stimulation
Visual	<ul style="list-style-type: none"> • Potential visual effect of wind turbines on the rural landscape and on surrounding farmsteads. • Potential shadow flicker caused by wind turbines to nearby receptors (early morning and late afternoon). • Potential visual clutter of on-site substation/s, operations and maintenance structures (O&M structures) and connecting powerlines. • Potential visual intrusion caused by navigation lighting from turbines and security lighting at substations and O&M structures at night.
Avifaunal	• Mortality of priority species due to collisions with wind turbines.
	• Mortality of priority species due to electrocution on the medium voltage internal reticulation network
	• During operation: Mortality of priority species due to collisions with the medium voltage internal reticulation network
Bat	• Bat mortality (direct impact) through collisions and/or barotrauma with wind turbine blades
	• The installation of lighting in the landscape at non-turbine project infrastructure can attract insects and in turn foraging bats, bringing them into the vicinity of wind turbines. Insects can also die at lighting infrastructure, removing bat prey resources.
Agricultural	Compliance Statement
Aquatic / Freshwater	<p><u>Impact on freshwater resource systems through the possible increase in surface water runoff</u></p> <p>An increase in the surface water budget of the wetlands and watercourses, due to an increase in volume and velocity of surface water flow from the cleared areas and from any compacted and hard surfaces.</p>

Environmental Aspect	Potential Impact during Operation
	<p>This may result in:</p> <ul style="list-style-type: none"> • a change in vegetation composition and structure, • the exposure of wetland soils leaving these areas prone to soil erosion; • increase in sedimentation and subsequently a reduction in water quality; and • reduction in the ability of the wetlands to fulfil vital ecological functions and services such as flood attenuation and precipitation of minerals such as nitrates and toxicants. <p><u>Impact on localized surface water quality</u></p> <p>Chemical pollutants (hydrocarbons from service equipment and vehicles etc.) could potentially be washed downslope into these wetlands and potentially affect water quality.</p>
Heritage	<p>Cultural landscape and structures</p> <ul style="list-style-type: none"> • Existence of the WEF in a rural/natural landscape directly alters landscape quality, sense of place and context of structures, including night time impacts from red flashing lights
Noise	<ul style="list-style-type: none"> • Mechanical and aerodynamic noise from the operation of the wind turbine components.
Terrestrial Ecology	<p><u>Disturbance or loss of indigenous natural vegetation</u></p> <p>Hard and engineered surface create areas of altered surface characteristics, rainfall interception patterns. Consequently, it can be expected that within the Facility development footprint, the species composition and topsoil characteristics will change significantly. A sparser or less stable vegetation, together with the altered surface and runoff characteristics may lead to:</p> <ul style="list-style-type: none"> • Increased vulnerability of the remaining vegetation to future disturbance, including erosion; • General loss or significant alteration of habitats for sensitive species; • Loss in variation within sensitive habitats due to a loss of portions of it; • General reduction in biodiversity; • Increased fragmentation (depending on location of impact); • Future extinction debt of a particular species; • Disturbance to processes maintaining biodiversity and ecosystem goods and services; and • Loss of ecosystem goods and services. <p><u>Altered runoff patterns due compacted areas</u></p> <p>Hard, engineered surfaces create surfaces of rainfall interception, where rainfall is collected and concentrated at the edges from where it then moves onto the ground in larger, concentrated quantities as opposed to small drops being directly intercepted and raindrop impact dispersed by vegetation, then absorbed by the ground. This may lead to a localised increase in runoff during rainfall events, which may result in localised accelerated erosion.</p> <p>Likewise, access roads and areas where soils have been compacted during construction will have a low rainfall infiltration rate, hence creating more localised runoff from those surfaces. Runoff will thus have to be monitored and channelled where necessary to prevent erosion over larger areas.</p> <p><u>Establishment and spread of declared weeds and alien invader plants</u></p>

Environmental Aspect	Potential Impact during Operation
	<p>The envisaged altered vegetation cover after construction and during the operation phase of the proposed development will create a window of opportunity for the establishment of alien invasive species. In addition, regenerative material of alien invasive species may be introduced to the site by machinery or persons traversing through areas with such plants or materials that may contain regenerative materials of such species. Consequences of the establishment and spread of invasive plants include:</p> <ul style="list-style-type: none"> • Loss of indigenous vegetation or change in vegetation structure leading to an even more significant change in or loss of various habitat characteristics; • Loss of plant resources available to fauna; • Change in soil chemical properties; • Loss or fragmentation of sensitive or restricted habitats; • Loss or disturbance to individuals of rare, endangered, endemic and/or protected species; • Change in flammability of vegetation, depending on alien species; • Hydrological impacts due to increased transpiration and runoff; • Increased production and associated dispersal potential of alien invasive plants

Decommissioning

Environmental Aspect	Potential Impact during decommissioning
Social	<ul style="list-style-type: none"> • Noise • Increase in crime • Increased risk of HIV infections • Influx of construction workers • Hazard exposure • Disruption of daily living patterns • Disruptions to social and community infrastructure • Job creation and skills development • Socio-economic stimulation
Avifaunal	n/a
Bat	<ul style="list-style-type: none"> • Disturbance to bats due to decommissioning activities through noise and dust, and damage to vegetation
Agricultural	Compliance Statement
Aquatic / Freshwater	None identified
Heritage	<p>Cultural landscape and structures</p> <ul style="list-style-type: none"> • Introduction of construction equipment directly alters landscape quality, sense of place and context of structures.
Noise	None identified
Terrestrial Ecology	None identified

Cumulative

Environmental Aspect	Potential Cumulative Impact
Social	None
Visual	None

Environmental Aspect	Potential Cumulative Impact
Avifaunal	None
Bat	<ul style="list-style-type: none"> Vegetation clearing for access roads, turbines and their service areas and other infrastructure, as well as noise and dust generated during the construction phase, will indirectly impact bats by removing habitat used for foraging/commuting and through disturbance. Construction of WEF infrastructure could result in destruction (direct impact) of bat roosts (trees, rock crevices) and disturbance (indirect impact) of bat roosts (trees, building, rock crevices) potentially resulting in roost abandonment. Bats may also roost in project infrastructure (e.g., buildings, turbines, road culverts) potentially attracting them to risky locations.
	<ul style="list-style-type: none"> Bat mortality (direct impact) through collisions and/or barotrauma with wind turbine blades
	<ul style="list-style-type: none"> The installation of lighting in the landscape at non-turbine project infrastructure can attract insects and in turn foraging bats, bringing them into the vicinity of wind turbines. Insects can also die at lighting infrastructure, removing bat prey resources.
	<ul style="list-style-type: none"> Disturbance to bats due to decommissioning activities through noise and dust, and damage to vegetation.
Agricultural	Compliance Statement
Aquatic / Freshwater	<p>The compromise of ecological processes as well as ecological functioning of these important freshwater resource habitats.</p> <p>Transformation of intact habitat could potentially compromise ecological processes as well as ecological functioning of important habitats and would contribute to habitat fragmentation and potentially disruption of habitat connectivity and furthermore impair their ability to respond to environmental fluctuations. This is especially of relevance for larger watercourses and wetlands serving as important groundwater recharge and floodwater attenuation zones, important microhabitats for various organisms and important corridor zones for faunal movement.</p>
Heritage	<p>All heritage resources</p> <ul style="list-style-type: none"> Grubbing of surface and introduction of WEF to the landscape directly impacts archaeology and alters landscape
Heritage – Palaeontological	If fossils of scientific value (rare, complete, index fossils) are present they might be destroyed when excavations for foundations commence
Noise	None
Terrestrial Ecology	The most significant cumulative impact that the proposed development will have is the potential impact on Broad-Scale Ecological processes and the impact on Ecological Support Areas.

PUBLIC PARTICIPATION PROCESS

Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs in March 2022 respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on 8 March 2022 (proof included in the Scoping Report).

POFADDER WIND ENERGY FACILITY 2 (PTY) LTD

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- Notification letters to be sent via E-mail or sms (if cellphone number / email is available, it is assuming the I&AP have an email or cellphone).
- Public notification of the EIA process will be advertised in a local newspaper (namely Die Gemsbok) in March 2022, and in a provincial newspaper (namely The Mercury) as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Final Scoping and EIA Report.

Availability of report for review:

- Report available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following location:
 - Pofadder Library, Loop Street, Pofadder, Northern Cape, South Africa

PLAN OF STUDY

The EIA phase will be informed by the scoping phase. The following steps will be undertaken as part of the EIA phase:

- The proposed final layout will be further investigated in order to avoid or minimize negative impacts and maximize potential benefits;
- Environmental impact statements regarding the potential significance of residual impacts, taking into account proposed mitigation measures will be provided in the EIA;
- An Environmental Management Programme (EMPr) covering construction and decommissioning phases of the proposed development will be prepared. The EMPr will include input from specialists and will incorporate recommendations for mitigation and monitoring.

The following specialist studies have been undertaken for the project and the significant environmental aspects will be further in the EIA Phase:

- Desktop Geotechnical Assessment (to be included in EIA Phase);
- Social Impact Assessment;
- Transport Assessment (to be included in EIA Phase);
- Visual Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Agricultural Assessment;
- Surface Water Assessment;
- Heritage Assessment;
- Noise Assessment;
- Biodiversity Assessment;
- Shadow Flicker Impacts (SFI);
- Electromagnetic Interference (EMI) Path Loss and Risk Assessment Report (SKA Requirement).

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify opportunities and constraints as associated with the site and the proposed development.

SiVEST will consult with DFFE as follows:

- Pre-application meeting with DFFE.
- Submission of application form to obtain EIA reference number.
- The Draft Scoping report will be made available for comment to I&As, key stakeholders and the authorizing authority.
- After the Draft Scoping Report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will then be submitted to DFFE for approval.
- A site visit with DFFE is proposed once the Final Scoping Report has been submitted.
- Notify I&As and key stakeholders of acceptance of Final Scoping Report
- The Draft EIA report will be made available for comment to I&As, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&As of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

POFADDER WIND ENERGY FACILITY (WEF) 2

DRAFT SCOPING REPORT

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POFADDER WIND ENERGY FACILITY (WEF) 2

DRAFT SCOPING REPORT

1. INTRODUCTION

Pofadder Wind Facility 2 (The Applicant) (Pty) Ltd is proposing to construct the Pofadder Wind Energy Facility (WEF) 2 and associated infrastructure approximately 35 km south east of Pofadder in the Kai !Garib Local and Z F Mgcawu District Municipalities, in the Northern Cape. (**Figure 1**) (**DFFE Reference Number: To be Allocated**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 200 megawatt (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the Pofadder WEF 2 and associated infrastructure. The proposed development requires an (Environmental Authorisation (EA) from the National Department Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform) will also be consulted. The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

Two additional WEF's are concurrently being considered on the properties and are assessed by way of separate impact assessment processes contained in the 2014 Environmental Impact Assessment Regulations (GN No. R982, as amended) for listed activities contained Listing Notices 1, 2 and 3 (GN R983, R984 and R985, as amended). These projects are known as Pofadder Wind Energy Facility 1 (**DFFE Reference Number: To be Allocated**) and Pofadder Wind Energy Facility 3 (**DFFE Reference Number: To be Allocated**). Refer **Figure 2** for a map of the overall project.

In order to evacuate the energy generated by the WEF's to supplement the national grid, Pofadder Grid (Pty) Ltd is proposing two grid connection alternatives which will be assessed in a separate Integrated Grid BAR (**DFFE Reference Number: To be Allocated**):

The respective WEF and grid connection infrastructure developments will require separate Environmental Authorisations (EAs) and are subject to separate Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes respectively. The proposed grid connection infrastructure developments will be handed over to Eskom once constructed (Eskom grid connection works). The substations will include an Eskom portion (switching station) and an Independent Power Producer (IPP) portion (facility substation) hence the facility substations will be included in the respective WEF EIAs and the Eskom switching stations in the respective associated grid connection infrastructure BA in order to allow for handover to Eskom.

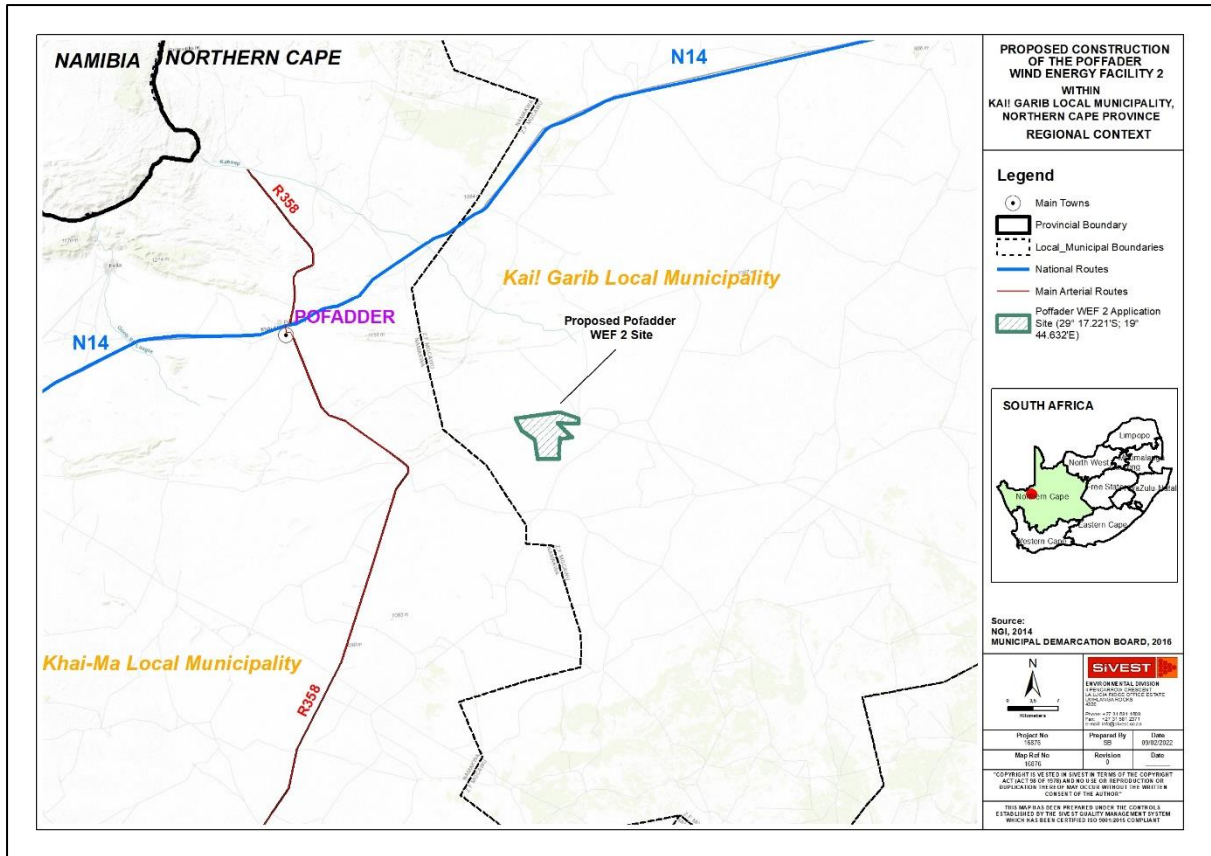


Figure 1: Pofadder WEF 2 Regional Context

Although the respective WEFs and associated grid connection infrastructure (switching stations and overhead power lines) developments will be assessed separately, it is proposed that a single public participation process be undertaken to consider all of the proposed projects [i.e. three (3) WEF EIAs and one (1) grid connection BAs]. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

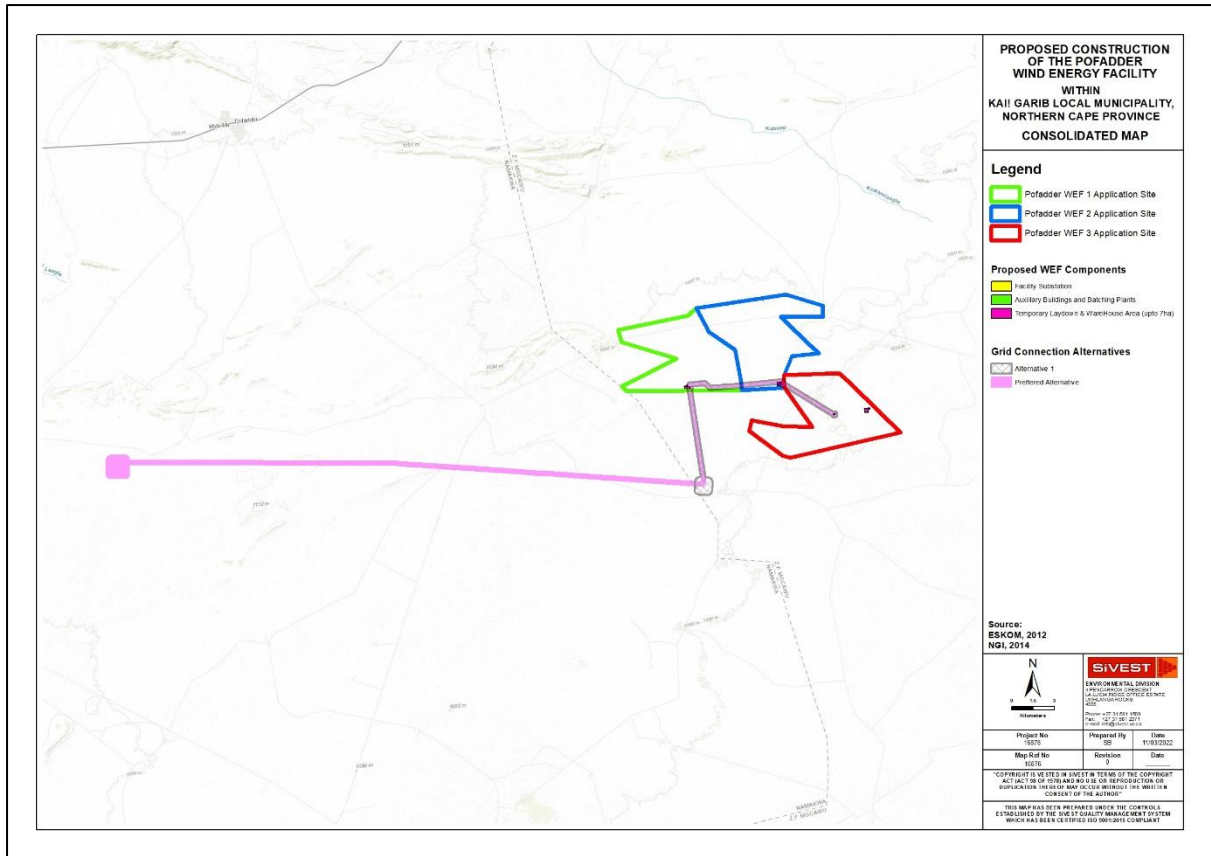


Figure 2: Layout showing context of Pofadder WEF 1, Pofadder WEF 2 and Pofadder WEF 3 and Pofadder Grid Corridor.

1.1 Overview of the EIA Process

The National Environment Management Act, 1998 (Act No 107 of 1998) (NEMA) promotes the use of scoping and EIA in order to ensure integrated environmental management. The purpose of an EIA is to provide the Authority with sufficient information to make an informed decision on whether an activity should proceed or not, and to assist with selecting an option that will provide the most benefit, and cause the least impact. The EIA process should identify activities which may have a detrimental effect on the environment, and which would therefore require Environmental Authorisation prior to commencement.

This project requires an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) and the 2014 EIA Regulations (as amended). The process triggered is a Scoping and Environmental Impact Assessment report (S&EIR). All the phases including the Environmental Management Programme report (EMPr) must be prepared in terms of the NEMA and GN R. 982, (as amended by GN R. 326) and the associated activities listed under GN R. 983, GN R. 984 and GN R. 985 (as amended by GN R 327, GN R 325, and GN R 324 respectively).

Objectives and Overview of the Scoping Phase

The Scoping Phase involves establishing the existing environmental baseline of the site proposed for development, considering the type of development and its potential impacts on the existing

environment, and therefore determining what potential impacts should be assessed and how, within the EIA process. The EAP therefore compiles a Draft Scoping Report (inclusive of a Plan of Study for the EIA phase) which is made available for public and stakeholder comment for a period of 30 days as part of the public participation process. All comments received in response to the DSR are then considered and responded to, incorporated into the Final Scoping Phase and Plan of Study for EIA Phase.

Public Participation Process

Public and Stakeholder participation is a fundamental component of the EIA Process. The inclusion of the views of the affected and interested public aids in ensuring the EIA Process is open, transparent and robust, as well as that the decision-making process is equitable and fair. This in turn guides informed choice and better environmental outcomes. It further presents a valuable source of information on key impacts, potential mitigation measures and the identification and selection of feasible alternatives. This process allows the EAP to identify key stakeholders and Interested and Affected Parties (I&APs), as well as to identify any fatal flaws, at the onset of a project. The Draft Scoping Report will be made available to all I&APs as well as Organs of State for a period of 30 days, following this, all comments will be drafted and responded to in a Comments and Response Report which will then be submitted to the Department for approval. Following this, the EIA Phase can proceed.

1.2 Content Requirements for a Scoping Report

The content requirements for a Scoping Report (as provided in Appendix 2 of the EIA Regulations 2014, as amended), as well as details of which section of the report fulfils these requirements, are shown in **Table 1** below.

Table 1: Content requirements for a Scoping Report

Content Requirements	Applicable Section
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	4
(b) the location of the activity, including- (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	5
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	5.2
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	6
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	10

Content Requirements	Applicable Section
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	12
(g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - <ul style="list-style-type: none"> (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity; 	13
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- <ul style="list-style-type: none"> (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; 	14

Content Requirements	Applicable Section
(vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
(i) an undertaking under oath or affirmation by the EAP in relation to- (i) the correctness of the information provided in the report; (ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix 1
(j) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties (I&APs) on the plan of study for undertaking the environmental impact assessment;	Appendix 1
(k) where applicable, any specific information required by the competent authority; and	Appendix 6
(l) any other matter required in terms of section 24(4)(a) and (b) of the Act.	All requirements have been met in this report.
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	Appendix 6

2. PROJECT TITLE

Proposed Development of the Pofadder Wind Energy Facility (WEF) 2 and Associated Infrastructure near Pofadder in the Northern Cape Province.

3. DETAILS OF APPLICANT

3.1 Name and contact details of the Applicant

Name and contact details of Applicant:

Table 2: Name and contact details of the applicant

Business Name of Applicant	Pofadder Wind Facility 2 (Pty) Ltd
Physical Address	1501, 15th Floor, Portside Building, 4 Bree Street Cape Town 8001
Postal Address	PO Box 1730 Welgemoed Cape Town Western Cape
Postal Code	7538
Telephone	082 300 6497

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4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

The table below provides the name and contact details of the Environmental Consultants who prepared this report:

Table 3: Name and contact details of the Environmental Consultant who prepared the report

Business Name of EAP	SiVEST SA (PTY) Ltd
Physical Address	4 Pencarrow Crescent, La Lucia Ridge Office Estate
Postal Address	PO Box 1899, Umhlanga Rocks
Postal Code	4320
Telephone	031 581 1500
Fax	031 566 2371
Email	michelleg@sivest.co.za

4.2 Names and expertise of the Environmental Assessment Practitioner (EAP)

The table below provides the names of the EAP's who prepared this report:

Table 4: Names and details of the expertise of the EAP's involved in the preparation of this report

Name of representative of the EAP	of	Educational Qualifications	Professional Affiliations	Experience (years)
Michelle Nevette (<i>Cert.Sci.Nat.</i>)		MEnvMgt. (Environmental Management)	SACNASP Registration No. 120356 EAPASA Registration No. 2019/1560 IAIA	19
Michelle Guy (<i>Pr.Sci.Nat</i>)		MSc Environmental Science	SACNASP Registration No. 126338 EAPASA Registration No. 2019/868 IAIA	9
Luvanya Naidoo (<i>Pr.Sci.Nat</i>)		BSc Geography	SACNASP Registration No. 126107 EAPASA Registration No. 2019/1404 IAIA	12

CV's of SiVEST personnel and the EAP declaration are attached in **Appendix 1**.

4.3 Names and expertise of the specialists

The table below provides the names of the specialists involved in the project:

Table 5: Names of specialists involved in the project

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
Visual Resource Management Africa (VRM)	Stephen Stead	Visual Impact Assessment	B.A (Hons) Human Geography, 1991 (UKZN, Pietermaritzburg) Registered with the Association of Professional Heritage Practitioners since 2014.	16
ASHA Consulting (Pty) Ltd	Jayson Orton	Heritage Impact Assessment	D.Phil. (Archaeology) Accredited Professional Heritage Practitioner	26
	Marion Bamford	Palaeontology Impact Assessment	PhD (Palaeontology)	25
Johann Lanz Consulting	Johann Lanz	Agriculture and Soils Impact Assessment (desktop)	M.Sc. (Environmental Geochemistry)	24
Safetech	Brett Williams	Noise Impact Assessment	PhD is in Environmental Management	26
Savannah Environmental	Nondumiso Bulunga	Socio-economic Impact Assessment (desktop)	M.Sc. Geographical Information Systems	8
	Neville Bews		D. Litt. et Phil	37
Nkurenkuru Ecological and Biodiversity	Gerhard Botha	Biodiversity and Freshwater Impact Assessment	B.Sc. Hons in Botany (Vegetation Ecology) Pr.Sci.Nat 400502/14	8
	Jan-Hendrik Keet		Doctor of Philosophy (Botany)	7
Chris Van Rooyen Consulting	Chris van Rooyen	Avifaunal Impact Assessment	BA LLB	22
	Albert Froneman	Avifaunal Impact Assessment	MSc (Conservation)	22
Camissa Sustainability Consulting	Jonathan Aronson	Bat Impact Assessment	MSc (Zoology), MSc (Environment and Resource Management)	13

5. LOCATION OF THE ACTIVITY

5.1 21 Digit Surveyor General Codes and Farm names of the sites

Table 6: 21 Digit Surveyor General Code

SG CODE	DESCRIPTION
C03600000000020200000	THE FARM GANNA POORT NO. 202
C03600000000015000003	PORTION 3 OF THE FARM SAND GAT NO. 150
C03600000000020100000	THE FARM LOVEDALE NO. 201

Please note that the Farm De Neus No. 149 was originally included in the project boundary (making a total of four (4) affected WEF properties) as the infrastructure from one (1) turbine was within the Farm De Neus boundary. However, the turbine has since been moved onto one of the properties identified above and the Farm De Neus No. 149 has been excluded from the project boundary. The specialist reports will be updated during the EIA Phase to exclude the Farm De Neus No. 149 property from any reporting.

5.2 Coordinates of the site

The centre point coordinates for the sites are as follows:

- Latitude: 29°17'19.51"S
- Longitude: 19°44'45.51"E

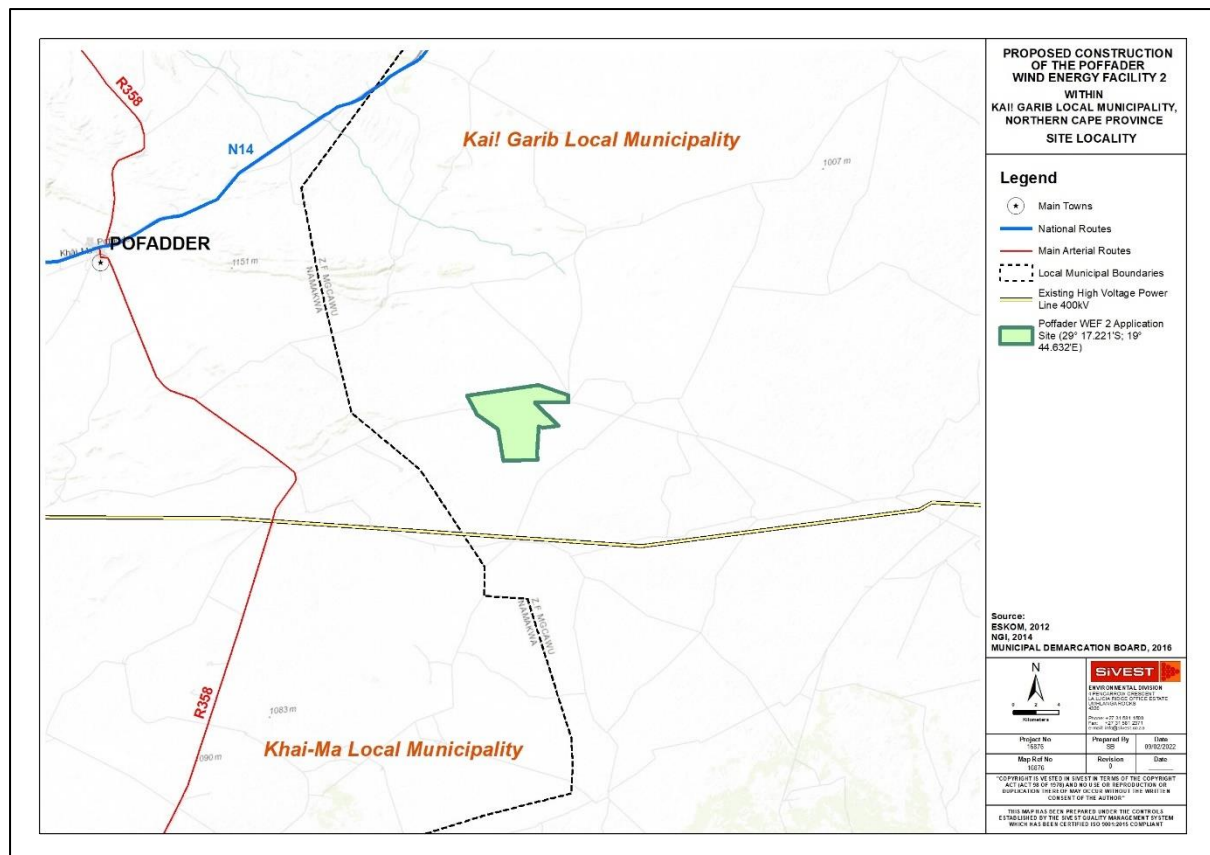


Figure 3: Site locality

The bend point coordinates of the site have been included below:

Table 7: Bend point coordinates for the Pofadder WEF 2 site boundary

POFFADER WEF 2: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	SOUTH	EAST
1	29°16'2.41"S	19°42'16.01"E
2	29°15'51.54"S	19°46'6.82"E
3	29°16'24.80"S	19°47'38.31"E
4	29°16'49.91"S	19°47'35.02"E
5	29°16'40.19"S	19°45'48.13"E
6	29°18'10.12"S	19°47'16.21"E
7	29°18'10.41"S	19°46'6.98"E
8	29°18'50.39"S	19°45'42.01"E
9	29°19'2.41"S	19°45'39.73"E
10	29°19'19.19"S	19°45'40.67"E
11	29°19'15.01"S	19°43'51.06"E
12	29°17'43.75"S	19°43'44.43"E
13	29°16'58.50"S	19°42'42.32"E

6. ACTIVITY INFORMATION

6.1 Project Description

The application site assessed during the scoping phase (which incorporates the farm portions / properties listed above) is approximately 3100 hectares (ha) in extent.

At this stage it is anticipated that the proposed Pofadder 2 WEF will comprise up to thirty (30) wind turbines with a maximum total energy generation capacity of up to approximately 200 MW. In summary, the proposed Pofadder WEF 2 development will include the following components:

- Up to 30 wind turbines, each with a maximum of 8 MW output per turbine, with a maximum export capacity of approximately 200 MW. This will be subject to allowable limits in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The final number of turbines and layout of the WEF will, however, be dependent on the outcome of the Specialist Studies conducted during the EIA process.
- Each wind turbine will have a maximum hub height and rotor diameter of up to approximately 200 m;
- Concrete turbine foundations and turbine hardstands;
- Each turbine will have a circular foundation with a diameter of up to 32 m and this will be placed alongside the 45 m wide hardstand resulting in an area of about 45 m x 32 m that will be permanently disturbed for the turbine foundation. The combined permanent footprint for the turbines will be approximately 4.4 ha.
- Each turbine will have a crane hardstand of approximately 70 m x 45 m. The permanent footprint for turbine crane hardstands will be approximately 9.5 ha.
- Each turbine will have a blade hardstand of approximately 80 m x 45 m (3 600 m²). The combined permanent footprint for blade hardstands will be approximately 10.8 ha.

- One (1) new 33/132 kV on-site substation occupying an area of approximately 1.6 ha.
- The wind turbines will be connected to the proposed on-site substation via medium voltage (33 kV) underground cables, which will mainly run alongside the access roads. Where burying of cables is not possible due to technical, geological, environmental or topographical constraints, cables will be overhead via 33 kV monopoles.
- The main access road will be between 8 – 12 m wide (to allow vehicles to pass).
- Internal roads with a width of between 6 – 8 m will provide access to each wind turbine. Existing farm roads will be upgraded and used wherever possible, although new site roads will be constructed where necessary.
- A 12 m wide corridor may be temporarily impacted during construction and rehabilitated to 6 m wide corridor after construction. The internal gravel roads will have an approximate 6 – 8 m wide surface and there will be up to 12m wide impacted during the construction phase, with additional space required for cut and fill, side drains and other stormwater control measures, turning areas and vertical and horizontal turning radii to ensure safe delivery of the turbine components.
- Pofadder WEF 2 will have a total road network of approximately 50 km.
- One (1) construction laydown / staging area of up to approximately 7 ha (to be rehabilitated following construction). It should be noted that no on-site labour camps will be required in order to house workers overnight as all workers will be accommodated in the nearby towns, and transported daily to site (by bus);
- The gate house and security house will occupy an area of up to 0.5 ha.
- One (1) permanent Operation and Maintenance (O&M) building (including offices, warehouses, workshops, canteen, visitors centre and staff lockers) occupying an area of up to 1 ha;
- A temporary site camp establishment and concrete batching plant occupying an area of up to 1.6 ha.
- Galvanized palisade fencing to be used at the substations with the maximum height of the fencing to be up to 3.5 m;
- Water will either be sourced from either the Local Municipality, supplied from a private contractor and trucked in, from existing boreholes located within the application site or from a new borehole if none of these options are available.

The Preliminary Layout is reflected below in **Figure 4** and attached in **Appendix 3**. Photographs of the site are included in **Appendix 4**.

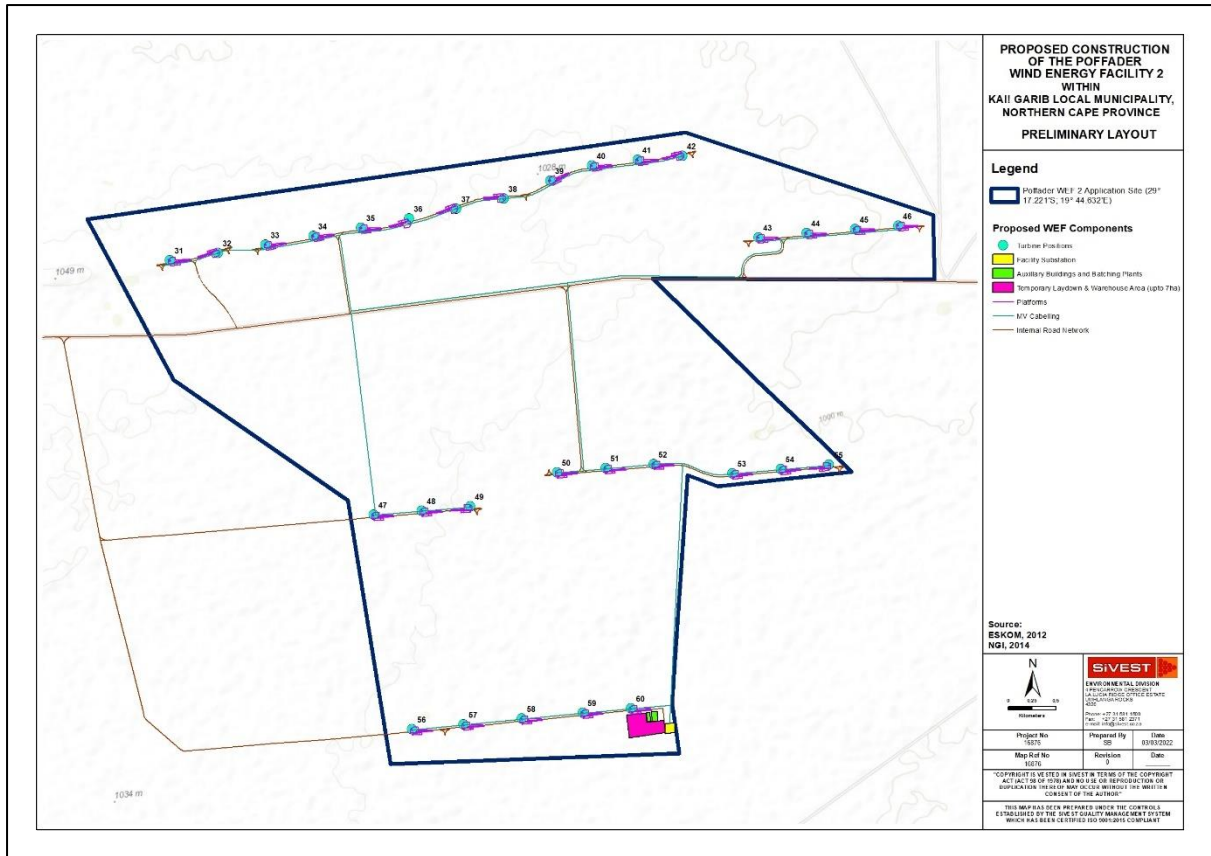


Figure 4: Preliminary layout showing proposed location of wind turbines

The wind turbines and all other project infrastructure will be placed strategically within the development area based on environmental constraints. The exact location of the turbines and associated infrastructure will be determined during the final design stages of the WEF design process.

Please refer to **Figure 5** below for the typical components of a wind turbine.

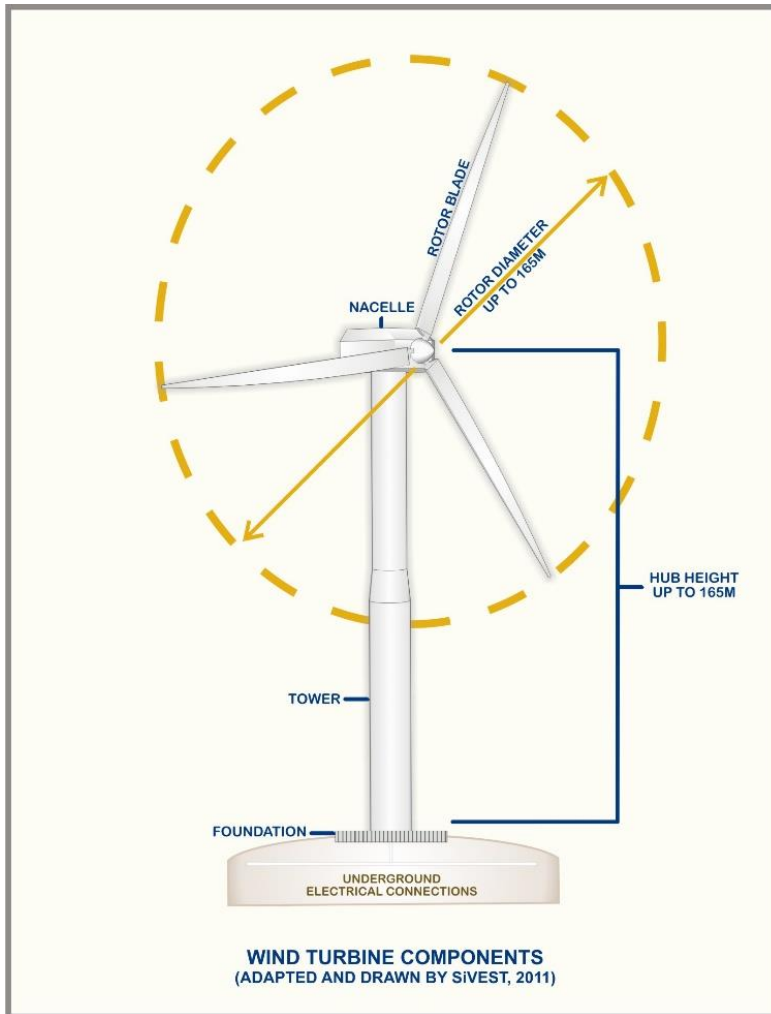


Figure 5: Typical components of a Wind Turbine

A summary of the project technical details is provided in **Table 8** below.

Table 8: Technical Detail Summary

Component	Description / Dimensions
Location of site (centre point)	29°17'19.51"S 19°44'45.51"E
Application site area	3100 ha
Turbine development area	Turbine Foundation Area = 45m*32m*30 turbines = 4.4 Ha
SG codes	C03600000000020200000 C03600000000015000003 C03600000000020100000
Export capacity	Up to 200 MW
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 200 m
Rotor diameter	Up to 200 m
Substation Area	Approximately 1.56 ha
O&M building area	Approximately 1 ha

Component	Description / Dimensions
Construction Laydown and Batching Plant	Up to 7 ha
Permanent laydown area	To be determined based on final layout
Gatehouse and Security	Approximately 0.5 ha
Temporary site camp	Up to 1.6ha
Hard stand areas	Approximately 10.8 ha for blade hardstands and 9.5 ha for crane hardstands
Width of internal access roads	Approximately 6 m
Length of internal access roads	Approximately 50 km
Site Access	The main road located within the region is the N14 National Highway which runs from Upington to Springbok and is located 20 km to the north of the site. A minor district road is located 7.2 km to the west (R358), as well as a minor farm access road routing through the proposed development area (east to west). These roads are for farming access and are gravel, usually unsuited for tourist related traffic.
Proximity to grid connection	Approximately 47 km from application site
Height of fencing (for substation)	Approximately 3.5 m high
Type of fencing (for substation)	Galvanized palisade fencing

6.2 NEMA Listed Activities

The amended EIA Regulations promulgated under Section 24(5) of the National Environmental Management Act, Act 107 of 1998 and published in Government Notice No. R. 326 list activities which may not commence without environmental authorization from the Competent Authority. The proposed activity is identified in terms of Government Notice No. R. 327, 325 and 324 for activities which must follow a full Environmental Impact Assessment Process. The project will trigger the following listed activities:

Table 9: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Basic Assessment Activities as set out in Listing Notice 1		
11 (i)	GN R. 327 (as amended) Item 11: The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	New on-site substations/collector switching stations will be constructed as part of the proposed developments. The proposed substations/ collector switching stations will be located outside urban areas and will have capacities of 33/132kV respectively. In addition, each facility substation or collector switching station will likely occupy a footprint of, ± 125 m x 125 m (1.5625 ha). The height of the substation will be a maximum of 10 m,

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		however lightning masts may extend up to 25 m in height.
12 (ii) (a) (c)	<p>GN R. 327 (as amended) Item 12: The development of:</p> <p>ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	<p>Drainage lines and watercourses are scattered across the proposed site. One or more roads and/or powerlines will cross these watercourses or drainage lines or be within 32m thereof.</p> <p>The proposed developments will therefore entail the construction of infrastructure with physical footprints of approximately 100m² or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse.</p>
19	<p>GN R. 327 (as amended) 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;</p>	<p>The proposed development will involve the excavation, removal, infilling or depositing of any material of more than 10m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m³ from some of the identified surface water features / watercourses.</p> <p>Although the layout of the proposed developments will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and/or access roads may need to traverse the identified surface water features / watercourses. In addition, during construction of these roads, soil may need to be removed from some of the identified surface water features / watercourses.</p>
24 (ii)	<p>GN R. 327 (as amended) Item 24: The development of a road -</p> <p>ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.</p>	<p>The main access road will be approximately 8 - 12 m wide. Internal roads of approximately 6 – 8 m wide will be needed for the WEF with side drains on one or both sides where necessary. During construction the footprint of road construction works will be up to 12 m, with additional space required for cut and fill, side drains and other stormwater control measures, turning areas and vertical and horizontal turning radii to ensure safe delivery of the turbine components.</p>
28 (ii)	<p>GN R. 327 (as amended) Item 28: Residential, mixed, retail, commercial, industrial or institutional developments where</p>	<p>The total area to be developed for the proposed Pofadder WEF 2 is greater than 1ha and occurs outside an urban</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	<p>such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p>	<p>area in an area currently zoned as agriculture land.</p>
48 (i) (a) (c)	<p>GN R. 327 (as amended) Item 48: The expansion of-</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;</p> <p>where such expansion occurs—</p> <p>(a) within a watercourse; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p>	<p>The proposed developments will most likely entail the expansion (upgrading) of roads and other infrastructure by 100m² or more within a surface water feature / watercourse or within 32m from the edge of a surface water feature / watercourse.</p> <p>Although the layout of the proposed development has been designed to avoid the surface water features / watercourses identified within the application site as far as possible, some of the internal roads to be upgraded and expanded will need to traverse some of the surface water features / watercourses identified within the application site and construction will occur within some of the surface water features / watercourses identified within the application site and/or be within 32 m of some of the surface water features / watercourses identified within the application site.</p>
56 (ii)	<p>GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <p>(i) where the existing reserve is wider than 13,5 metres; or</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres –</p>	<p>Existing roads may require widening of up to 12 m and/or lengthening by more than 1 km, to accommodate the movement of heavy vehicles and cable trenching activities associated with the WEF.</p>
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	<p>GN R. 325 (as amended) Item 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.</p>	<p>The proposed development will entail the construction of a WEF where the respective electricity output will be up to 200 MW. In addition, the proposed WEF developments will be located outside urban areas.</p>
15	<p>GN R. 325 (as amended) Item 15: The clearance of an area of 20 hectares or more of indigenous vegetation.</p>	<p>The proposed WEF development will likely involve the clearance of more than 20 ha of indigenous vegetation. Clearance will also be required for the proposed substations, internal access</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		roads and other associated infrastructure.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
4 g. (ii) (ee)	<p>GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>g. Northern Cape ii. Outside urban areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<p>The development of the WEF facilities and associated infrastructures is likely to require the development of roads wider than 4 m with a reserve of less than 13.5 m within a CBA 1 and CBA 2.</p> <p>These roads will occur within the Northern Cape Province, outside urban areas.</p>
12 g. (ii)	<p>GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>g. Northern Cape ii. Within critical biodiversity areas identified in bioregional plans;</p>	<p>The proposed development will entail the construction of infrastructure (caballing and roads) with physical footprints of approximately 300 m² or more. As such, approximately 300 m² or more of indigenous vegetation will likely be cleared as part of the respective proposed developments.</p>
14 ii. (a) (c) g (ii) (ff)	<p>GN R. 324 (as amended) Item 14: The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse; or (l) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>g. Northern Cape i. 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;</p>	<p>The proposed development will likely entail the development of infrastructure with physical footprints of 10m² or more within a watercourse / surface water feature or within 32 m from the edge of a watercourse / surface water feature.</p> <p>Although the layouts of the respective proposed developments will be designed to avoid the identified surface water features / watercourse as far as possible, some of the infrastructure / structures will likely need to traverse the identified surface water features / watercourses.</p> <p>The construction of the infrastructure (MV caballing and roads) for the development will occur within Critical Biodiversity Areas (CBAs) located outside of urban areas.</p>
18 g (ii) (ee)	<p>GN R. 324 (as amended) Item 18: The widening of a road by more than 4 meters, or</p>	<p>Internal access roads will be required to access the wind turbines as well as the respective substations. Existing</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	<p>the lengthening of a road by more than 1 kilometer-</p> <p>g. Northern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.</p>	<p>roads will be used wherever possible. Internal access roads will thus likely be widened by more than 4 m or lengthened by more than 1 km. These roads will occur within the Northern Cape Province, outside urban areas. The respective proposed development sites contain indigenous vegetation. In addition, the widening of the roads will occur within CBAs and or within 100 m from the edge of a watercourse or wetland.</p>
<p>23 ii (a) (c) (g) (ii) (ee)</p>	<p>GN R. 324 (as amended) Item 23: The expansion of—</p> <p>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;</p> <p>where such expansion occurs—</p> <p>(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;</p> <p>excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>g. Northern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	<p>The respective proposed development will likely entail the development and expansion of roads by 10 m² or more within a surface water feature / watercourse or within 32 m from the edge of a surface water feature / watercourse.</p> <p>Although the layout of the proposed development will be designed to avoid the identified surface water features / watercourses as far as possible, some of the existing internal and access roads may likely need to traverse some of the identified surface water features / watercourses.</p> <p>The proposed developments occur within CBAs, and are located outside urban areas.</p>

7. NATIONAL WEB-BASED ENVIRONMENTAL SCREENING TOOL

The National Web based Environmental Screening Tool is a geographically based web-enabled application which allows a proponent intending to submit an application for environmental authorisation in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity.

According to the DFFE Screening Tool Report (attached in **Appendix 8**), the following themes described in **Table 10** below are applicable to the proposed development:

Table 10: DFFE Screening Tool Environmental Sensitivity

Theme	Sensitivity	Comment
Agriculture Theme	Low	The Agricultural Compliance Statement is included in Appendix 6 of the Draft Scoping Report.

Theme	Sensitivity	Comment
		The low agricultural sensitivity of the entire site, as identified by the screening tool, is confirmed by the specialist.
Animal Species Theme	Medium	The Terrestrial Ecological Report is included Appendix 6 of the Draft Scoping Report. Based on findings of a desktop and in-field survey of the property the majority of the project area can be classified as Medium Sensitivity and provide some potential habitat for species of conservation concern.
Aquatic Biodiversity Theme	Very High	The Terrestrial Ecological Report is included in Appendix 6 of the Draft Scoping Report. The majority of the Very High sensitive areas are based primarily on the NFEPA coverage and SANBI's 2018 National Wetland Map 5 and 2018 National River Map. With meticulous implementation of recommended mitigation measures proposed by the specialist, the proposed development of the Pofadder WEF 2 will not have an impact on these freshwater resource features.
Archaeological and Cultural Heritage Theme	Low	The Heritage Report is included in Appendix 6 of the Draft Scoping Report. This site sensitivity verification has verified the expected sensitivity as being generally low but with a number of small areas of higher sensitivity ranging from low-medium to high.
Avian (Wind) Theme	Low	The Avifaunal Report is included in Appendix 6 of the Draft Scoping Report. The classification of low sensitivity in the DFFE screening tool is not considered accurate as far as the proposed Pofadder WEF 2 is concerned, based on the habitat and species observations made during the field surveys to date. The classification should be high sensitivity, based on the presence of species of conservation concern (SCC) recorded during onsite surveys thus far, namely Verreaux's Eagle (SA status: Vulnerable), Lanner Falcon (SA status: Vulnerable) and Ludwig's Bustard (SA status: Endangered). Furthermore, the development area contains habitat for other SCCs which could potentially occur, namely Martial Eagle (SA status: Endangered), White-backed Vulture (SA status: Endangered) and Lappet-faced Vulture (SA status: Endangered).
Bats (Wind) Theme	High	The Bat Report is included in Appendix 6 of the Draft Scoping Report.

Theme	Sensitivity	Comment
		The overall sensitivity of the site is classified as medium, lower than the high sensitivity rating given by the Screening Tool. However, the two sensitivities are based on different data types. The Screening Tool is based on broad scale habitat data whereas the SSV is based on bat collision risk with wind turbines derived from activity data collected within the project boundary and is therefore a better approximation of the project sensitivity because collision is the primary impact. As such the SSV disputes the current environmental sensitivity of the proposed project area, arguing that the sensitivity should be reduced to medium.
Civil Aviation (Wind) Theme	Low	The closest airport is the Kenhardt Aerodrome, located approximately 145 km from the site.
Defence (Wind) Theme	Low	The entire site has a low sensitivity in terms of the defence theme. No further specialist study required.
Flicker Theme	Very High	Labourer cottages were identified within 1km of the turbine placement location. To ensure that Shadow Flicker Impacts (SFI) do not take place, a SFI needs to be undertaken for any turbines located within 1km from the inhabited settlements. This assessment will be undertaken as part of the VIA in the EIA Process as outlined in the Plan of Study.
Landscape (Wind) Theme	Very High	The Visual Assessment is included in Appendix 6 of the Draft Scoping Report. Medium levels of scenic quality from natural landscape setting. Remote locality with limited receptors but with potential for on-site receptors including farm worker dwellings to be located within 1km distance from wind turbines with possible flicker impacts due to the large size of the turbines. No significant landscape resources located within the project Zone of Visual Influence. Some steep and moderate slope areas related to a low ridgeline to the northwest of the property. While not a significant landscape feature, the low ridgeline (approximate 20m in height) does add to the local scenic quality. While suitable for development, there are steeper slope areas around the small 'poort'. These slopes have been identified and require

Theme	Sensitivity	Comment
		<p>verification in the detail design phase. The 1 in 4m slopes should be avoided, with detail design on the cut/fills (if any) requested for turbine and road footprint in the possible 1 in 10m slopes areas.</p> <p>In principle support for the study area for wind farming with large sized turbines.</p> <p>No residential location was found on the site and as such the Shadow Flicker screening is Low sensitivity.</p>
Palaeontology Theme	Medium	<p>The Heritage Report is included in Appendix 6 of the Draft Scoping Report.</p> <p>This site sensitivity verification has verified the expected sensitivity as being generally low but with a number of small areas of higher sensitivity ranging from low-medium to high.</p>
Noise Theme	Very High	<p>The Noise Site Sensitivity Verification Report is included in Appendix 6 of the Draft Scoping Report.</p> <p>The project could impact on several noise sensitive areas. A full noise impact assessment will be undertaken as part of the EIA Process as outlined in the Plan of Study.</p>
Plant Species Theme	Medium	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Scoping Report.</p> <p>In terms of individual Plant Species of Conservation Concern (SCC) and/or important populations of Plant SCC, potential suitable habitats persist within the project site and surroundings, and as such the classification of the development area as Medium Sensitivity, in terms of Plant SCC, within the Screening Tool, is consistent with the on-site findings.</p>
RFI (Wind Theme)	Very High	<p>The screening tool described the study area as very high Radio Frequency Interference Theme (RFI) sensitivity due to the cluster falling within the Square Kilometre Array (SKA) Karoo Central Radio Astronomy Advantage Area 1 buffer. A high-level path loss study has been commissioned to understand if there is any impact to SKA receptors and if so what mitigation is required. This study will be included in the EIA Phase Reporting.</p>
Terrestrial Biodiversity Theme	Very High	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Scoping Report.</p> <p>The majority of the “Very High Sensitive” areas identified within the affected properties are based primarily on the NFEPA coverage (mainly FEPA and</p>

Theme	Sensitivity	Comment
		Upstream Catchments) and Northern Cape CBA coverage (mainly ESA and CBA2). With the exclusion of sensitive areas, as specified within the above-mentioned sections, and with the meticulous implementation of mitigation measures the proposed development of the Pofadder WEF 2 will not have an impact on the province’s biodiversity targets.

8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

8.1 Geographical

The proposed WEF is located approximately 35 km south-east of Pofadder in the Northern Cape Province and is within the Kai !Garib Local Municipality, in the Z F Mgcawu District Municipality Central Karoo District Municipality. The regional context of the proposed application site is shown in **Figure 6** below.

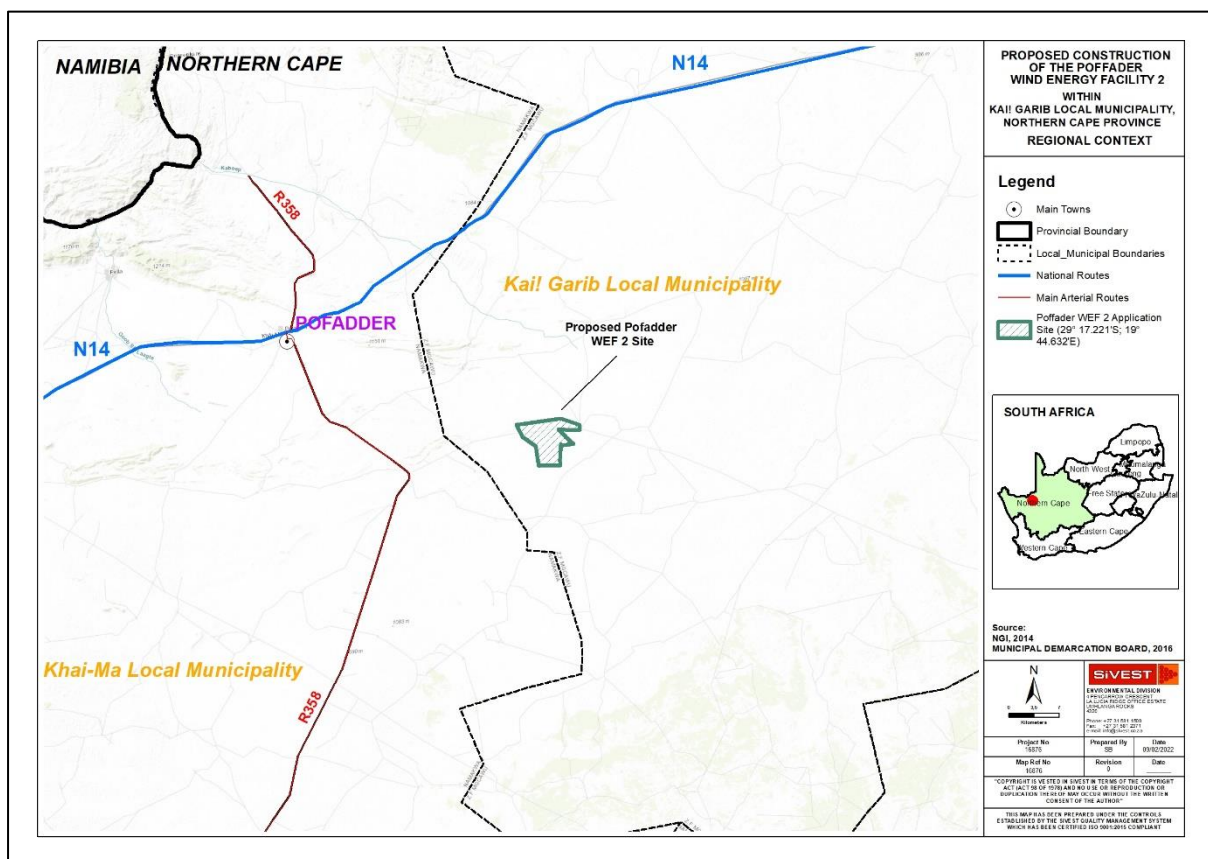


Figure 6: Regional context

8.2 Land Use

According to the South African National Land Cover dataset (2018), much of the assessment area is classified as “Bare / Barren Land”, interspersed with areas of “Low shrubland (nama Karoo)” (Figure 7). In most cases these patches of land are undisturbed areas with very sparse vegetation cover. The study area is an extensive flat plain with minimal relief (Figure 8 and 9), the main exception being a low ridge of white quartzite that runs across the northern part of the layout area. Occasional shallow water courses occur within the landscape. The open plains tend to be sandy with some gravel patches in places.

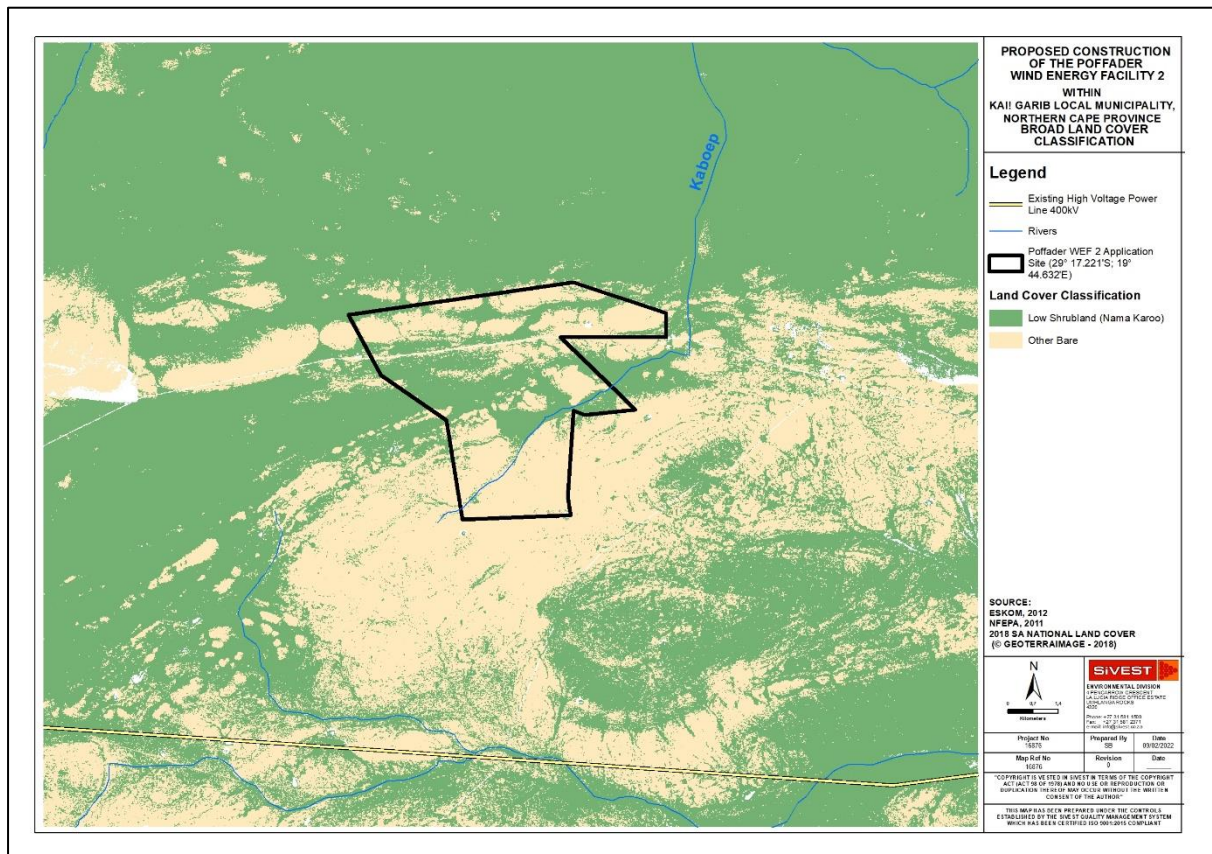


Figure 7: Land Cover Classification

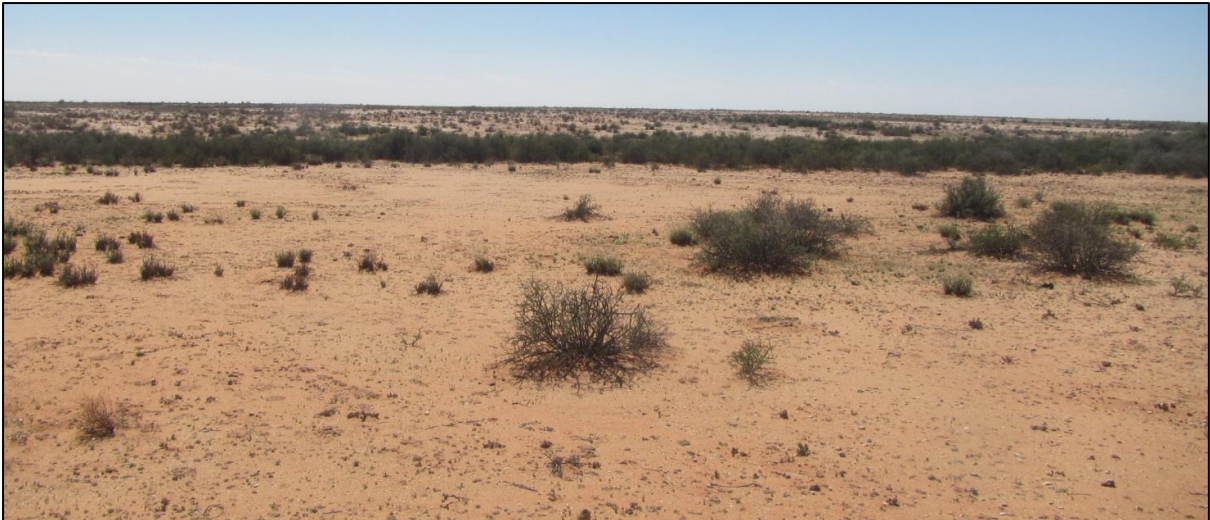


Figure 8: Typical site area

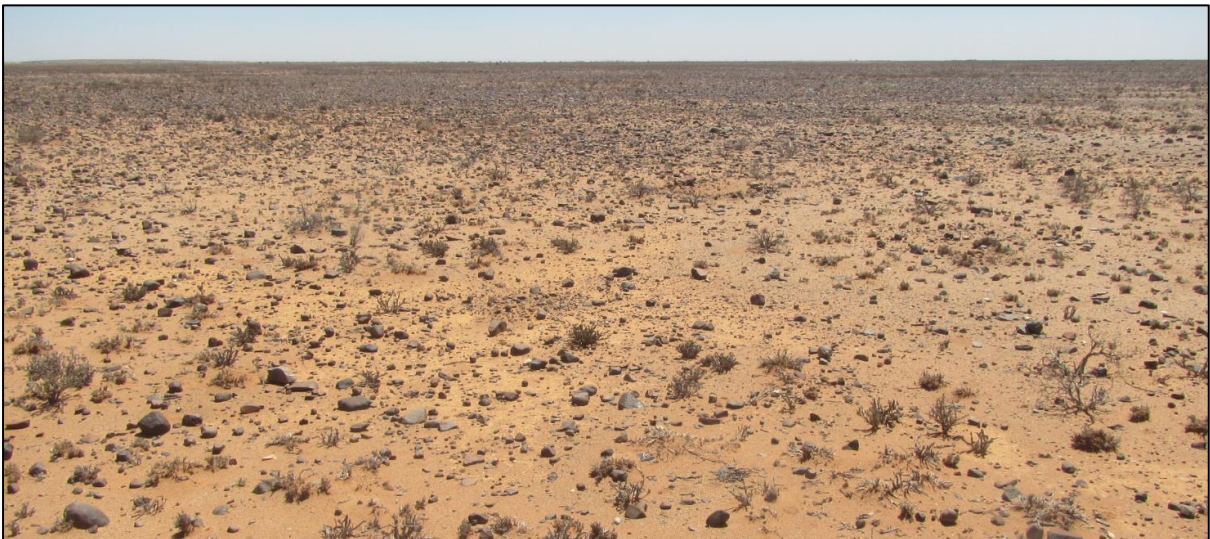


Figure 9: Typical site area

The current land use of the proposed properties is an arid agricultural area with sheep and goat farming carried out in a very dry environment – this is the only agricultural land use on the site and surrounds which is restricted by the arid nature of the local climate. Due to the limited stock carrying capacity, the farms are large in size. The area has a very low density of rural settlement, with relatively few isolated farmsteads (**Figure 10**). Man-made modifications associated with farming are related to those typical of the low intensity sheep farming. This includes wind pumps with stock watering points. These features are small in scale in the landscape and do not detract from the sense of place.



Figure 10: Farm houses on Pofadder 2 site

The main road located within the region is the N14 National Highway which runs from Upington to Springbok and is located 20 km to the north of the site (**Figure 11**). A minor district road is located 7.2 km to the west (R358), as well as a minor farm access road routing through the proposed development area (east to west). These roads are for farming access and are gravel (**Figure 12**), usually unsuited for tourist related traffic.

Further human influence is visible in the area - located in the southern portion of the study area is an Eskom 132 kV power line. Within the 2 km distance from the power line, the landscape character is likely to be strongly defined as a power line corridor.



Figure 11: N14 National Road northbound just before Aggeneys Town



Figure 12: Typical gravel road west of the study area

The closest built-up area is the town of Pofadder which is situated approximately 35 km north-west of the Pofadder WEF 2 application site. The town is well outside the study area for this project and is thus not expected to have an impact on the visual character of the study area.

8.3 Climate

The Pofadder area is extremely arid with cold winters and hot summers, with temperatures ranging between 33°C in January (summer) and 2°C in July (winter). Average rainfall happens mostly between December and April and averages about 120mm per year, which makes for a fairly arid climate.

8.4 Topography

The area is semi-arid with short, sparse grass and low bushes. The topography is generally flat with low ridges and shallow water courses for ephemeral streams and pans.

The characteristics of the ecoregion are:

- Topography is diverse, but plains with a moderate to high relief and lowlands, hills and mountains with moderate to high relief are dominant. Vegetation consists almost exclusively of Nama Karoo vegetation types;
- Most of the rivers in the region are seasonal to ephemeral,
- Perennial rivers that traverse this region are the Riet and Orange;
- Rainfall is moderate to low in the east, decreasing to arid in the west. Coefficient of variation of annual precipitation is moderate to high in the east to very high in the west;
- Drainage density is generally low, but medium to high in some parts;

8.5 Aquatic/Freshwater Assessment

An Aquatic Ecological Study was undertaken by Nkurenkuru Ecological and Biodiversity (report dated March 2022).

The Pofadder WEF 2 project is located within the Nama Karoo Level 1 ecoregion. The Nama Karoo ecoregion incorporates a number of northward flowing rivers, with the main system into which these rivers flow being the Orange River.

The study site occurs within three Quaternary Catchments namely D81G, D81F and D53G (All of which are located within the Lower Orange Water Management Area). The main drainage features within the region are the Kaboep River (area to the north-east – D81F), T-Goob se Laage River (area to the north-west – D81G) and Soutput se Laagte River (area to the south – D53G).

8.5.1 Aquatic / Freshwater Resource Delineation

Wetland Features

Soil and vegetation sampling in conjunction with the recording of topographical features enabled the delineation of a twenty-three (23) wetland units within the project site (refer **Figure 13** below). Wetland ecosystems are in general the dominant drainage features in this landscape and comprised of ephemeral depressions (endorheic) hydrogeomorphic (HGM) units. Inundation periods for this wetland is very short-lived (days to a few weeks) following sufficient precipitation. Similarly, the frequency is highly variable, from less than once a year to once every few decades. The flat, central portion of this pan is mostly devoid of vegetation, with a zonation of plants occurring around the margin. These depression wetlands are located outside of the proposed Pofadder WEF 2 footprint, but a very small portion of some of these wetlands' catchments will be impacted by the proposed development.

Ephemeral Streams and Washes

Three major/primary washes, and 35 minor streams/washes were identified and delineated (refer **Figure 13**). These delineated features represent larger and wider watercourses that include broad watercourses that may lack distinct channel development. Washes are typically discontinuous, diffuse channels on a flat topography in dry environments.

Smaller Ephemeral Channels and Drainage Lines

A total of one hundred and seventy-three (173) drainage lines were identified within the project site (refer **Figure 13**). These drainage lines are never or very seldom in connection with the zone of saturation and they consequently never have base flow and are unlikely to support wetland conditions.

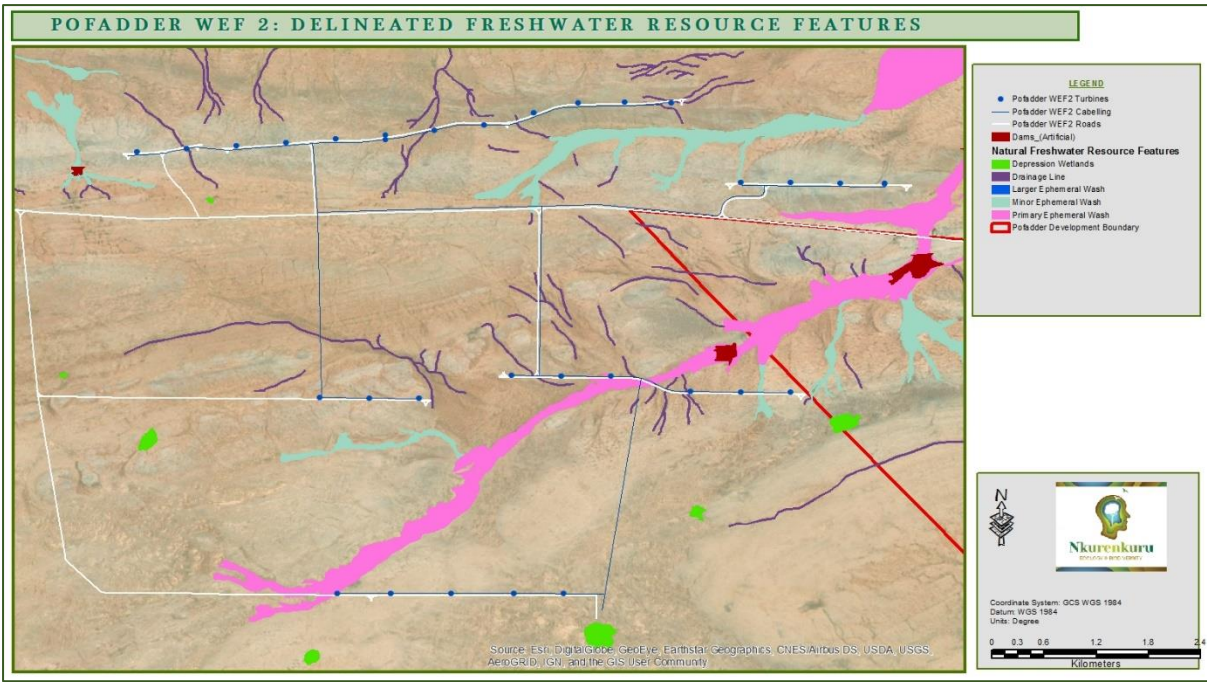


Figure 13: Aquatic / Freshwater Resource Features delineated within the Pofadder WEF 2 development

8.5.2 Aquatic / Freshwater Resource Screening Phase Sensitivity Assessment

Refer to Figure 14 below for the sensitivity mapping for the Pofadder WEF 2.

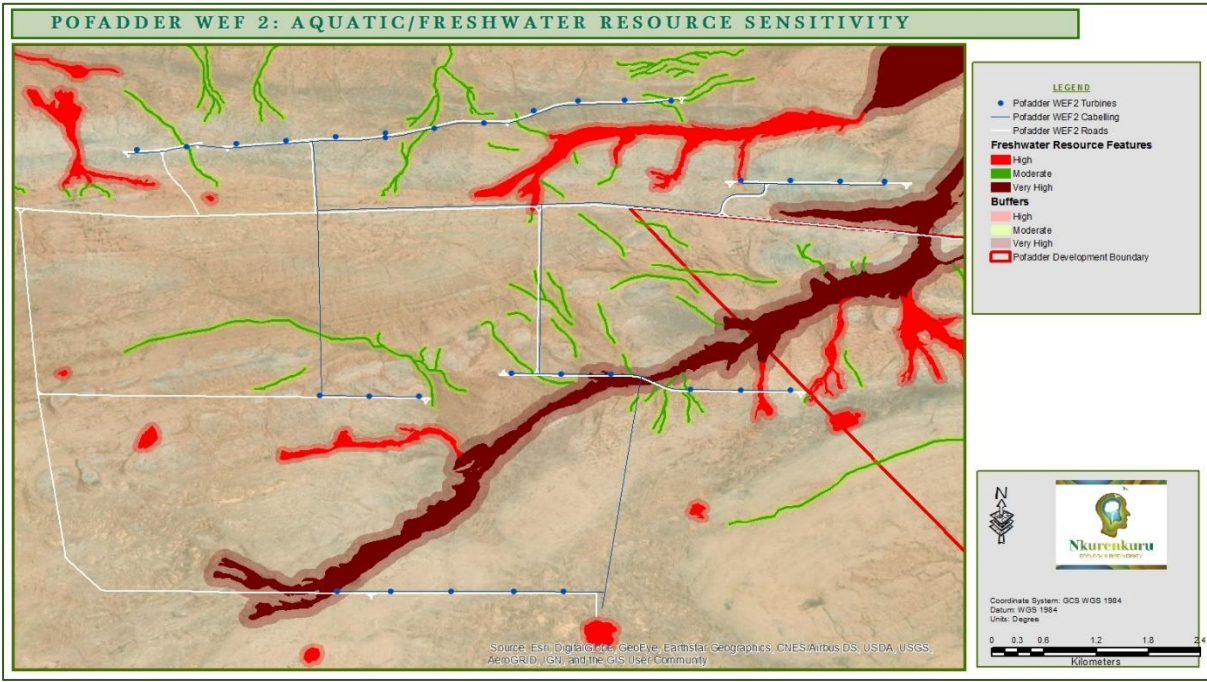


Figure 14: Aquatic / Freshwater Resource Sensitivity mapping for Pofadder WEF 2

Depression Wetlands

- These depression wetlands are considered to be ecologically important and sensitive (**High sensitive**).
- Such depression wetlands are known to contain important/unique invertebrate populations like branchiopods, crustaceans, and dipterans.
- Such depression wetlands may provide important feeding sites for local and migrating faunal species.
- The contribution of these pans to grazing will only be on and around the outer edges of these pans, where seasonal higher soil moisture in less saline soils can support more palatable vegetation during periods of rainfall.
- The ephemeral nature of the wetlands mean that the wetlands will be fairly sensitive to further reductions and changes in the natural hydrological regime. This may have a significant impact on the floral composition of these areas and may result in a reduction in water supply and a collapse in invertebrate populations.

Major Ephemeral Streams / Washes

- All major ephemeral streams/washes are considered to be of **very high importance and sensitivity**.
- The smaller ephemeral streams/washes are considered to be of **high importance and sensitivity**
- The braided channel network and “vloere” of most of the washes contribute slightly to diversity in vegetation and geomorphological structure but more significantly to patchiness.
- Furthermore, deeper pools within these systems may contain important/unique invertebrate populations like branchiopods, crustaceans, and dipterans.
- The morphological heterogeneity of these features and their associated vegetation contribute to habitat diversity within the region and valuable resources, not only for faunal species associated with these habitats, but for faunal species in general.
- Dry watercourses are known to serve as important migration routes and corridors, especially the more extensive habitats.

Smaller Drainage Features

- All smaller ephemeral washes and drainage channels are considered to be of **moderate** ecologically importance and sensitivity.
- These smaller, valley floor and drainage systems in general were found to be more prone to degradation – often visible by the formation of smaller washes and/or occasional dense encroachment by spiny high shrubs, most notably of *Rhigozum trichotomum*. It was then also quite significant that these smaller valley floor systems had a much lower apparent utilisation by livestock and game, although the presence of smaller fauna (birds, rodents) still seemed higher than on surrounding rocky plains.
- These systems convey floodwater into and out of the ecologically important and sensitive larger washes and subsequently play an important role in the maintenance of these, more important, system.
- The vegetation of these drainage lines help reduces flood damage to downstream habitats and subsequently contribute to the maintenance of biological productivity of downstream environments.

According to the current layout no depression wetlands will be impacted by the development, whilst very limited development/activities will occur within the watercourses, which is mostly restricted to watercourse crossings and underground cabling between the wind turbines.

According to the current layout:

- A single minor ephemeral wash will be impacted by a proposed wind turbine platform;
- A single drainage line will be impacted by a wind turbine as well as its associated platform;
- A small portion of the Kaboep River will be impacted by a portion of the proposed platform of a single wind turbine.
- Approximately eleven small drainage lines will be crossed by access routes and underground cabling.
- Two minor ephemeral washes will be crossed by access routes and underground cabling.
- One primary ephemeral wash (Kaboep River) will be crossed by a single access route and an underground cable.
- Drainage Line Buffer Areas: Three wind turbines are proposed within the buffer areas whilst four turbine platforms will likely encroach into these buffer areas. Access routes and underground cabling will impact approximately 11 buffer features.
- Minor Ephemeral Wash Buffer Areas: One wind turbine is proposed within a buffer area whilst two turbine platforms will likely impact two buffer features. Access routes and underground cabling will impact three buffer features.
- Large and Primary Ephemeral Washes: Two wind turbines as well as platform features are proposed within the Kaboep River buffer area. Furthermore, an access route and underground cable will traverse this buffer feature within a few areas.

It is recommended that all turbines and platforms located within any watercourses/wetland as well as associated buffer areas, be relocated to more acceptable areas outside of these freshwater resource features and their associated buffer areas. The following buffer areas have been recommended:

- Primary and large ephemeral washes (including associated alluvial floodplains): 100 m buffers from the outer edge of the freshwater resource features.
- Minor ephemeral washes: 50 m buffers from the outer edge of the freshwater resource features.
- Endorheic depression wetlands (pans): 50 m buffers from the outer edge of the freshwater resource features.
- Small drainage lines: 35 m buffers.

All ephemeral washes and alluvial floodplains with their buffer areas should be regarded as “No-Go” areas apart from the following activities and infrastructure which may be allowed (although restricted to an absolute minimum footprint):

- only activities relating to the route access and cabling:
 - the use/upgrade of existing roads and watercourse crossings are the preferred options;
 - Where no suitable existing roads and watercourse crossings exist, the construction of new access roads and watercourse crossings can be allowed, however this should be deemed as a last resort.
 - All underground cabling should be laid either within access roads or next to access roads (as close as possible).

All depression wetlands with their buffer areas should be regarded as “No-Go” areas for all activities associate with the proposed development.

All drainage lines with their buffer areas should be regarded as “No-Go” areas apart from the following activities and infrastructure which may be allowed (although restricted to an absolute minimum footprint):

- only activities relating to the route access and cabling:
 - the use/upgrade of existing roads and watercourse crossings are the preferred options;
 - Where no suitable existing roads and watercourse crossings exist, the construction of new access roads and watercourse crossings can be allowed, however this should be deemed as a last resort.
 - All underground cabling should be laid either within access roads or next to access roads (as close as possible).

Overall, no significant surface hydrological flaws that could pose a problem to the proposed WEF development were identified during the scoping phase assessment; this will however, be confirmed during a detailed field study of the vegetation of the area.

8.6 Terrestrial Ecological Assessment

A Terrestrial and Aquatic Ecological Study was undertaken by Nkurenkuru Ecological and Biodiversity (report dated March 2022).

8.6.1 Terrestrial Ecological Baseline Assessment

The largest portion of the project site has been classified as Bushmanland Arid Grassland (81.2%). Bushmanland Basin Shrubland is mostly confined to the deeper sandier pediments surrounding the narrow ridge system, and only cover approximately 12.5% of the site. The narrow, west to east running ridge located within the northern portion of the site has been classified as Bushmanland Inselberg Shrubland and covers an area of around 6.4%. Namakwa Klipkoppe Shrubland is the smallest vegetation unit within the project site and cover less than 1% of the project site.

Due to the vast extent of intact, natural vegetation still present within all four mentioned vegetation types nationally and the fact that only a very small extent of these vegetation types are located within the project site along with the fact that the development footprint itself will be much smaller, it is highly unlikely that this development will have an impact on the status and conservation targets set out for these vegetation types. A general habitat map has been compiled, based on the finding of the screening site visit, and is illustrated in the map below.

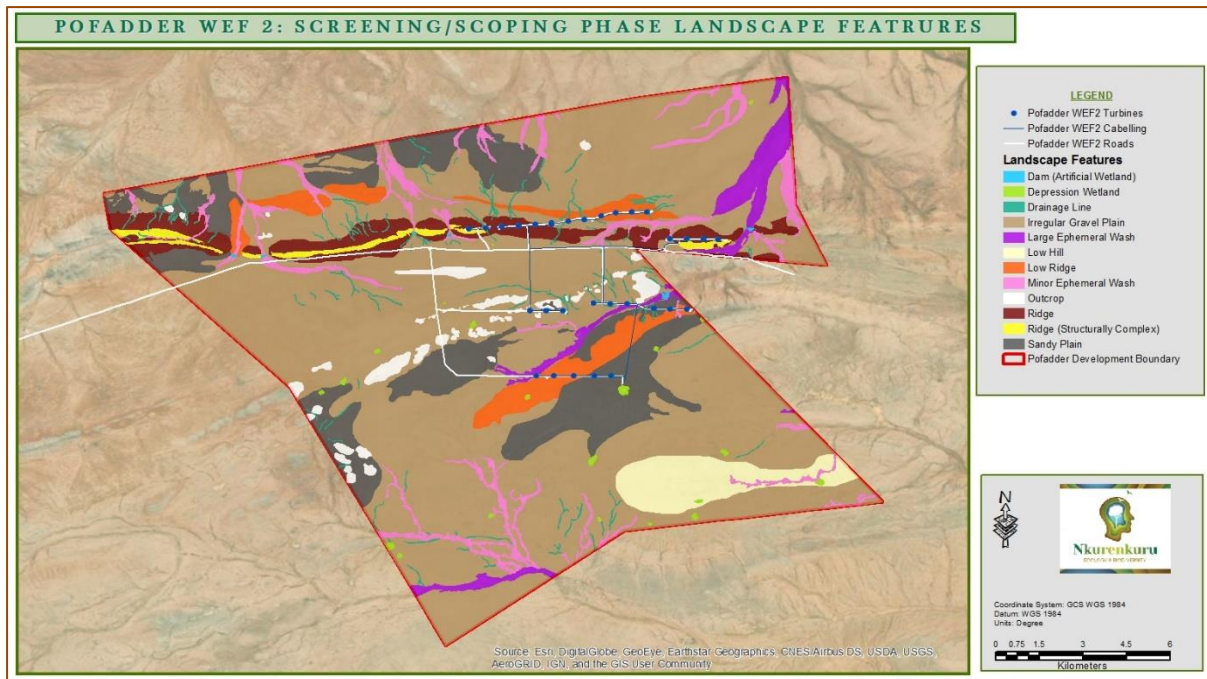


Figure 15: Delineated habitat features based off screening assessments

8.6.2 Faunal Screening Baseline Assessment

Mammal Diversity, Habitats and Species of Conservation Concern (SCC) and Protected Mammal Species

The IUCN Red List Spatial Data lists 65 mammal species that could be expected to occur within the vicinity of the project site. This is regarded as a moderately-low species diversity. Eight of these species are medium to large conservation dependent species that had a historical range that included the project area however are now considered to be locally “extinct” (e.g. African wild dog, lion, cheetah etc.).

Of the remaining 57 small to medium sized mammal species, eight (8) indigenous mammals species have been observed through direct observations, camera trap photographs, Sherman traps, and/or the presence of visual tracks & signs. These data represent strong evidence as to a potential low diverse and functional mammal assemblage populating the study area.

The following mammals were the most frequently observed within the project site:

- Bat-eared Fox (*Otocyon megalotis*): No of Records - 8 (and digging/feeding signs);
- Cape Porcupine (*Hystrix africaeaustralis*): No of Records - 4 (and numerous feeding/gnawing signs);
- Pygmy Hairy-footed Gerbil (*Desmodillus auricularis*): No physical records (but numerous burrows);

Five (5) of the remaining 57 small to medium mammal are listed as being of conservation concern on a regional or global basis (Mammal Species of Conservation Concern (SCC)).

The list of potential species includes:

- Two (2) that are listed as Vulnerable (VU) on a regional basis (Leopard, Small Spotted Cat); and

- Three (3) that are listed as Near Threatened (NT) on a regional scale (Littledale's Whistling Rat, Brown Hyaena, Spectacled Dormouse).

During the site visit no Mammal SCC were recorded. Based on the ecology and behaviour of the potential Mammal SCC that may occur within the region, as well as the general design and layout of the WEF (avoiding sandy alluvial washes and floodplains as well steep slopes and tall ridges) it is highly unlikely that this development will threaten local individual and populations of Mammal SCC.

In terms of protected mammal species, which are either protected nationally within TOPS (Threatened and Protected Species Issued in terms of Section 56(1) of the National Environmental Management: Biodiversity Act, 2004) or provincially within Schedule 1 and 2 of the Northern Cape Nature Conservation Act No 9 of 2009, the following was recorded during the site visit:

During the site visit the following protected mammal species (within TOPS as well as Provincial Act) were recorded namely:

- Bat-eared Fox (*Otocyon megalotis*): 8 recordings;
- Aardwolf (*Proteles cristatus*): 1 recording.

The most significant habitat for these protected species, are the alluvial washes along with its floodplains and woody/thicket patches. Most of the protected mammals recorded within the project site or which have a high likelihood of occurring within the project site, utilize burrows, and the deeper sandy substrates of these washes provide valuable burrowing sites. The higher rodent, small mammal and invertebrate activities within this habitat also makes this habitat a valuable forage/hunting area for potential protected species such as Bat-eared Fox, Aardvark, Cape Fox and African Wild Cat and potentially for Honey Badger, Striped Polecat, and Aardwolf.

Reptile Diversity, Reptile Species of Conservation Concern (SCC) and Protected Reptile Species

The IUCN Red List Spatial Data lists 41 reptile species that could be expected to occur within the vicinity of the project site. Of the 41 reptile species, four (4) indigenous reptile species were observed through direct observations, within the project site.

However, it must be noted that the low diversity observed within the project site can most likely be attributed to unfavourable climatic conditions.

The following reptiles were the most frequently observed within the project site:

- Western Ground Agama (*Agama aculeata aculeata*): No of Records 14;
- Southern Karusa Lizard (*Karusasaurus polyzonus*): No of Records 12;

In terms of the 41 Reptile Species of Conservation Concern (SCC), two (2) are listed as being of conservation concern on a regional or global basis. During the site visit, the only reptile recorded was the *Psammobates tentorius verroxii* (Tent Tortoise). In terms of the likely impacts of the development on these tortoise species, habitat loss is not likely to be highly significant as the direct footprint of the development is not likely to exceed a few hundred hectares and this would not be significant in context of the relatively homogenous and intact surrounding landscape.

In terms of protected reptile species which are either protected nationally within TOPS (Threatened and Protected Species Issued in terms of Section 56(1) of the National Environmental Management: Biodiversity Act, 2004) or provincially within Schedule 1 and 2 of the Northern Cape Nature Conservation Act No 9 of 2009, the following was observed: During the site visit the only protected species confirmed, was *Psammobates tentorius verroxii*. *P. t. verroxii* is expected to potentially inhabit any of the identified habitats. As mentioned, habitat loss and other likely impacts are not likely to be highly significant as the direct footprint of the development is not likely to exceed a few hundred hectares and this would not be significant in the context of the relatively homogenous and intact surrounding landscape.

Amphibian Diversity, Amphibian Species of Conservation Concern (SCC) and Protected Amphibian Species

No amphibian species have been recorded within the project area, however there are available habitat for these species and the likelihood of some of these species to occur. Impacts on amphibians are likely to be low given the limited extent of the development as well as low likely density of amphibians in the area. Although there are some available amphibian habitats these habitats are unlikely to be impacted by the proposed development.

Of the eight amphibian species that have a natural distribution range that include the project site, none are listed as being of conservation concern on a regional or global basis.

8.6.3 Terrestrial Ecological Scoping Phase Sensitivity Assessment

The majority of the site can be considered as “Medium” sensitive (**Figure 16** below). This classification coincides largely with the vegetation types, Bushmanland Arid Grassland and Bushmanland Basin Shrubland covering the slightly broken/irregular sandy and gravel plains. Faunal diversity within these habitats are likely to be fairly low and will likely comprises largely of “habitat generalists”. As such, development within these habitats are regarded as acceptable. However, care should be taken when developing in this unit, since some of these areas are characterised by deeper sandier soils that may be prone to erosion. Therefore, erosion should be carefully monitored and mitigated wherever possible. Furthermore, although overall conservation value and sensitivity is medium, a Pre-Construction Botanical and Faunal Walk-Through will have to be conducted in order to identify the presence of any potential sensitive species (protected and SCC) that may occupy/inhabit the development footprints of the WEF and to assist in the biodiversity permitting processes.

The areas classified as “Very High” sensitivity coincide with the primary and larger washes, which are by nature ephemeral river systems. In order to avoid any detrimental impacts on these features’ functions, services and ecological drivers a **100 m buffer** is recommended around these freshwater resource features. These buffer areas are also subsequently regarded as “Very High” sensitive. These ephemeral freshwater resource features are probably the most significant faunal habitats within the project site (for mammals, reptiles and also potentially for amphibians). Furthermore, these freshwater resource systems can be regarded as potentially important corridors for faunal movement and migration. Overall diversity, connectivity and sensitivity of these areas were regarded as “Very High” and as such these areas should be regarded as “No-Go” areas apart from the following activities and infrastructure which may be allowed (although restricted to an absolute minimum footprint):

- only activities relating to the route access and cabling:
 - the use/upgrade of existing roads and watercourse crossings are the preferred options;

- Where no suitable existing roads and watercourse crossings exist, the construction of new access roads and watercourse crossings can be allowed, however this should be deemed as a last resort.
- All underground cabling should be laid either within access roads or next to access roads (as close as possible).

All moderately sized ephemeral washes are regarded as High sensitive and are regarded as important tributaries of the larger watercourses. These watercourses provide mostly, similar ecological functions and services as provided by the larger watercourses, but to a slightly smaller extent. In order to achieve this, a **50m buffer** area around all of these smaller watercourses have been recommended and should also be similarly classified as High sensitive areas. Furthermore, these areas should be regarded as “No-Go” areas apart from the following activities and infrastructure which may be allowed (although restricted to an absolute minimum footprint):

- only activities relating to the route access and cabling:
 - the use/upgrade of existing roads and watercourse crossings are the preferred options;
 - Where no suitable existing roads and watercourse crossings exist, the construction of new access roads and watercourse crossings can be allowed, however this should be deemed as a last resort.
 - All underground cabling should be laid either within access roads or next to access roads (as close as possible).

All small drainage channels are considered to be of moderate ecologically importance and sensitivity. In order to avoid any detrimental impacts on these drainage features’ functions and services a **35m buffer** is recommended. Even though these areas are only regarded as Medium sensitive, these areas should still be regarded as “No-Go” areas for most activities, apart from the following activities and infrastructure which may be allowed (although restricted to an absolute minimum footprint):

- only activities relating to the route access and cabling:
 - the use/upgrade of existing roads and watercourse crossings are the preferred options;
 - Where no suitable existing roads and watercourse crossings exist, the construction of new access roads and watercourse crossings can be allowed, however this should be deemed as a last resort.
 - All underground cabling should be laid either within access roads or next to access roads (as close as possible).

The medium sensitive areas coincide with portions of Bushmanland Inselberg Shrubland that contain more gradual slopes, are more homogenous, structurally less complex and generally low in species diversity. Development within these medium sensitive portions of the Bushmanland Inselberg Shrubland are regarded as acceptable. The sandier pediments surrounding some of the larger ridges and outcrops may be vulnerable to erosion. As such, a detailed Storm Water and Erosion Management Plan as well as a Plant Rehabilitation and Invasive Alien Plant Management Plan should accompany the EIA Report. Furthermore, a Pre-Construction Fauna and Flora Walk-Through will be required in order to determine whether there are any sensitive, restricted species confined to these areas and at risk of being impacted by the proposed development.

Through the avoidance/exclusion of sensitive faunal and floral habitats and the implementation of mitigation measures, regional faunal and plant populations will likely not be significantly impacted and impacts on any faunal and plant SCC should be successfully avoided.

Overall, no significant ecological flaws that could pose a problem to the proposed WEF development were identified during the scoping phase assessment; this will however, be confirmed during a detailed field study of the vegetation of the area.

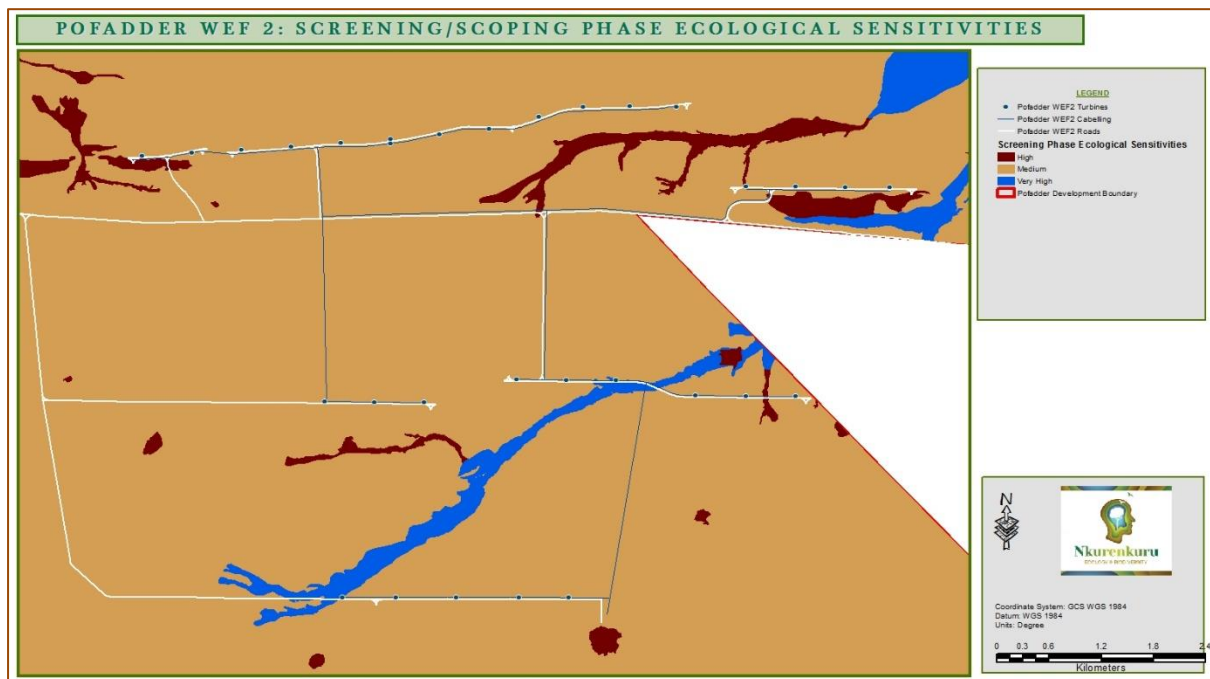


Figure 16: Ecological Sensitivity Mapping

8.7 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz (report dated 19 March 2022). An agricultural compliance statement was applicable and therefore compiled as a result of the low sensitivity identified in the DFFE screening tool. According to the agricultural report, *the site has very low agricultural potential predominantly because of climate constraints, but also because of soil constraints. As a result of the constraints, the site is unsuitable for crop production, and agricultural production is limited to low capacity grazing. The land impacted by the development footprint is verified in this assessment as being of low agricultural sensitivity.*

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.

The Agricultural report concluded that *the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable and it is recommended that the development be approved.*



Figure 17: Agricultural sensitivity from DEA screening tool (green=low sensitivity; yellow = medium)

8.8 Avifauna

An Avifaunal Assessment was undertaken by Chris van Rooyen Consulting (report dated February 2022).

8.8.1 Baseline Assessment

According to the assessment, the DFFE screening tool is inaccurate in terms of bird sensitivity as it reports a low sensitivity area for birds for the Pofadder 2 site. According to the observations made during the field surveys to date, the classification should be high based on the presence of species of conservation concern recorded during the on-site surveys. This includes the Verreaux's Eagle (SA status: Vulnerable, Ludwig's Bustard (SA status: Endangered), Lappet-faced Vulture (SA status: Endangered) and White-backed Vulture (SA status: Critically Endangered).

The project site and proposed development area do not fall within a formally protected area. The Gamsberg Nature reserve is the closest protected area however the Pofadder WEF 2 is not expected to impact on the avifauna from the reserve, as it is a considerable distance from the nearest turbines. In terms of Important Bird Areas (IBA), the Mattheus-Gat Conservation Area is to the North of the site. This IBA is one of a few sites protecting both the globally threatened Red Lark and the near-threatened

Sclaters Lark. However, the proposed wind energy facility is not expected to impact on the avifauna from the IBA due to the distance from the nearest turbines.

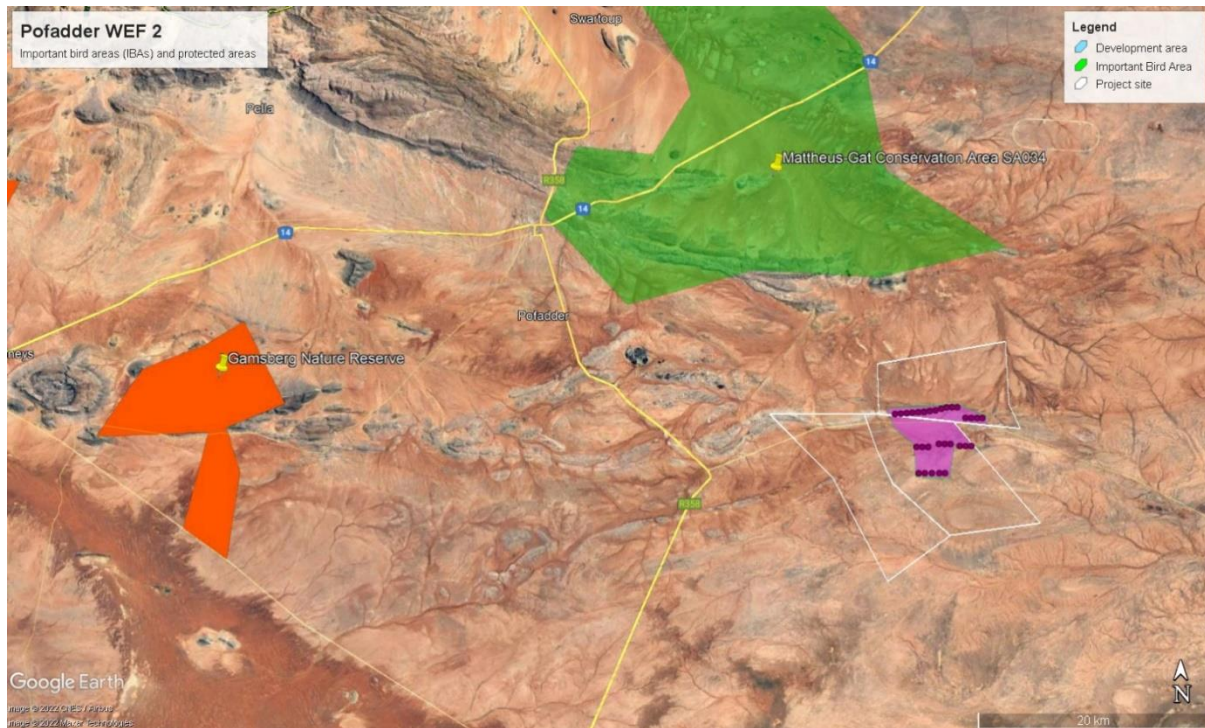


Figure 18: Regional map detailing location of the proposed Pofadder WEF 2 in relation to Protected and Important Bird Areas

8.8.2 Avifauna in the Project Site

The Bird distribution data from the Southern African Bird Atlas Project 2 (SABAP2) data indicates that a total of 96 bird species could potentially occur within the broader area. Of these, 18 species are classified as priority species and 11 of these are South African Red List species. Of the priority species, 15 are likely to occur regularly in the development area.

8.8.3 Impact Assessment

Bird Behaviour

The priority species which could occur with some regularity at the proposed Pofadder WEF 2 can be classified as either terrestrial species, soaring species or occasional long-distance fliers. At the project site, Ludwig Bustard, Kori Bustard, Karoo Korhaan and Northern Black Korhaan are included in this category. Occasional long-distance fliers generally behave as terrestrial species but can and do undertake long distance flights on occasion (Shaw 2013). Species in this category are Ludwig’s Bustard. Soaring species spend a significant time on the wing in a variety of flight modes including soaring, kiting, hovering and gliding at medium to high altitudes. At the project site, these include all the raptors and vultures. Based on the time spent potentially flying at rotor height, soaring species are likely to be at greater risk of collision. Specific behaviour of some species might put them at risk of collision, Vultures taking off and arriving at carcasses could also be at risk of turbine collisions.

Avoidance Behaviour

It is anticipated that most birds at the proposed Pofadder WEF 2 will avoid the wind turbines, as is generally the case at all wind farms (SNH 2010). Vultures descending to carcasses may also be at risk as they will be concentrating on the carcass and not the turbines. Complete macro-avoidance of the wind farm is unlikely for any of the priority species likely to occur within the project site.

Bird Abundance

The abundance of priority species within the proposed Pofadder WEF 2 development area will fluctuate depending on the season of the year, and possibly in response to rainfall. White-backed and Lappet-faced Vulture are probably only present at the project site in numbers between January and May, when the highest collision risk is expected. However, it is not clear at this stage whether the occurrence of White-backed Vulture and Lappet-faced Vulture in the first two quarters of 2020 and during the third preconstruction monitoring survey were extraordinary events, or whether it signals the start of a regular pattern in the non-breeding season.

Landscape Features

The most significant landscape features from a turbine collision risk perspective are the Aries – Aggeneys 400 kV high voltage line, the rocky outcrops in the north of the project site, and the multitude of drinking troughs.

Flight Paths

The potential areas of high flight activity that have been identified are the low ridges in the north of the project site (not present in the Pofadder WEF 1 development area), and the vulture roost on the Aries – Aggeneys 400kV powerline. The pair of Verreaux's Eagles which are breeding in Mattheus-Gat IBA might forage along the ridges, as they most likely fall within the core range of the pair, and a juvenile Verreaux's Eagle was also recorded perched on a ridge. However, it is unlikely that the species will regularly forage in the development areas where the turbines are planned, due to the absence of ridges.

Displacement

It is inevitable that a measure of displacement will take place for all priority species during the construction phase, due to the disturbance factor associated with the construction activities. Species that are likely to be most impacted are ground-nesting species and some species of raptors. If any priority nests are discovered habitat during pre-construction monitoring, it will have to be buffered appropriately to prevent displacement of the breeding birds. Based on likely occurrence in the development area, priority species that could be temporary displaced, either partially or completely, due to disturbance during the construction phase are Greater Kestrel, Karoo Korhaan, Ludwig's Bustard, Kori Bustard, Northern Black Korhaan, Pale Chanting Goshawk, Spotted Eagle-Owl, Burchell's Courser, Double-banded Courser, Red Lark and Sclater's Lark.

8.8.4 Avifaunal Sensitivity

Very High Sensitivity Zones

The very high sensitivity zones are listed below. The construction of all infrastructure in these zones should be avoided completely:

- 500m buffer zone around water troughs to prevent the displacement of Sclater's Larks due to disturbance and habitat transformation, and to reduce the risk of turbine collisions for priority species using the water troughs for drinking and bathing. Alternatively, water troughs could be relocated to maintain a minimum distance of 500m from the closest turbine.
- Should any additional priority species nests be discovered during pre-construction monitoring, it will have to be buffered appropriately to prevent displacement of the breeding birds through disturbance, and collisions with turbines.

High Sensitivity Zones

The high sensitivity zones are listed below. The construction of turbines in these zones should be avoided to eliminate the risk of turbine collisions. Other infrastructure is permitted:

- 2km no-turbine buffer around the seasonal vulture roost on the Aries-Aggeney's 400kV transmission line running through the south of the project site.

Medium Sensitivity Zones

The medium sensitivity zones are listed below. The construction of turbines in these zones should be restricted to a minimum. If restriction is not possible, additional mitigation measures will be required, e.g. increasing cut in speeds or shutdown on demand:

- Highly suitable Red Lark habitat: Placement of turbines in highly suitable Red Lark habitat to be avoided where possible. If avoidance is not possible, turbine cut in-speeds should be increased to 3m/s (measured at ground level) during daylight hours when a rainfall event of 10mm or higher is recorded at the site, for turbines located in areas of highly suitable Red Lark habitat, as determined by the avifaunal specialist. The increased cut-in speeds to be maintained for a period of six weeks after the rainfall event.
- Based on the results of the pre-construction monitoring, a medium risk zone will be delineated where most of the vulture flight activity beyond the 2km turbine exclusion zone is concentrated. If turbines in this medium-risk zone cannot be avoided, pro-active mitigation must be implemented at these turbines. Suitable pro-active mitigation measures should be selected prior to commencement of operation, informed by best-available information at the time of implementation. This could include measures such as shutdown on demand during the non-breeding season, a carcass removal programme, and/or other proven measures.

Figure 19 below is a sensitivity map, indicating very high, high sensitivity and medium sensitivity areas identified to date. **This map is subject to refinement based on data to be collected in the field during the pre-construction monitoring.**

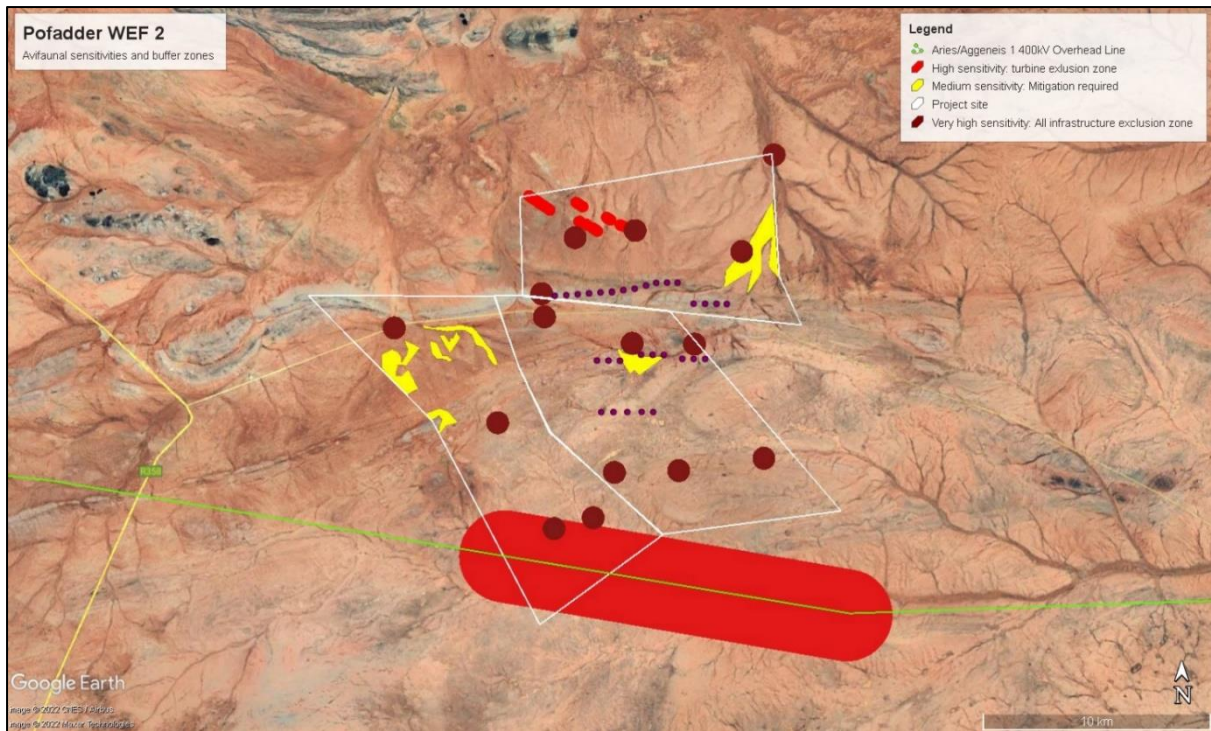


Figure 19: Avifaunal sensitivities within the project site and Pofadder WEF 2 Development area

8.8.5 Preliminary Conclusions

Based on the pre-construction monitoring to date, it is envisaged that the proposed 200MW Pofadder WEF 2 could potentially have a range of pre-mitigation negative impacts on priority avifauna ranging from low to high, all of which could be reduced to acceptable levels with appropriate mitigation. The conclusions and proposed mitigation measures in this report are subject to the completion of the current pre-construction monitoring at the project site. No fatal flaws are expected to be discovered during the remaining investigations.

8.9 Bat

A bat specialist study was undertaken by Camissa Sustainability Consulting (report dated February 2022).

Bat roosting sites in the study area are relatively limited and unlikely to support large congregations of bats. The closest known major bat roosts are approximately 120 km northeast of the Pofadder site. Rocky outcrops are present primarily in the north and northwest and these geological features may provide roosting spaces for Bat species. Bats are also likely to roost in buildings associated with farmsteads within and bordering the project especially Cape Serotine and Egyptian Free-tailed Bat. Trees growing at these farmsteads, and in limited places elsewhere on site usually at livestock water points, could also provide roosting spaces for bats although the extent of this is likely limited since these trees are typically not large and day-time temperatures may be too hot. The building inspections on site did not reveal any evidence of roosting bats.

The baseline was determined by using acoustic monitoring to record spatial-temporal bat activity patterns, and roost surveys to locate used or potentially used bat roosting sites. This assessment is based on the data collected between 29 June 2021 and 2 December 2021 (157 nights). Bat acoustic activity was sampled at five locations within the study area by recording bats at 50 m and 100 m at

three locations, and at 10 m at two locations. The monitoring period spanned winter, spring, and the transition to summer when bat activity is typically lower in South Africa compared to summer and autumn when activity is higher. Therefore, this assessment is based on the expected lower magnitude of bat activity meaning that collision risk could be higher than that presented in this report. Collision risk based on a full annual cycle of bat activity will be determined upon completion of the 12 month of bat monitoring.

Based on current taxonomic information and bat occurrence data, eight bat species could occur at the project, four of which have been confirmed based on the acoustic data recorded thus far. No Threatened species were recorded or expected to occur on site but based on habitat suitability modelling, it is possible that the distribution of the nationally Near Threatened Angolan Wing-gland Bat (*Cistugo seabrae*) may overlap with the project.

Over the 157 nights of sampling, 1,546 bat passes were recorded and activity was generally low (typical for the sampling period), but activity peaked to relatively higher levels on specific nights although this occurred rarely. Eighty-six percent of total activity was attributed to Egyptian free-tailed bat, while 13 % was attributed to Roberts's Flat-headed Bat. Cape serotine and Long-tailed serotine were seldomly recorded. Bat activity was highest at 100 m across the study area. There were no major differences between bat activity at 10 m compared to 50 m, both of which were notably lower compared to activity at 100 m. Based on the magnitude of bat activity recorded, risk to bats would be medium at approximately 100 m and low closer towards ground level.

To assist in avoiding impacts to bats, buffers have been placed around key habitat features as per best practice resulting in the identification of several no-go areas for turbine placement. Seven turbines in the proposed layout are within no-go areas and must be relocated: WTG12, WTG17, WTG23, WTG40, WTG41, WTG42 and WTG56 (**refer Figure 20 below for bat constraint areas**). Once operational, bat fatality monitoring must be undertaken to search for bat carcasses beneath wind turbines to measure the observed impact of the WEF on bats for a minimum of two years (Aronson et al. 2020). Mitigation measures that are known to reduce bat fatality if needed based on the fatality monitoring results include curtailment and acoustic deterrents (Arnett et al. 2013, Romano et al. 2019, Weaver et al. 2020). These techniques must be used if post-construction fatality monitoring indicates that species fatality thresholds have been exceeded to reduce the impacts to bats to within acceptable limits of change and prevent declines in the impacted bat population. If these are adhered to, the Pofadder WEF 2 can be authorized without unacceptable levels of impacts to bats but pending the outcome of the remainder of the pre-construction bat monitoring which would provide a greater understanding of risk. These additional monitoring data will be assessed as part of the final ESIA and the impact assessment updated accordingly.

Please note that the seven turbines located within the no-go areas have been relocated out sensitive areas.

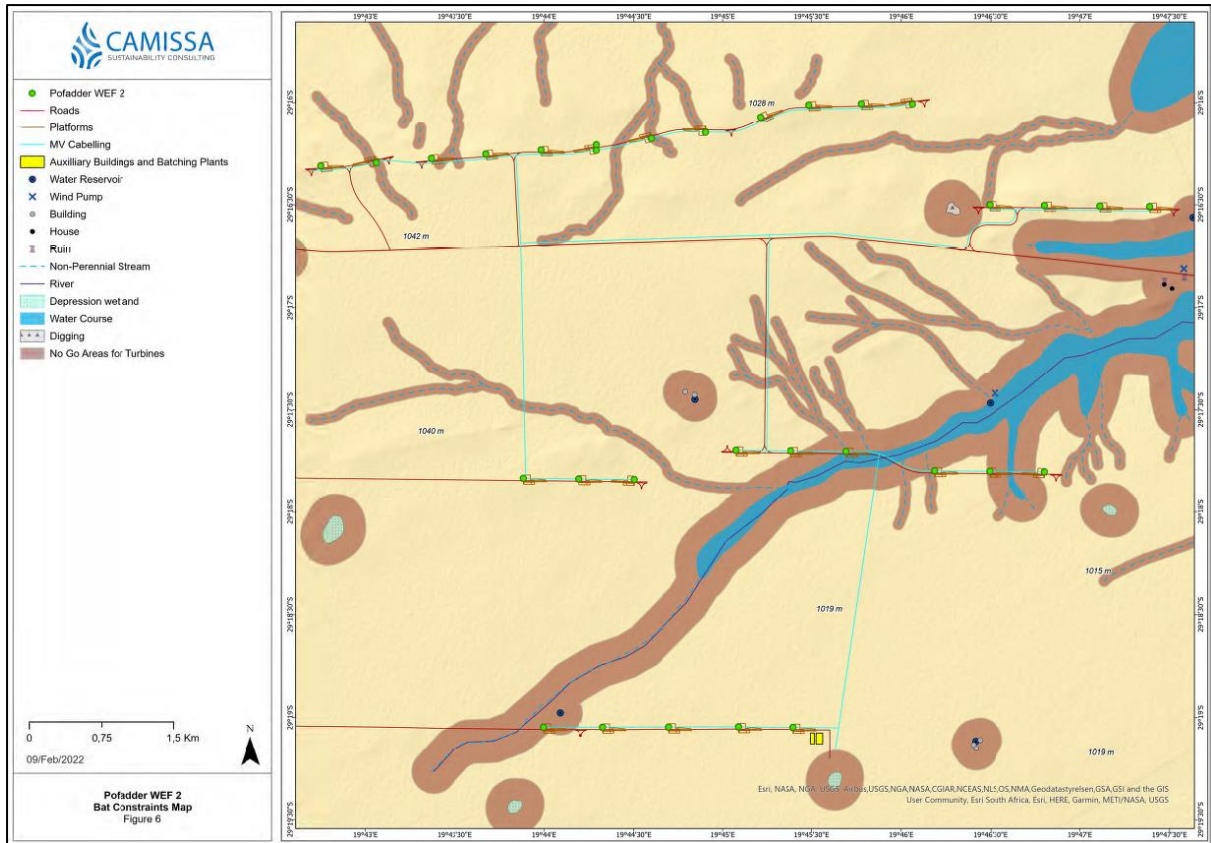


Figure 20: Bat constraints map for Pofadder WEF 2

9. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

9.1 Socio economic characteristics

A Socio-economic Impact Assessment was undertaken by Savannah Environmental (report dated February 2022).

9.1.1 Z F Mgcawu District Municipality

The ZF Mgcawu District Municipality (ZFMDM) consists of five local Municipalities. These include the following:

- Dawid Kruiper Local Municipality;
- Kai !Garib Local Municipality;
- Tsantsabane Local Municipality;
- !Kheis Local Municipality; and
- Kgatelopele Local Municipality.

The District covers an area of more than 100 000 km² (almost 30 % of the Northern Cape Province). Of this total, 65% (65 000 km²) is made up of the Kalahari Desert, Kgalagadi Transfrontier Park and the former Bushman Land. The largest town in the region is Upington, which also functions as the district municipal capital. Following the municipal elections in 2011, Riemvasmaak (Sending and Vredesvallei) were included within the Kai !Garib Local Municipality (KGLM) The Riemvasmaak Community is located

approximately 60 km west of Kakamas. Based on the Household Community Survey data the population of the ZFMDM was 252 692 in 2016 compared to 236 763 in 2011, The DLKM and KGLM are home to approximately 70% of the ZFMDM population.

The ZFMDM accounts for approximately 30% of the Northern Cape economy. Agriculture plays a role in the local economy and is strongly linked to irrigation along the Gariiep River (Orange River). The Orange River is perennial with a flow which varies between 50 and 1800 cubic meter per second (cum/s) depending on the season. The flow of the river is largely controlled by the releases of the dams upstream, like the Bloemhof, Gariiep and van der Kloof dams. Agriculture in the ZFMDM is dominated by grape production for table grapes, which is mainly exported to Europe, as well as livestock and game farming.

Tourism represents one of the most important economic sectors in the Northern Cape as well as within the ZFMDM. In this regards the ZFMDM IDP indicates that tourism is the fastest growing component of the economy. Key tourism assets include the world renowned Kgalagadi Transfrontei Park, Au-grabies National Park and Pitskop Nature Reserve near Upington.

9.1.2 Kai !Garib Local Municipality

The Kai !Garib LM is located in the south-western extent of the ZF Mgcawu DM. It is bordered by the Dawid Kruiper LM to the north, and north-east, the !Kheis LM to the east, the Hantam LM and Khai-Ma LM of the Namakwa DM to the south and south-west respectively, and Namibia to the north-west. The Kai !Garib LM is approximately 26 377km² in extent, and is the second-largest LM in the ZF Mgcawu DM, accounting for approximately one quarter (25.7%) of the DM's geographical area. The Kai !Garib LM is characterised by its unique landscape, which includes the Kalahari Desert on one side, and the Orange River on the other.

The Kai !Garib LM is characterised by three main towns, namely: Kakamas, Keimoes, and Kenhardt. The main economic sectors within the LM include agriculture (51.8%), community and government services (15.9%), wholesale and retail trade (11.3%), finance services (7.6%), and manufacturing (5.1%)

The Orange River is the life vein of the area and forms the largest economic base of this area with large tracts of cultivated land occurring on both sides of the river. The Orange River is the biggest driving force behind the area, causing economic activities to have expanded greatly along the river over the last two decades. The main towns of Kakamas and Keimoes are situated in the midst of an intensive irrigation farming community stretching from Groblershoop in the east to Blouputs in the west. Farming includes crops like vineyards, pecan-nut, and citrus plantations. Local areas where these types of farming flourish include: Blouputs, Eksteenskuil, Riemvasmaak and Cannon Island, while Kenhardt is known for livestock farming.

9.1.3 Key Considerations/Impacts for Wind Energy Facilities

Health and social wellbeing - The health and social wellbeing impacts related to the project include air quality, noise, shadow flicker, blade glint, electromagnetic field and RF interference, increase in crime, increased risk of HIV infections, influx of construction workers and hazard exposure.

Quality of living environment - including disruption of daily living patterns, disruptions to social and community infrastructure, transformation of the sense of place

Economic – impacts related to job creation and skills development and socio-economic stimulation

Cultural - at a social level, it is likely that any cultural impact would be associated with sensitive archaeological and/or heritage sites

9.1.4 Key Findings and Recommendations

The social impacts identified above (including all positive and negative impacts) will be either of a low or medium significance. No negative impacts with a high significance rating have been identified to be associated with the development of the Pofadder WEF 2. All negative social impacts are within acceptable limits with no impacts considered as unacceptable from a social perspective. The recommendations proposed for the project are appropriate and suitable for the mitigation of the negative impacts and the enhancement of the positive impacts.

It is recommended that a full EIA level Social Impact Assessment (SIA) be conducted as part of the EIA phase.

9.2 Cultural/Historical Environment

A Heritage Impact Assessment was undertaken by Asha Consulting (report dated February 2022).

9.2.1 Archaeological

Archaeological materials were found to be widespread. Most were scatters of Early and Middle Stone Age artefacts associated with the gravels and best considered background scatter. These are not significant. However, occasional scatters of Later Stone Age materials were found, usually alongside pans, and some had low-medium cultural significance. Also noted was a set of small stone-walled features that have low-medium significance but no apparently associated artefacts. A single farm graveyard and two small farm complexes are near the footprint area but will not be impacted in any way. All features are more than 0.5 km from turbines but a WEF road comes closer to a farm complex.

No isolated graves were seen anywhere in the greater study area. Some graveyards were recorded, though none are implicated in or close to the Pofadder WEF 2 footprint area.

9.2.2 Historical aspect and the Built Environment

Very few historical structures and features exist on the landscape. The majority of buildings date to the early-mid-20th century and tend to be of low or no heritage significance. During the site visit, two historical sites were recorded. The first is the farm complex on Lovedale. The complex was not examined in detail but it contains at least two historical buildings of which the main house, according to the owner, likely dates to the 1920s. The second farmstead was only seen from a distance and contains a few historical structures. They are split by the local gravel road passing through the study area and actually fall on two different farms. Those to the south, on the Remainder of Quagga-Maag 200 (not part of the study area), seem likely to be the oldest. One of these is built in the same style as the Lovedale farmhouse with a recessed central stoep. It seems to be in reasonable condition but, judging by a boarded up window and another that appears broken, it is empty and derelict. A stone kraal and water reservoir also form part of this complex. The main farmstead lies to the north of the road and also appears to contain at least one heritage building, though this looked, from the small amount visible between trees and another house, to be early-mid-20th century in age.

The built heritage features have medium to high cultural significance at the local level for their aesthetic, architectural, historical and social values.

9.2.3 Cultural Landscape

The landscape is largely a natural one with only minimal anthropogenic inputs in the form of rare buildings and a scattering of fences, farm tracks, wind pumps and small earthen dams. Because of the flatness of the landscape, the quartzite ridge in the north of the project area is a prominent feature. The four farmsteads of the wider study area (two in the study area and one to the west and east) have all been placed along the southern side of the ridge. This is probably because of the drainage lines that lead northwards, penetrating the ridge in places. Farm dams are located at many of these spots. The site lies in a remote location well away from commonly used roads that might be regarded as scenic routes. This aspect is thus of no further concern.

9.2.4 Palaeontological

A desktop Palaeontological Impact Assessment was undertaken by Marion Bamford of the Wits Evolutionary Studies Institute (report dated February 2022).

Most of the area is on non-fossiliferous rocks of the Namaqua-Natal Suite and the Quaternary sands but there are some areas of moderately palaeosensitivity. Most of the project area is of zero to insignificant palaeo sensitivity but there are parts that are moderately sensitive (refer **Figure 21** below). These are on the Mbizane Formation (Dwyka Group, Karoo Supergroup) and the Tertiary calcretes. Fossils are rare and their distribution unpredictable so a Fossil Chance Find Protocol should be followed once excavations for foundations and infrastructure commence. As far as the palaeontology is concerned there are no preferred areas and NO no-go areas because the Significance Rating of the Impact is Negative low. The project should be authorised.

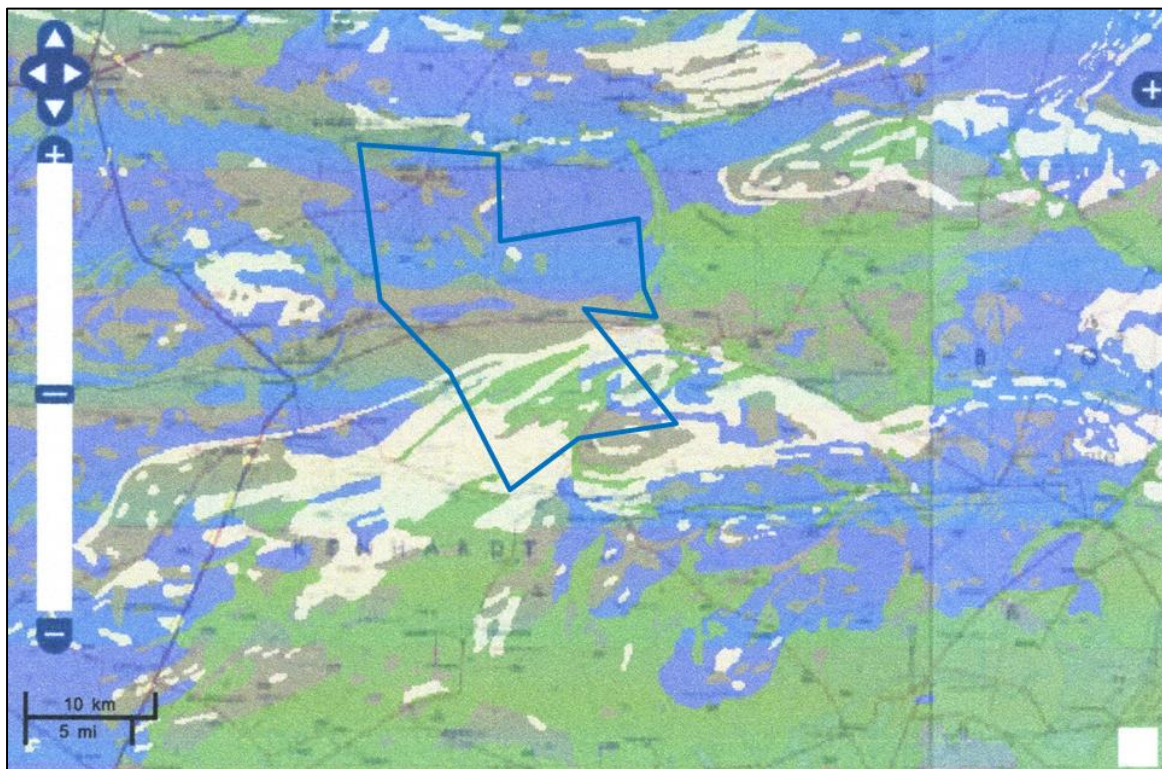


Figure 21: SAHRIS palaeosensitivity map for the entire study area showing Pofadder WEF 1, 2 and 3 within the polygon. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero

9.2.5 Overall significance of heritage resources found

The main heritage concerns for this project are archaeological sites and the cultural landscape. Some archaeological sites are within the current layout but none of these are highly significant sites and none require in situ conservation. It is, of course, always best to avoid any sites that have some research value and hence cultural significance, but excavation within a commercial mitigation context would be completely acceptable for all of the sites concerned here. Impacts to the landscape are unavoidable and mitigation can only deal with impacts at a very localised level. The remaining concern is the introduction of the red flashing lights at night which would cause a considerable change in the night time sense of place with the lights being strongly visible in an otherwise very dark landscape, and potentially over great distances. This impact may be mitigable if there is an approved system in place to allow the lights to come on only when required.

Overall there are no highly significant concerns for this project and the expected impacts can largely be mitigated. The remaining concerns are likely outweighed by the socio-economic benefits of the project.

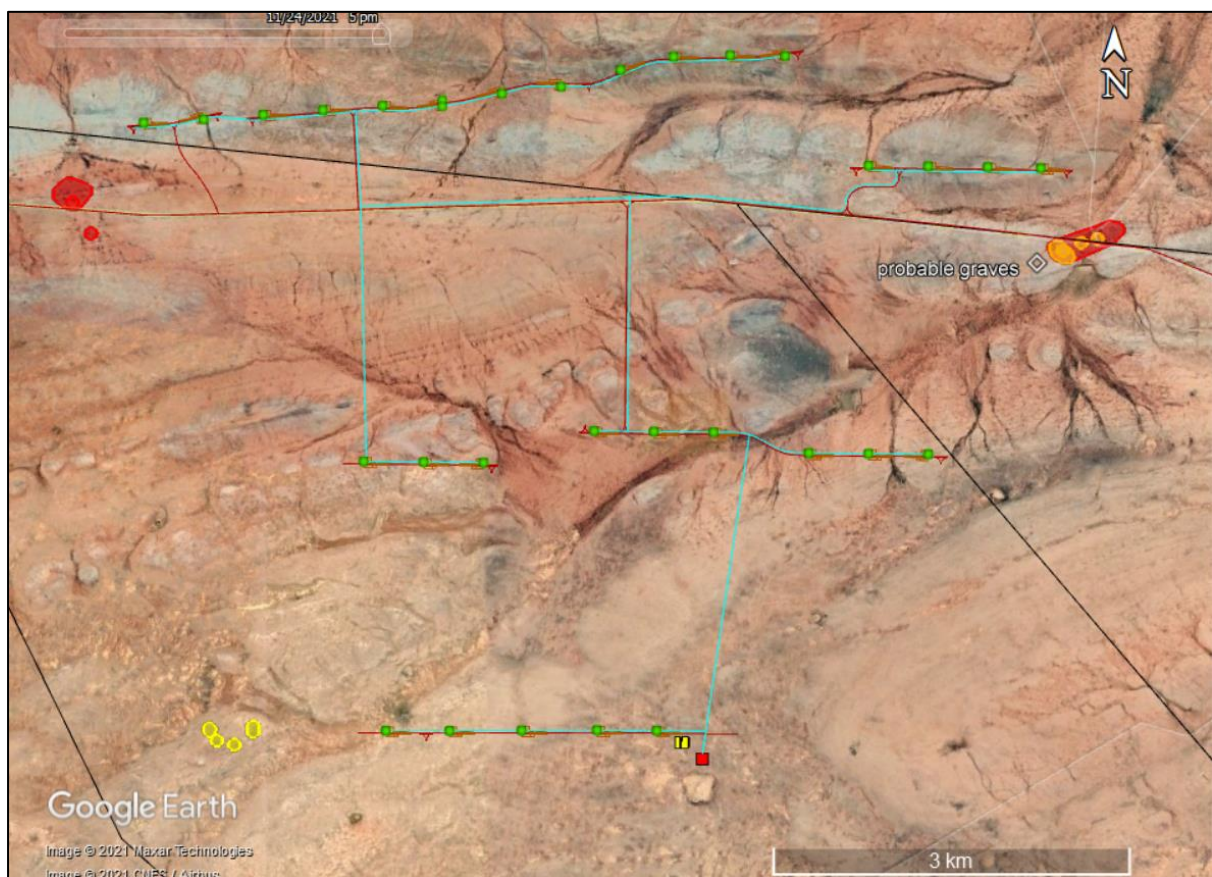


Figure 22: Aerial view of the Pofadder WEF 2 layout showing the locations of all heritage resources graded GPB and above. Yellow polygons are GPB/low-medium, orange are IIBB/medium-high and red are IIIA/high.

9.3 Noise

A Site Sensitivity Verification Report was undertaken by Safetech (report dated December 2021). In terms of noise emitted from operating wind turbines, two main categories are identified: mechanical

sounds from the interaction of turbine components as well as aerodynamic sounds produced by the flow of air over the blades.

A total of 64 Noise Sensitive Areas (NSAs) were identified within the region. The site verification process determined that most NSAs are not occupied and some NSAs are kraals for livestock and abandoned buildings. The noise emissions could impact on local residents.

Within the Pofadder WEF 2 site itself, two NSAs were identified (refer **Figure 23** below). NSA 38 is a kraal and will be excluded in the full noise impact assessment report. NSA 41 is occupied full time. NSA 43 and NSA 40 had no occupants during the field study. However, the properties were well kept and therefore it is possible that occupants may be present at some stages during the year, even if only for short periods. The landowner should be contacted to determine the status of these two NSAs. It is recommended that a 500m buffer be placed around the noise sensitive receptors. No wind turbines should be placed within the 500m buffer.

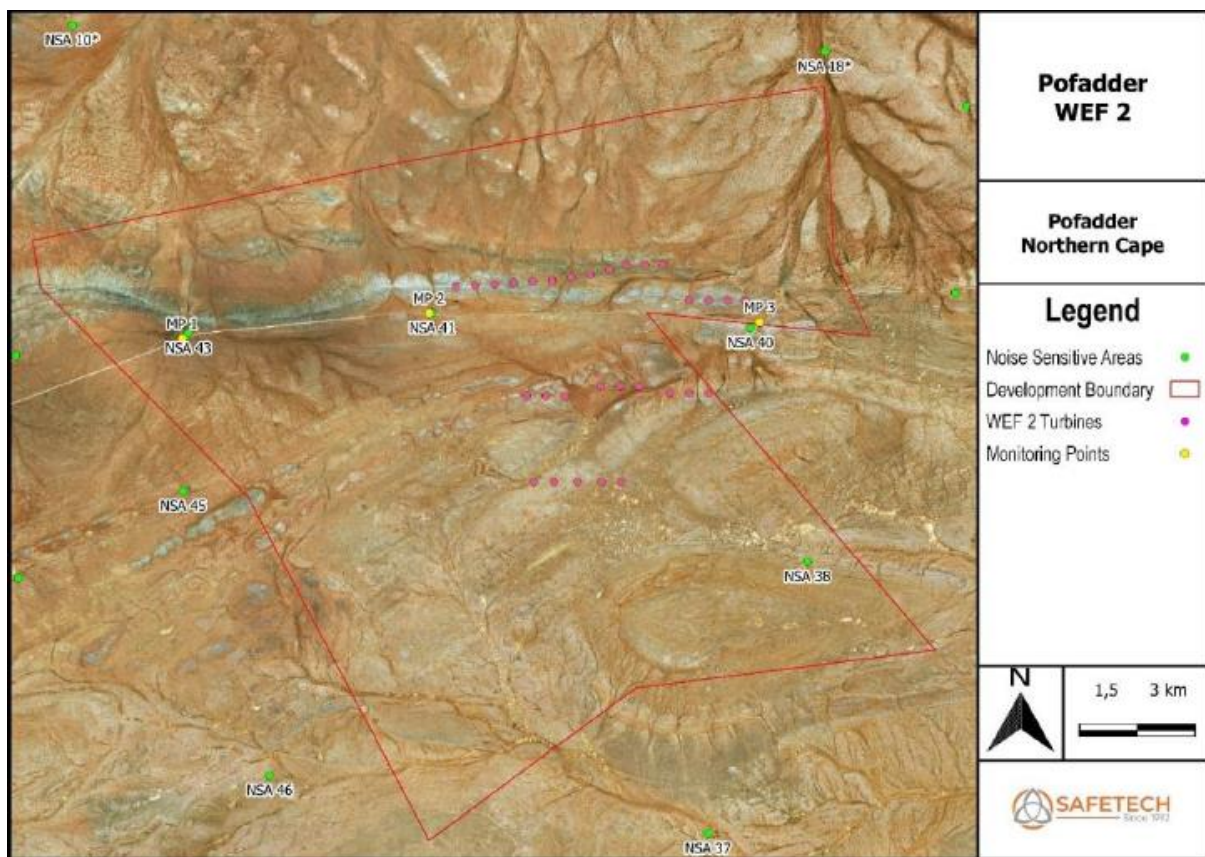


Figure 23: Monitoring points on or in close proximity to the site/turbines

9.4 Visual

A Visual Impact Assessment (Scoping) was undertaken by VRM Africa (report dated February 2022). Regional and local topography has the potential to strongly influence landscape character, as well as the extent of the Zone of Visual Influence. In order to better understand these aspects of the study, a Digital Elevation Model was generated making use of the NASA STRM digital elevation model.

Due to the relatively flat nature of the terrain, the Zone of Visual Influence (ZVI) is likely to be widespread, but with slight undulation creating some visual screening in the background areas. The east to west profile depicts the site as having relative prominence, with low ground of 933 m in the east rising to a high of 1058 m in the west. Across the 75 km length, the total change in elevation is 155 m, emphasising the flat nature of the terrain. The north to south profile also reflects a flat terrain, with more undulation to the north. Due to the flat terrain, topographic screening is likely to be limited given the height of the turbines.

Key Observation Points (KOPs) are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. The following table lists the receptors identified within the ZVI and motivates if they are significance and should be defined as KOP for further evaluation in the impact assessment phase. The receptors located within the ZVI and KOPs view lines are mapped in the **Figure 24** below.

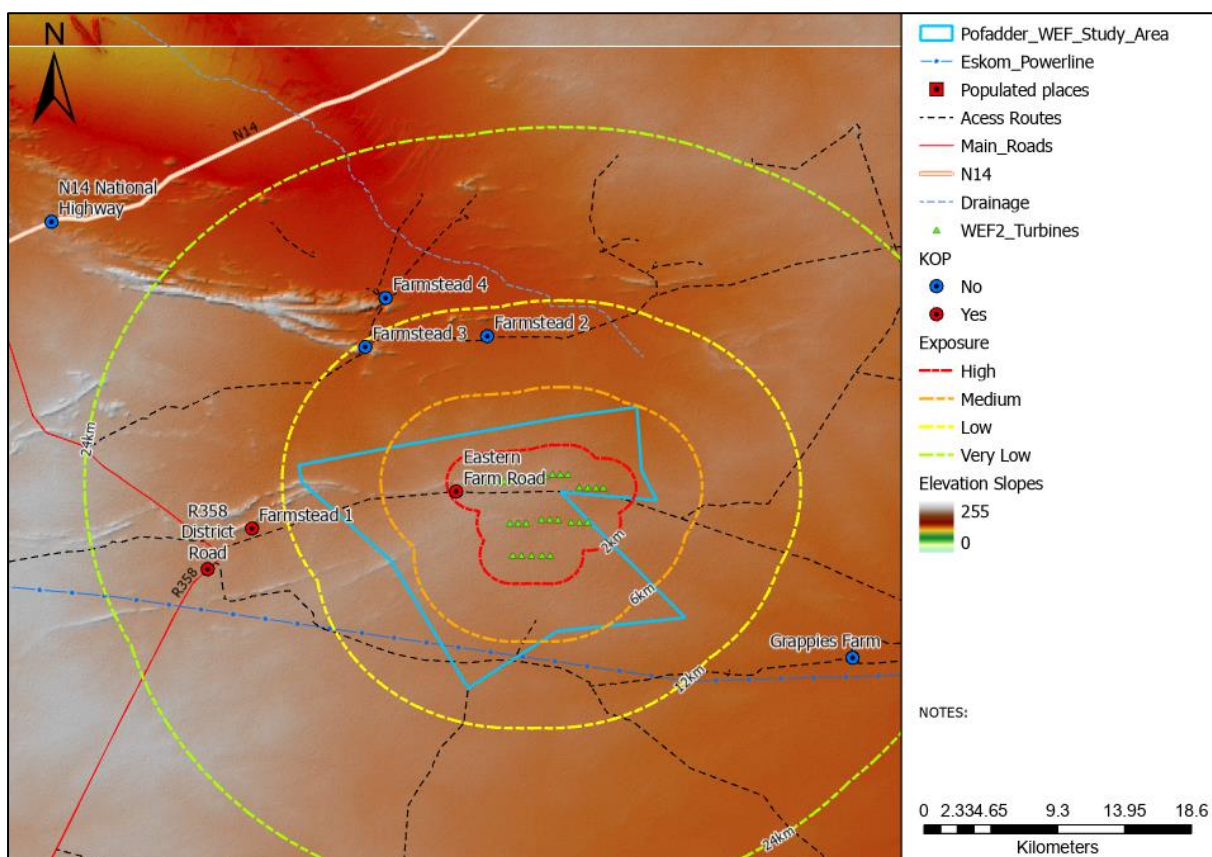


Figure 24: Preliminary Receptors and KOP locality map (to be verified with site survey)

9.4.1 Visual Resource Management Classes

The Bureau of Land Management has defined four classes (Visual Resource Management (VRM) Classes) that represent the relative value of the visual resources of an area and are defined making use of the VRM Matrix below:

- **Classes I and II** are the most valued
- **Class III** represent a moderate value
- **Class IV** is of least value

The various classes are represented graphically in **Figure 25** below.

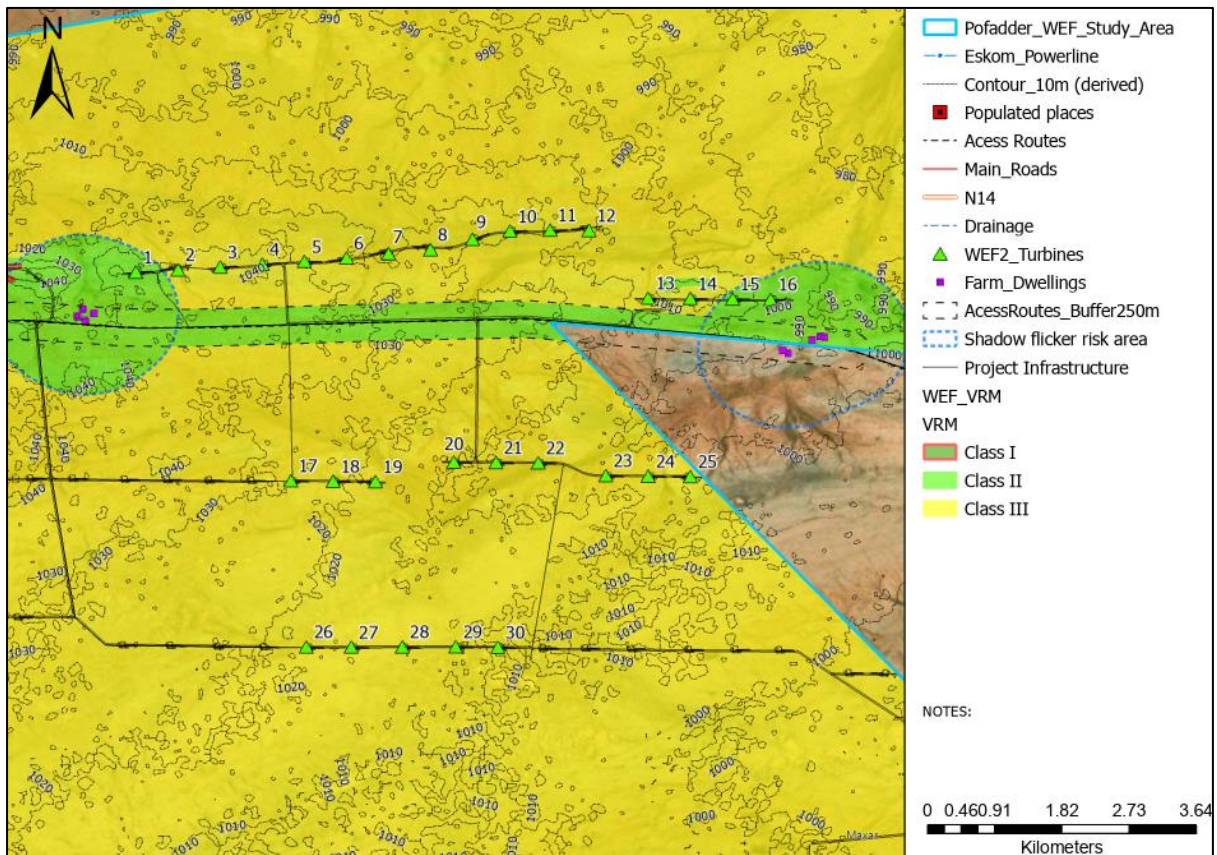


Figure 25: VRM Class overlay onto Pofadder WEF 2 layout

9.4.2 Preliminary findings

The following issues were raised in the Scoping Assessment for further review in the EIA Process.

Table 11: Development Constraints Table

Landscape Element	Mitigation	Motivation
Aircraft Warning Lights.	Strategic and Cupped Aircraft Warning Lights.	Aircraft lights at night have the potential to significantly impact the night-time sense of place. If possible, aircraft warning lights should be limited to outside extent of the wind farm and placed in shielding cups that restrict light spillage to the adjacent rural areas.
Internal power lines	Underground placement.	Internal MV power lines connecting the turbines need to be placed underground were possible to reduce clutter to the rural landscape.
Cultural farmsteads	Shadow Flicker Impacts (SFI)	To ensure that Shadow Flicker Impacts (SFI) do not take place, a SFI needs to be undertaken for any turbines located within 1km from the inhabited settlements.

9.4.3 Scoping Phase Conclusion

To ensure that Visual Resource Management Objectives are met, a full Level 4 VIA is required. This assessment must incorporate photomontages to inform the adjacent landowners of the nature of the landscape change and make an informed decision on the suitability of the landscape change such that surrounding eco-tourism activities that align with the significant biodiversity of the area, can be effectively accommodated. Further information requirements have been listed in the table below.

Table 12: Further information requirements

Landscape Element	Motivation
Botanical Study	Any areas defined as botanically significant would need to be incorporated into the VRM Class I layer (No-go).
Hydrological study	Any areas defined as hydrologically significant would need to be incorporated into the VRM Class I layer (No-go).
Heritage study	Any areas defined as having heritage significant would need to be incorporated into the VRM Class I layer (No-go).
Engineering drawings	<ul style="list-style-type: none">• Drawings depicting how the steeper slope areas will not be impacted.• Engineering drawings depicting cut and fill areas around the small 'poort' areas and turbine stabilisation/ cut & fills on moderate slopes on the north face of the low ridge.
Shadow flicker	Labourer cottages were identified within 1km of the turbine placement location. Care would need to be undertaken to ensure that these residents are not impacted as per international best practice limitation on impacts.

The rural setting and arid environment settlement pattern of this predominantly natural landscape has aesthetic value and care should be taken to ensure that the proposed wind farm adds to the value of this cultural landscape, without resulting in landscape modifications that are visually intrusive. Wind farms have the potential to complement a rural settlement landscapes and all efforts should be set in place to ensure that this does take place. **As no significant visual resources were identified within the proposed wind farm ZVI, and visual receptors are suitably set back with lower Visual Exposure, no fatal flaws were identified in the scoping phase.** To ensure that the natural landscape heritage is not degraded, a full Landscape and Visual Impact Assessment is recommended.

A site assessment to verify the receptors identified will be undertaken to better inform the draft EIR Phase.

10. POLICY AND LEGISLATIVE CONTEXT

The relationship between the project and certain key pieces of environmental legislation is discussed in the subsections to follow.

10.1 The Constitution

The Constitution of the Republic of South Africa, Act 108 of 1996 sets the legal context in which environmental law in South Africa occurs and was formulated. All environmental aspects should be interpreted within the context of the Constitution, National Environmental Management Act 107 of 1998 and the Environment Conservation Act 73 of 1989.

The Constitution has enhanced the status of the environment by virtue of the fact that an environmental right has been established (Section 24) and because other rights created in the Bill of Rights may impact on environmental management through, for example, access to health care, food and water and social security (Section 27). An objective of local government is to provide a safe and healthy environment (Section 152) and public administration must be accountable, transparent and encourage participation (Section 195(1) (e) to (g)).

Section 24 of the Constitution states that:

“Everyone has the right –

- *To an environment that is not harmful to their health or well-being; and*
- *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:*
 - Prevent pollution and ecological degradation;
 - Promote conservation and
 - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

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

10.2 National Environmental Management Act (107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998) was promulgated in 1998 but has since been amended on several occasions from this date. The act intends to provide for:

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

NEMA is the overarching legislation which governs the EIA process and environmental management in South Africa. Sections 24 and 44 of NEMA make provision for the promulgation of regulations that

identify activities which may not commence without an EA. Activities that may significantly affect the environment must be considered, investigated and assessed prior to implementation.

According to Section 2(3) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), “development must be socially, environmentally and economically sustainable”, which means the integration of these three factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

The EIA Regulations, 2014 (as amended) identify lists of activities which have the potential to result in detrimental environmental impacts and thus require EA, subject to either “Basic Assessment” or “Scoping and Environmental Impact Assessment”. The Regulations prescribe the procedural and substantive requirements for the undertaking of EIAs and the issue of EA’s.

The proposed project triggers listed activities under Listing Notice 1, 2 and 3 (as detailed in Section 6 above), and thus requires an EA subject to an Environmental Impact Assessment (EIA) Process.

10.3 Environmental Impact Assessment (EIA) Guideline for Renewable Energy Projects, DFFE Notice 989 of 2015

The purpose of this document is primarily to provide guidance on the environmental management legal framework applicable to renewable energy operations and all the role players in the sector. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders (e.g., Eskom, IDC, etc.);
- Private Sector Entities (as project funder / developer / consultant); and
- Other interested and affected parties (as determined by the project location and/or scope).

This guideline seeks to identify activities requiring authorisation prior to commencement of that activity and provide an interface between national EIA Regulations and other legislative requirements of various authorities.

The guidelines are applicable for the construction, installation and/or development of the following renewable energy projects:

- Concentrating Solar Power (CSP) Plant;
- Wind Energy Facility (WEF);
- Hydropower Station; and
- Photovoltaic (PV) Power Plant.

10.4 National Water Act (Act 36 of 1998)

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

Water resources as defined include a watercourse, surface water, estuary or aquifer. Specifically, a watercourse is defined as (inter alia):

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

Due to the possible encroachment into the wetland areas, the following Section 21 water uses in terms of the NWA may be triggered and require licensing:

- (c) impeding or diverting the flow of water in a watercourse; and
- (i) altering the bed, banks, course or characteristics of a watercourse.

In light of the above, there are a number of stipulations within the NWA that are relevant to the potential impacts on rivers, streams and wetlands that may be associated with the proposed development. An Aquatic / Surface Water Impact Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on identified water resources as protected by the Act. Should the proposed development require a General Authorisation (GA) or Water Use Licence (WUL), it will be determined and applied for separately prior to construction.

10.5 The National Heritage Resources Act 1999 (25 of 1999)

The National Heritage Resources Act promotes good management of the heritage resources of South Africa which are deemed to have cultural significance and to enable and encourage communities to ensure that these resources are maintained for future generations.

The aim of the Act is to introduce an integrated, three-tier system for the identification, assessment and management of national heritage resources (operating at a national, provincial and local level). This legislation makes provision for a grading system for the evaluation of heritage resources on three levels which broadly coincide with their national, provincial and local significance.

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

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

The proposed development would involve; (c) the development of a WEF and associated infrastructure that will change the character of more than 0.5ha, and (d), the rezoning of a site that will exceed 1ha.

Under the legislation the South African Heritage Resources Agency (SAHRA), was established, which replaced the National Monuments Council. SAHRA is responsible for the preservation of heritage resources with exceptional qualities of special national significance (Grade I sites). A Provincial Heritage Resources Authority, established in each province, will protect Grade II heritage resources which are significance within the context of a province or region. Buildings and sites of local interest (Grade III sites) is the responsibility of local authorities as part of their planning functions. In this case, the Heritage Western Cape (HWC) will need to be consulted with extensively throughout the process.

A Notice of Intent to develop (NID) was submitted to HWC by PGS Heritage on the 6th October 2021.

Within the scope of this project, Section 38 of the NHRA (25 of 1999), states that, as described above, an assessment of potential heritage resources in the development area needs to be done. A Heritage Impact Assessment (HIA), Archaeological Impact Assessment (AIA), Paleontological Impact Assessment (PIA) and Cultural Landscape Assessment (CLA) has therefore been commissioned to explore how the proposed development may impact on heritage resources and potential cultural artefacts as protected by the Act.

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

As the principal national act regulating biodiversity protection, the National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004), which is administered by the DFFE, is concerned with the management and conservation of biological diversity, as well as the use of indigenous biological resources in a sustainable manner.

The overarching aim of the NEM:BA, within the framework of the NEMA, is to provide for:

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

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

- Conserve endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations);
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity; and
- Limit further loss of biodiversity and conserve endangered ecosystems.

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

The NEM:BA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a prohibition on carrying out a 'restricted activity' involving a specimen of a listed threatened or protected species

without a permit issued in terms of Chapter 7 of the Act. According to Section 57 of the Act, 'Restricted activities involving listed threatened or protected species':

A Terrestrial Biodiversity Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on biodiversity as protected by the Act.

In addition, all relevant conservation departments (such as the SANBI and DENC) will be invited to provide comments with regards to the proposed development.

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

The overarching aim of the National Environmental Management: Protected Areas Act (NEMPAA) Act No. 57 of 2003, within the framework of NEMA, is to provide for:

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

The proposed project is not located in close proximity to any protected areas.

10.8 National Forests Act (NFA) (Act No. 84 of 1998)

The National Forest Act (NFA) (Act No. 24 of 1998) was enacted to:

- Provide for the protection, management and utilisation of forests;
- The protection of certain plant and animal life;
- The regulation of trade in forest produce; and
- The control and management of a national hiking way system and National Botanic Gardens.

The NFA enforces the necessity for a license to be obtained prior to destroying any indigenous tree in a natural forest and, subject to certain exemptions, cutting, disturbing, damaging, destroying or removing any protected tree. The list of protected trees is currently contained in GN 908 of 21 November 2014. Licenses are issued by the Minister and are subject to periods and conditions as may be stipulated.

Protected trees

According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister'.

Forests

Prohibits the destruction of indigenous trees in any natural forest without a licence.

The NFA is relevant to the proposed development as the removal and/or disturbance and/or clearance of indigenous vegetation will be required and a license in terms of the NFA may be required for this to be done.

A Terrestrial Biodiversity Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on vegetation as protected by the Act.

In addition, all relevant conservation departments (such as the SANBI and DENC) will be invited to provide comments with regards to the proposed development.

10.9 National Veld and Forest Fire Act (Act No. 101 of 1998)

Provides requirements for veldfire prevention through firebreaks and required measures for firefighting. Chapter 4 of the Act places a duty on landowners to prepare and maintain firebreaks. Chapter 5 of the Act places a duty on all landowners to acquire equipment and have available personnel to fight fires.

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

The Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) controls the utilisation of natural agricultural resources in South Africa. The Act promotes the conservation of soil, water sources and vegetation as well as the combating weeds and invader plants. The Act requires the protection of land against soil erosion and the prevention of water logging and salinization of soils by means of suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges and watercourses are also addressed.

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

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

In terms of this Act, no degradation of natural land is permitted. Rehabilitation after disturbance to agricultural land is also managed by this Act. The CARA is relevant to the proposed development as the construction of a WEF as well as other components (such as the on-site switching substation and permanent guard house) may impact on agricultural resources and vegetation on the site. The Act prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this. As such, measures will need to be taken to protect agricultural resources and prevent weeds and exotic plants from invading the site as a result of the proposed development.

Declared Weeds and Invaders in South Africa are categorised according to one (1) of the following categories:

- Category 1 plants: are prohibited and must be controlled.
- Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread.

- Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.

An Agricultural and Soils Site Verification (**Appendix 6**) has been conducted to explore how the proposed development may impact on the agricultural production potential of the proposed site.

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

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

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

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

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

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

The Air Traffic and Navigation Services Company Limited (ATNS) and the SACAA will be consulted throughout the EIA process and the required approvals will be obtained, where necessary. It is not however anticipated that any approvals will be required.

10.13 Astronomy Geographic Advantage Act (Act No. 21 of 2007)

The Astronomy Geographic Advantage Act (Act No. 21 of 2007) provides for:

- The preservation and protection of areas that are uniquely suited for optical and radio astronomy; and
- Intergovernmental cooperation and public consultation on matters concerning nationally significant astronomy advantage areas and matters connected therewith.

Under Section 22(1) of the Act, the Minister has the authority to protect the radio frequency spectrum for astronomy observations within a core or central astronomy advantage area. As such, the Minister may under section 23(1) of the Act, declare that no person may undertake certain activities within a core or central Astronomy Advantage Area (AAA). These activities include the construction, expansion or operation; of any fixed radio frequency interference source, facilities for the generation, transmission

or distribution of electricity, or any activity capable of causing radio frequency interference or which may detrimentally influence the astronomy and scientific endeavours.

In terms of section 7(1) and 7(2) of this Act, national government established the following AAAs:

- Karoo Central AAA (GN 198 of 2014) – proposed development falls inside of this AAA
- Sutherland Central AAA – proposed development falls outside this AAA
- Northern Cape AAA (GN 115 of 2010) – proposed development falls outside of this AAA

The proposed site falls within the Square Kilometre Array (SKA) Karoo Central Radio Astronomy Advantage Area (KCAAA) 1 buffer (refer **Figure 26** below). The main impacts of renewable energy developments on the SKA is RFI. RFI is a part of the Electromagnetic Compatibility (EMC) discipline that includes Electromagnetic emissions and Electromagnetic immunity. The location of the proposed project could pose an EMI or RFI risk to the SKA, as the proposed project is located within the KCAA 1 buffer. As such, an Electromagnetic Interference (EMI) Path Loss and Risk Assessment Report (SKA Requirement) is currently being undertaken.

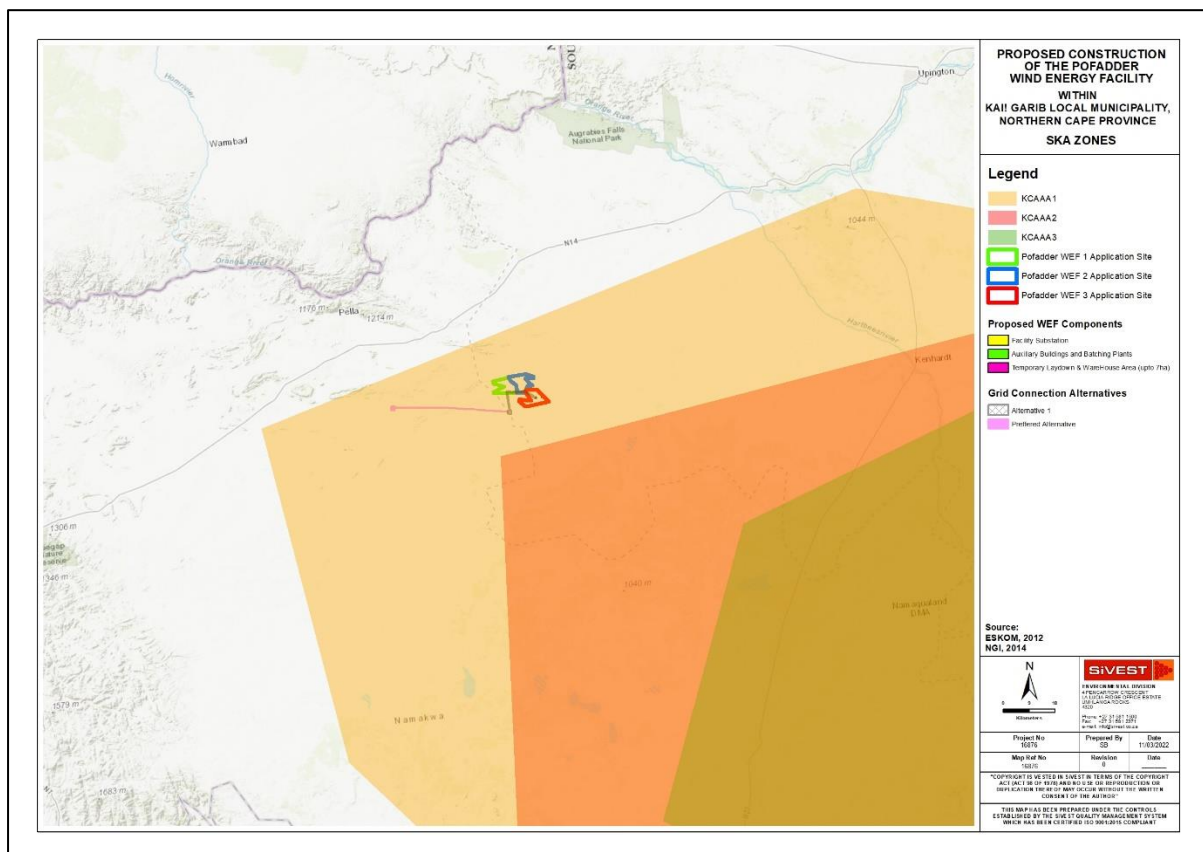


Figure 26: Location of the project in relation to the KCAAA

10.14 National Energy Act (Act No. 34 of 2008)

South Africa has two (2) acts that direct the planning and development of the country's electricity sector, namely:

- The National Energy Act of 2008 (Act No. 34 of 2008); and

- ii. The Electricity Regulation Act (ERA) of 2006 (Act No. 4 of 2006).

The National Energy Act (Act No. 34 of 2008), promulgated in 2008, has, as one (1) of its key objectives, the promotion of diversity of supply of energy and its sources. From this standpoint, the Act directly references the importance of the renewable energy (RE) sector, with a mention of the solar energy sector included. The aim is to ensure that the South African economy is able to grow and develop, fast-tracking poverty alleviation, through the availability of a sustainable, diverse energy mix. Moreover, the goal is to provide for the increased generation and consumption of RE (Republic of South Africa, 2008).

10.15 Electricity Regulation Act (Act No. 4 of 2006)

In 2011, the electricity regulation on new generation capacity was published under Section 35(4) of the Electricity Regulation Act (ERA) (Act No. 4 of 2006). These regulations apply to the procurement of new generation capacity by organs of state.

The objectives of the regulations include:

- To facilitate planning for the establishment of new generation capacity;
- The regulation of entry by a buyer and a generator into a Power Purchase Agreement (PPA);
- To set minimum standards or requirements for PPAs;
- The facilitation of the full recovery by the buyer of all costs efficiently incurred by it under, or in connection with, a PPA including a reasonable return based on the risks assumed by the buyer thereunder and to ensure transparency and cost reflectivity in the determination of electricity tariffs; and
- The provision of a framework for implementation of an Independent Power Producer (IPP) procurement programme and the relevant agreements concluded.

The Act establishes a National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated.

10.16 Protection of Public Information Act (Act No. 4 of 2013)

The Protection of Public Information Act (Act No. 4 of 2013) (POPIA) recognises the Constitutional requirement that everyone has a right to privacy.

Ultimately the Act promotes “the protection of personal information processed by public and private bodies; to introduce certain conditions so as to establish minimum requirements for the processing of personal information; to provide for the establishment of an Information Regulator to exercise certain powers and to perform certain duties and functions in terms of this Act and the Promotion of Access to Information Act, 2000 (PAIA); to provide for the issuing of codes of conduct; to provide for the rights of persons regarding unsolicited electronic communications and automated decision making; to regulate the flow of personal information across the borders of the Republic; and to provide for matters connected therewith”.

Due to the requirements around the Public Participation Process, SIVEST will process and capture information aligned to the POPIA and always obtain consent for I&APs information to be gathered, stored and distributed for the purpose of this project.

10.17 Renewable Energy Development Zones (REDZs) and Strategic Transmission Corridors

The Strategic Environmental Assessment (SEA) for Wind and Solar PV Energy in South Africa (CSIR, 2015) originally identified eight (8) formally gazetted Renewable Energy Development Zones (REDZs) that are of strategic importance for large-scale wind and solar PV development in terms of Strategic Integrated Project 8: Green Energy in Support of the South African Economy, as well as associated strategic transmission corridors, including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 10: Electricity Transmission and Distribution.

- REDZs for large-scale wind and solar photovoltaic development;
- associated Strategic Transmission Corridors which support areas where long-term electricity grid will be developed;
- process of basic assessment to be followed and reduced decision-making timeframe for processing of applications for environmental authorisation in terms of the NEMA; and
- acceptance of routes which have been pre-negotiated with all landowners as part of applications for environmental authorisations for power lines and substations.

In addition to the eight (8) formally gazetted REDZs mentioned above, the Phase 2 SEA for Wind and Solar Photovoltaic Energy in South Africa (2019) identified three (3) additional REDZs (namely REDZ 9, REDZ 10 and REDZ 11) that are of strategic importance for large scale wind and solar photovoltaic energy development. These REDZs were published under Government Notice No. 786, Government Gazette No. 43528 of 17 July of 2020, and were officially gazetted under Government Notice No. 144, Government Gazette No. 44191 of 26 February 2021.

Table 13: The SEA for Wind and Solar PV Energy in South Africa (Phase 1 and Phase 2) (CSIR, 2015; CSIR, 2019) identified the following eleven (11) geographic areas for REDZs

REDZ Number	Name	Applicability of REDZ
REDZ 1	Overberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 2	Komsberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 3	Cookhouse	Large-scale wind and solar photovoltaic energy facilities
REDZ 4	Stormberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 5	Kimberley	Large-scale solar photovoltaic energy facilities
REDZ 6	Vryburg	Large-scale solar photovoltaic energy facilities
REDZ 7	Upington	Large-scale solar photovoltaic energy facilities
REDZ 8	Springbok	Large-scale wind and solar photovoltaic energy facilities
REDZ 9	Emalaheni	Large scale solar photovoltaic energy facilities
REDZ 10	Klerksdorp	Large scale solar photovoltaic energy facilities
REDZ 11	Beaufort West	Large scale wind and solar photovoltaic energy facilities

It should be noted that the powerline and proposed 400kV MTS are located within the Northern Corridor of the Strategic Transmission Corridors, as defined and in terms of the procedures laid out in Government Gazette No. 41445 and No. 44191.

The proposed development will be subject to an EIA process in terms of the NEMA, as amended, and the EIA Regulations, 2014 (as amended). Since the proposed project falls within one (1) of the Strategic Transmission Corridors, it is expected to contribute towards the requirement of renewable energy highlighted by the development of these zones.

10.18 Additional Relevant Legislation

- White Paper on the Energy Policy of the Republic of South Africa (1998)
- Occupational Health and Safety Act (Act No. 85 of 1993) [OHSA];
- Environment Conservation Act (Act 73 of 1989) [ECA]
- Road Safety Act (Act No. 93 of 1996) [RSA];
- National Environmental Management: Air Quality Act (Act No. 39 of 2004) [NEM:AQA];
- National Environmental Management: Waste Act (Act No. 59 of 2008, as amended) [NEM;WA];
- Development Facilitation Act (Act No. 67 of 1995) [DFA];
- Promotion of Access to Information Act, (Act No. 2 of 2000); [PAIA]
- The Hazardous Substances Act (Act No. 15 of 1973) [HSA];
- Water Services Act (Act No. 108 of 1998) [WSA];
- Municipal Systems Act (Act No. 32 of 2000) [MSA];
- Subdivision of Agricultural Land Act, 70 of 1970, and
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended) [MPRDA].

11. KEY DEVELOPMENT STRATEGIES AND GUIDELINES

In his 2021 State of the Nation Address, President Cyril Rhamaposa announced government are taking the following measures to rapidly and significantly increase generation capacity outside of Eskom:

- *One of the priority investment areas is to rapidly expand energy generation capacity.*
- *Restoring Eskom to operational and financial health and accelerating its restructuring process is central to achieving this objective. Eskom has been restructured into three separate entities for generation, transmission and distribution.*
- *A Section 34 Ministerial Determination will be issued shortly to give effect to the Integrated Resource Plan 2019, enabling the development of additional grid capacity from renewable energy, natural gas, hydro power, battery storage and coal.*
- *We will initiate the procurement of emergency power from projects that can deliver electricity into the grid within 3 to 12 months from approval.*
- *The Department of Mineral Resources and Energy gazetted the Amended Schedule 2 of the Electricity Regulation Act 4 of 2006 on 12 August 2021, for 100 Megawatts of embedded electricity generation as approved by Minister Gwede Mantashe.*
- *We will negotiate supplementary power purchase agreements to acquire additional capacity from existing wind and solar plants.*
- *We will also put in place measures to enable municipalities in good financial standing to procure their own power from independent power producers.*

Policy decisions taken in the next decade will largely determine the dimension of the impact of climate change. Local government is in the front line of implementation and service delivery, and thus needs to pursue adequate mitigation and adaptation strategies which should include participation from the public sector, the private sector and NGOs.

The DoE gazetted its White Paper on Renewable Energy in 2003 and introduced it as a 'policy that envisages a range of measures to bring about integration of renewable energies into the mainstream energy economy.' At that time, the national target was fixed at 10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013. The White Paper proposed that this would be produced mainly from biomass, wind, solar and small-scale hydropower. It went on to recommend that

this renewable energy should be utilised for power generation and non-electric technologies such as solar water heating and biofuels. Since the White Paper was gazetted, South Africa's primary and secondary energy requirements have remained heavily fossil-fuel dependent, both in terms of indigenous coal production and use, as well as the use of imported oil resources. Alongside this, the projected electricity demand of the country has led the National utility Eskom, to embark upon an intensive build programme to secure South Africa's longer-term energy needs, together with an adequate reserve margin.

The National Development Plan (NDP), 2011 – 2030, aims to address parts of the South African triple development challenges of poverty and inequality by 2030. In order to achieve this, numerous enabling milestones and critical actions have been formulated. One (1) of the critical actions is the formulation and implementation of interventions that aim to ensure environmental sustainability and resilience to future shocks.

The emphasis is on South African investment and assistance in the exploitation of various opportunities for low-carbon energy in the clean energy sources of Southern Africa (National Planning Commission, 2011).

A more efficient and competitive infrastructure is envisaged, particularly infrastructure that facilitates economic activity and is conducive to growth and job creation. The plan identifies key services that need strengthening; namely commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability. The National Planning Commission maintains that South Africa has missed a generation of capital investment in many infrastructure opportunities including electricity. Therefore, one (1) infrastructure investment priority is in the procurement of at least 20,000 MW of renewable energy-efficiency (National Planning Commission, 2011).

The proposed project is thus well aligned with the aims of the NDP which is further detailed in the following national and provincial plans:

- National Integrated Resource Plan for Electricity (2010-2030);
- Integrated Resource Plan (IRP 2019)
- National Infrastructure Plan 2012, as amended;
- Northern Cape Provincial Spatial Development Framework;
- Northern Cape Province Strategic Plan 2020-2025 (refer section 8)
- Z F Mgcawu District Municipality Integrated Development Plan, 2017 – 2022

The proposed project is also well aligned with the Kai !Garib Municipality IDP 2020/2021 (discussed further below) which has identified renewable energy as a way of diversifying the economy within the municipality.

11.1 Northern Cape Province Strategic Plan 2020 - 2025

The Northern Cape Province Strategic Plan 2020-2025, highlights the need for energy security and the finalization of the draft Northern Cape Renewable Energy Strategy was identified as a key focus area. The Northern Cape province not only supports this sector but are identifying ways to tap into and draw benefit from the endless opportunities that the renewable energy sector holds for the economic development of the Province.

11.2 Z F Mgcawu Integrated Development Plan, 2020 – 2021

The Z F Mgcawu District Municipality has identified a number of development priority areas, one of them being Energy and Electricity and the need to ensure that there is adequate energy to supply households.

The vision set out in the ZFMDM is “Quality support to deliver quality services”. The mission is a “Centre of excellence in providing quality basic services through support to local municipalities”.

In terms of the National Spatial Development Perspective, the ZF Mgcawu District area has been classified as a ‘medium’ importance area which means that no significant investment is concentrated in the region, in terms of the National Spatial Development Perspective, the ZF Mgcawu District area has been classified as a ‘medium’ importance area which means that no significant investment is concentrated in the region.

The IDP lists a number of strategic objectives and development objectives. The relevant objectives include:

Strategic objective:

To Facilitate the Development of Sustainable regional land use, economic, spatial and environmental planning frameworks that will support and guide the development of a diversified, resilient and sustainable district economy, the associated development objective is to:

- Establish a vehicle to ensure all businesses are co-operating (i.e. District LED Forum)
- Create investment opportunities in sectorial development (i.e. investment activities; Entrepreneurial business support programme)
- Enable an environment for business establishment and support initiatives (i.e. increase the number of businesses; entrepreneurial support)

Development objective

To market, develop and co-ordinate tourism in the ZFMDM. The associated development objective is to:

- Promote the Green Kalahari tourism brand in the ZF Mgcawu district

The IDP identifies several key challenges. The following are relevant to the proposed development

- High rate of unemployment
- Inadequate human capital
- Youth development
- Access to health care facilities

The IDP also notes that the ZF Mgcawu District Municipality acknowledged that climate change poses a threat to the environment, its residents, and future development. Actions are required to reduce carbon emissions (mitigation), and prepare for the changes that are projected to take place (adaptation in the District, ZF Mgcawu District Municipality has therefore prioritised the development of a Climate Change Vulnerability Assessment and Climate Change Response Report

11.2.1 Kai !Garib Local Municipality Integrated Development Plan (2020/21 Draft Review)

The municipality has identified renewable energy as a way of diversifying the economy within the municipality. New opportunities have opened up for Kai !Garib municipal area since the need to facilitate the generation of sustainable energy was introduced in South Africa by Eskom and the South African government.

South Africa has embarked in a process of diversifying its energy-mix to enhance energy security while also lowering green-house gas emissions. The country is blessed with a climate that allows Renewable Energy (RE) technologies like solar photovoltaic (PV) and Wind generation to be installed almost anywhere in the country. According to the IDP, the Northern Cape has attracted 66% of the total IPPPP investments to date and has secured a substantial share of the equity for local communities with benefits materializing over the project life construction.

There is potential for further IPPs to become operational in the municipality with several being in the planning stages. Kai !Garib Municipality is also a participant in the ZF Mgcawu Development Forum, an initiative coordinated by the Industrial Development Corporation which aims to ensure that integrated development planning and implementation of regional projects take place. This includes the renewable energy. Kai !Garib Municipality recognizes the importance of participating in this forum to provide a platform for partnerships for regional socio-economic growth.

The proposed project is also well aligned with the Kai !Garib Municipality IDP 2020/2021 which has identified renewable energy as a way of diversifying the economy within the municipality. Furthermore the implementation of Pofadder WEF 2 would contribute towards addressing the Kai !Garib local municipality key issue regarding high levels of poverty and unemployment, skills shortage, and inequalities through the creation of employment opportunities, the provision of skills training opportunities, and local economic growth, including growth in personal income levels of those community members who would be employed on the project.

12. NEED AND DESIRABILITY

12.1 National Renewable Energy Requirement

In 2010, South Africa had 44,157 MW of power generation capacity installed. Current forecasts indicate that by 2025, the expected growth in demand will require the current installed power generation capacity to be almost doubled to approximately 74,000 MW (SAWEA, 2010).

This growing demand, fuelled by increasing economic growth and social development within Southern Africa, is placing increasing pressure on South Africa's existing power generation capacity. Coupled with this, is the growing awareness of environmental impact, climate change and the need for sustainable development. Despite the worldwide concern regarding Greenhouse Gas (GHG) emissions and climate change, South Africa continues to rely heavily on coal as its primary source of energy, while most of the countries renewable energy resources remain largely untapped (DME, 2003). There is therefore an increasing need to establish a new source of generating power in SA within the next decade.

The use of renewable energy technologies, as one (1)10 of a mix of technologies needed to meet future energy consumption requirements is being investigated as part of Eskom's long-term strategic planning and research process. It must be remembered that wind energy is plentiful, renewable, widely

distributed, clean and reduces GHG emissions when it displaces fossil-fuel derived from electricity. In this light, renewable wind energy can be seen as desirable.

The REIPPP programme and the competitive nature of the bidding process has resulted in significant lowering of solar and wind tariff prices since 2011. Further projects will increase the competitive nature of the REIPPP program and further result in cost savings to South African consumers.

12.2 National Renewable Energy Commitment

In support of the need to find solutions for the current electricity shortages, the increasing demand for energy, as well as the need to find more sustainable and environmentally friendly energy resources, South Africa has embarked on an infrastructure growth programme supported by various government initiatives. These include the National Development Plan (NDP), the Presidential Infrastructure Coordinating Commission (PICC), the DoE's IRP, the National Strategy for Sustainable Development, the National Climate Change Response White Paper, the Presidency of the Republic of South Africa's Medium-Term Framework, and the National Treasury's Carbon Tax Policy Paper.

The Government's commitment to growing the renewable energy industry in South Africa is also supported by the White Paper on Renewable Energy (2003) which sets out the Government's principals, goals and objectives for promoting and implementing renewable energy in South Africa. In order to achieve the long term goal of achieving a sustainable renewable energy industry, the DoE has set a target of contributing 17,8GW of renewable energy to the final energy consumption by 2030. This target is to be produced mainly through, wind and solar; but also through biomass and small scale hydro (DME, 2003; IRP, 2010). Further renewable energy targets have been proposed within the latest IRP, which was gazetted in 2019.

The 2019 Integrated Resource Plan (2019) (IRP2019) was released on 18 October 2019 and includes the following capacity allocation:

- 1 500 MW of new coal power (noting that there will be decommissioning of coal capacity over the period);
- 2 500 MW of hydro power;
- 6 000 MW solar;
- 14 400 MW wind;
- 2 000 MW of storage;
- 3 000 MW from gas.

12.3 Wind Power Potential in South Africa and Internationally

Onshore wind energy technology is the most commonly used and commercially developed renewable energy technology in South Africa as wind is abundant and inexhaustible (DEA Guideline for Renewable Energy, 2015). Wind energy is one (1) of the lowest-priced renewable energy sources and is economically competitive (www.wasaproject.info).

12.4 Site Suitability

The location of the proposed Pofadder WEF 2 (this application) and proposed on-site Switching / Collector Substation included several key aspects including wind resource, grid connection

suitability/infrastructure as well as environmental and social constraints, proximity to various planning units and strategic areas and topography and access.

12.4.1 Wind Resource

The Applicant followed an in-house wind farm site identification protocol involving the application of a number of data sets and variables. Having applied the different data sets such as wind presence and speed, as well as other meteorological information and geographical factors, a consensus emerged confirming the suitability of the project site for the Pofadder WEF 2. A wind measurement mast was installed on the Pofadder WEF 2 site in June 2021 which confirms that the wind resource at the site is deemed to be suitable for the development of a wind farm (wind resource map included below).

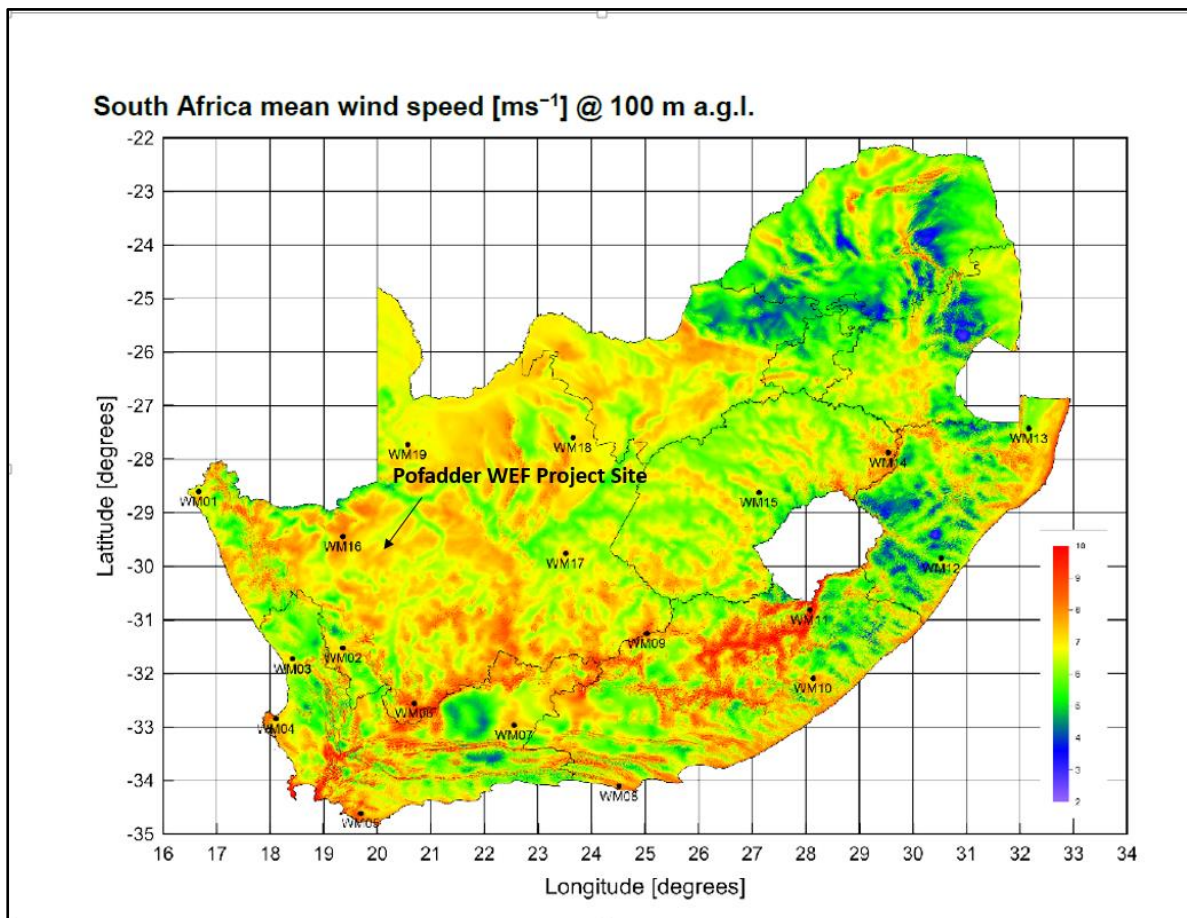


Figure 27: WASA High Resolution Wind Resource Map: mean wind speed [ms⁻¹] @ 100 m a.g.l. (2020).

12.4.2 Site Access

The main access route to the proposed Pofadder WEF 2 is the N14 national road up until the Pofadder town which is located approximately 35km North West of the project site. The project site is accessible via the R358 gravel access road that traverses the northern section of the project site. In addition to the existing internal service 'farm' roads on site, which will be extended to a maximum width of 12 m, where necessary, additional internal service roads are planned to be constructed on the project site of which the width will not exceed 12 m. The length of the internal service road network for the proposed Pofadder WEF2 will be approximately 50 km.

These roads are for farming access and are gravel, usually unsuited for tourist related traffic.

The traffic impact study will further inform the scope of works which will need to be undertaken on the proposed access roads to ensure they can withstand the heavy loads associated with the delivery of infrastructure and turbine components for a WEF development.

12.4.3 Topography and Land Use

According to the South African National Biodiversity Institute (SANBI) 2012 Vegetation Map of South Africa, Lesotho and Swaziland (South African National Biodiversity Institute, 2012) the vegetation biome is described as Nama-Karoo. The Nama-Karoo Biome “occurs on the central plateau of the western half of South Africa, at altitudes between 500m and 2000m, with most of the biome falling between 1000m and 1400m. The general topography of the proposed study area is flat with a gentle slope of 10%. The topography is characterised by mostly gravel plains in the southern half of the site while the northern half of the project site constitutes mostly sandy plains. The flat plains that make up the project area make it a good site to establish a WEF from a technical perspective.

The farm is located in a sheep farming agricultural region, and this is the only land use on the site and surrounds. Grazing capacity of the site is low at 36 hectares per large stock unit. Due to the extreme aridity constraints as well as the poor soils, agricultural land use is restricted to low intensity grazing only. The proposed development poses zero threat to arable land and almost zero threat to grazing land. There are two reasons for this. The first is that the small and widely distributed nature of the footprint of a wind energy facility means that the loss of potential agricultural land is insignificantly small. The second is that only land of very limited agricultural potential, that is not suitable for crop production, occurs on the site.

12.4.4 Policy

From a strategic renewable energy development perspective, the Pofadder WEF 2 site is located approximately 65 km east of the Springbok Wind Renewable Energy Development Zone (REDZ) 8. The associated grid route is also located within the Electrical Grid Infrastructure (EGI) Northern corridor. The proposed project site is therefore linked to the national planning vision for wind and solar development in South Africa.

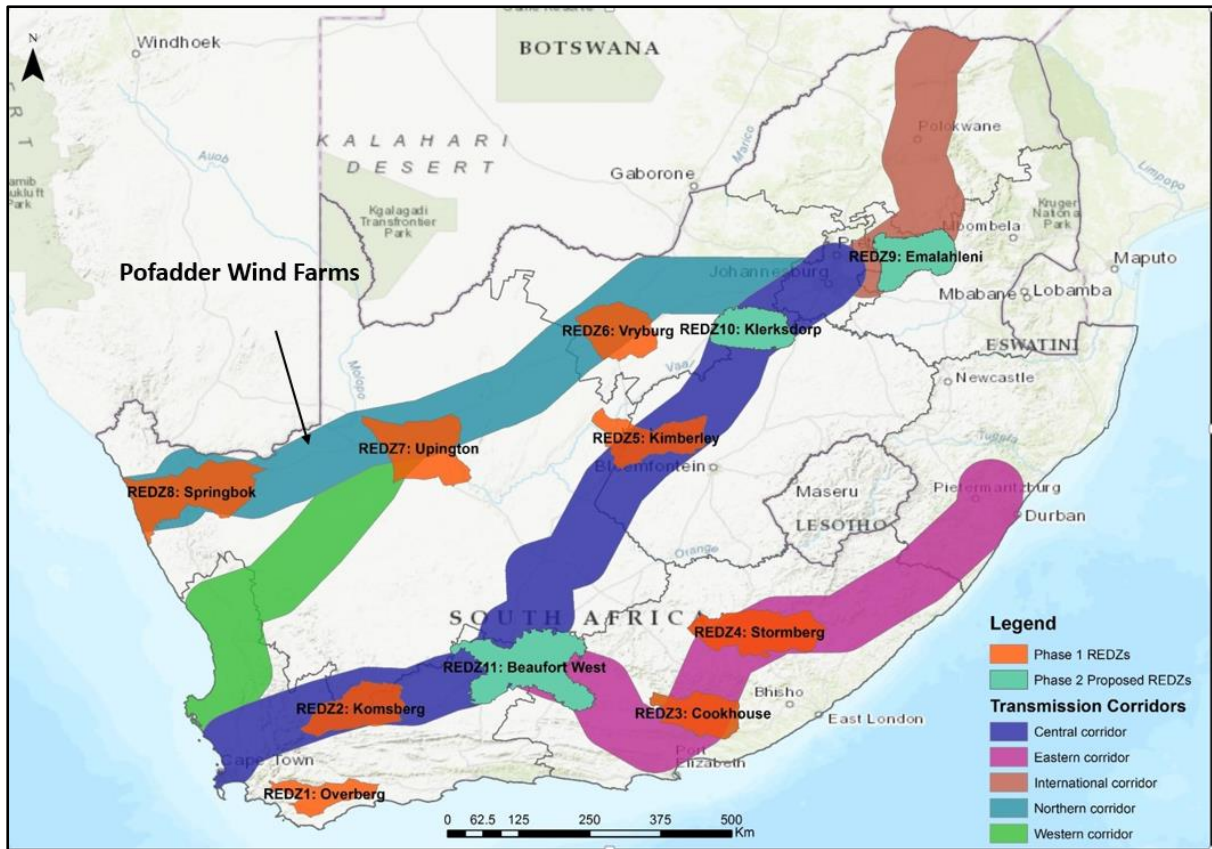


Figure 28: Location of 8 existing Renewable Energy Development Zones (REDZs) and 3 proposed additional zones, overlaid onto the electricity grid infrastructure corridors where investment in transmission infrastructure is planned (CSIR, n.d.).

12.4.5 Environmental

The applicant conducted an extensive environmental screening process using various available desktop data and tools to determine the suitability of the site. An avifaunal specialist was appointed to conduct a site sensitivity screening visit and report to identify key priority species nesting within the project or neighbouring properties which may require buffering out of large portions of the proposed project site. A Verreaux's eagle nest which required a 5.2 km no go buffer was identified in the northern section of the initial project area, during the screening study. This no-go buffer resulted in the proposed WEF development being shifted to the current location south of the Verreaux's eagle nest.

Subsequent consultation with the affected landowners was also undertaken in order to identify possible areas within the proposed project site boundary that should be excluded from development. Furthermore, key environmental specialists and stakeholders familiar with the Pofadder area were consulted to identify any potential impacts which may be associated with a proposed WEF at the selected site. The National Department of Environmental Affairs (DEA) screening tool was also utilized to generate a site sensitivity report for the proposed Pofadder WEF Cluster. The outcome of the site selection process was the identification of a ±24,000 ha potentially developable area on which three wind farm projects are being proposed, one of which is the Pofadder WEF 2.

There are a number of proposed WEF's located approximately 40 km west of Pofadder WEF 2 which have received environmental authorisation. The proponent consulted the various EIA reports and the associated specialist studies for the authorised WEF's to determine the environmental, economic and social risks associated for WEF's within the wider area.

12.4.6 Land Availability

Availability of land is a key feasibility criterion in the site selection process. Large portions of farmland within the Northern Cape Province and Pofadder region has been secured by renewable energy Independent Power Producers for the purpose of developing, constructing and operating wind and solar PV projects.

The identified project site for the Pofadder WEF 2 is of a suitable land size for the proposed development. Pofadder Wind Energy Facility 2 (Pty) Ltd has entered into an option to lease agreements with the respective landowners of the properties within the project site. All affected landowners have given their consent and have signed letters of consent for the undertaking of the Scoping and EIA Process and the subsequent development of the proposed Pofadder WEF 2 should EA be granted.

12.4.7 Access to Grid

The Applicant has consulted with Eskom network planners to understand their future load centres as well as strategic plans to upgrade and strengthen any local networks. Eskom has confirmed that they are proceeding with the development of the newly established Korana 400/132 kV MTS which is located approximately 40 km west of the project. These plans have been corroborated in the most recent Eskom Transmission Development Plan (TDP) 2022 – 2031, presented by Eskom on 26 October 2021.

Notwithstanding the fact that the wind farm will contribute to meeting the electrical demand on the distribution network, close proximity to the planned 400 kV infrastructure means that in due course, surplus power can be evacuated into Eskom's Transmission System and conveyed at very high voltage for consumption elsewhere in the country. The placement of the Pofadder WEF 2 power line in parallel to the planned 400 kV Transmission powerline reduces disturbance on the ground and limits the visual intrusion.

The site is considered suitable for the reasons provided above. The investigation of an alternative site is not currently proposed within this Scoping Report. There is therefore no Site alternative for the Pofadder WEF.

12.5 Reduce dependency on fossil fuels

At present, more than 90% of South Africa's energy is generated by coal-fired power stations. Apart from the fact that these are finite resources that will eventually run out, fossil fuels are also harmful to the environment when used to produce electricity. During combustion, fossil fuels such as coal emit many by-products into the atmosphere, two (2) of which are carbon dioxide (CO₂) and sulphur dioxide (SO₂). Both these gases have been shown to contribute to the worsening climate crisis. Wind is a free and infinite resource that occurs naturally in the environment. Converting wind energy into electricity releases no harmful by-products into the environment and will reduce the dependency on fossil fuels.

12.6 Stimulate the economy

A significant portion of the capital expenditure envisaged for the project will be spent on procurement of goods and services within South Africa and specifically within the Northern Cape Province. If goods and services are procured locally (i.e. within South Africa), it increases the production of the respective industries. This has a positive impact on the national economy and economies of the municipalities where inputs are procured.

The proposed development has the potential to stimulate the demand for other industries, among others construction services, engineering service, transport services, steel structures, cement and other aggregates, and electrical equipment. At the local level, increase in demand for accommodation, personal services, perishable and non-perishable goods is expected, which will stimulate the local economies of the towns and settlements, where labour will be procured from or where migrant workers will be temporarily located.

Some of the local businesses could benefit from sub-contracting opportunities, if the construction companies appointed by the developer implement a local community procurement policy, and consumer expenditure of the construction crew. Furthermore, the demand for hospitality services (including accommodation and catering in the towns Beaufort West and other nearby towns) is expected to increase and provide for much-needed stimulus for the local economy.

According to the Social Impact Assessment, the development of this project will create both direct and indirect jobs which will have a positive economic benefit within the region. Job opportunities will be available and many of the low and semi-skilled employment opportunities will be available to residents in the area. Many of the beneficiaries are likely to be historically disadvantaged members of the community and the project will provide opportunities to develop skills for the local people. Even more the project will stimulate the local economy, which is likely to be most significant at a cumulative level. The socio-economic stimulation will contribute in the form of disposable salaries and the purchases of services and supplies from the local communities in and around the towns of Pofadder. The developer would need to ensure that there is a corporate social responsibility plan in place, the intention is ensure that it falls in line with the Renewable Energy Independent Power Producer Procurement (REIPPP) BID guidelines or to put an equivalent plan in place.

The construction phase for the Pofadder WEF 2 will extend over a period of 18 to 24 months. The total estimated wage bill for the construction phase is ± R 54 million, where total capital expenditure estimate for construction phase is ± R 2.4 billion. The construction phase will employ 300 - 400 employees. The number of employment opportunities in terms of low skilled, semi-skilled and skilled is Low skilled: ± 165 - 220 (± 55%); Semi-skilled: ± 90 - 120 (± 30%) and Skilled: ± 45 - 60 (± 15%).

The typical lifespan of WEFs is 20 to 25 years, during the operational phase there will be a significant decrease in employment opportunities, hence the potential socio-economic benefits will be limited. The total number of people employed in the operational phase is ± 40 – 50. Typical employees that might be required include Technicians, electricians, engineers, IT specialists, environmental specialists, health and safety managers, and administrators (skilled); drivers and equipment operators (semi-skilled); construction workers and security staff (low-skilled). It should be noted that the majority of the semi- and low-skilled employment opportunities are likely to be available to the local communities of Pofadder and Kakamas, which will present a positive social benefit to these communities due to the low availability of employment opportunities in these areas.

12.7 Job opportunities and household livelihoods

Wind energy projects create both temporary and permanent job opportunities in South Africa for both skilled and unskilled workers. The project will lead to the creation of both direct and indirect jobs which will have a positive economic benefit within the region. In this regard, and as indicated above, there are 300 - 400 jobs associated with the construction phase of the project and 40 - 50 with the operational phase. Of the construction phase jobs approximately 165 - 220 (55%) of the employment opportunities will be available to low-skilled workers (construction labourers, security staff etc.), 90 - 120 (30%) to semi-skilled workers (drivers, equipment operators etc.), and 45 - 60 (15%) for skilled personnel

(engineers, land surveyors, project managers etc.). Many of the low and semi-skilled employment opportunities will be available to residents in the area, specifically residents from Pofadder and Kakamas. Many of the beneficiaries are likely to be historically disadvantaged members of the community and the project will provide opportunities to develop skills amongst these people. The operational phase will employ approximately 40 - 50 people full time for a period of 20 - 25 years. Of this, approximately 20 - 25 are low skilled, 10 - 12 are semi-skilled and 5 - 6 are skilled.

In addition to those benefitting from direct employment created at the project, various multiplier effects will assist in temporarily supporting existing jobs in the businesses offering services and goods that will be procured during construction activities. The increased temporary income earned by these businesses will, in turn, stimulate consumer spending, creating another round of multiplier effect, positively impacting on the employment situation in the area. There will be opportunities for skills development and training.

Household earnings are linked closely with trends in employment and, as such, will be affected positively by the creation of jobs as discussed above. The creation of temporary jobs during the construction period will temporarily increase affected households' income. A temporary increase in living standards based on additional monthly income will thus ensue. Employees working for local businesses that will be sub-contracted to supply goods and services to the WEF during construction are also expected to benefit indirectly.

According to the Socio-Economic Report, the implementation of Pofadder WEF 2 would contribute towards addressing the Kai !Garib local municipality key issue regarding high levels of poverty and unemployment, skills shortage (described below), and inequalities through the creation of employment opportunities, the provision of skills training opportunities, and local economic growth, including growth in personal income levels of those community members who would be employed on the project.

12.8 Skills development

In addition to the job creation, there is valuable opportunities for skills enhancement/development/training and knowledge transfer as quite often input from experts are required in this field. Therefore, opportunities for guiding and training of local workers is created. A variation of skill sets is required ranging from semi-skilled construction workers to highly skilled engineers. The skill set of the majority of the municipality's residents comprises of low-skills, which means that with proper planning and recruitment strategies, many of the local unemployed residents could be hired as temporary construction workers on site provided they satisfy any other recruitment criteria.

Those employed will either develop new skills or enhance current skills. This insinuates that inexperienced workers will have the opportunity to attain and develop new skills, while experienced workers will further improve their existing skills. Albeit the employment is temporary, the skills attained will be of long-term benefit to employees. However, as any skills set it will need to be supported and practised on a regular basis to maintain its currency.

13. DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION

13.1 Details of alternatives

As per Chapter 1 of the EIA regulations (2014), as amended, feasible and reasonable alternatives are required to be considered during the EIA process. Alternatives are defined as “*different means of meeting the general purpose and requirements of the activity*”. These alternatives may include:

- (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.

Each of these alternatives are discussed in relation to the proposed development in the sections below. The EIA Regulations, 2010 guideline document stipulates that the environmental investigation needs to consider feasible alternatives for the proposed development. The developer should be encouraged to consider alternatives that would meet the objective of the original proposal and which could have an acceptable impact on the environment. The role of alternatives in the EIA process is therefore to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and/or through reducing or avoiding potentially significant negative impacts.

13.1.1 Location/Site alternatives

Prior to the initiation of the EIA, alternative properties / sites were considered for the location of the proposed development. As discussed above, the selection of a potential wind farm site includes several key aspects including wind resource, grid connection suitability/infrastructure as well as environmental and social constraints, proximity to various planning units and strategic areas and topography and access. This proposed project site was selected based on the above criteria ahead of other regional properties / sites due to the cumulative assessment of all criteria. This internal process takes several weeks to complete and ensures that the least environmentally sensitive property / site is selected in the specific region of development.

Based on the reasons above no site alternatives have been considered during the EIA process for this proposed development. The placement of wind energy facilities is dependent on the factors discussed above, all of which are favourable at the proposed site location. A met mast was installed on the project site and the proposed site has been deemed suitable in terms of wind resource. The proposed project site has topography which is suitable for the development of a WEF. In addition, the proposed project site also has a low agricultural intensity and is easily accessible off the N14 national road and the R358 gravel access road. The site is therefore considered highly suitable for the proposed development of a WEF and no other locations have been considered.

13.1.2 The type of activity to be undertaken

No other activity alternatives have been considered. Renewable Energy developments in South Africa are highly desirable from a social, environmental and development perspectives respectively. The importance of renewable energy has been outlined in **Section 10** and **11** above highlighting national, district and local support. Wind energy installations are also more suitable for the proposed site because of the high wind resource.

South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although wind energy is not the only solution to solving the energy crisis in South Africa, it is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa's goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

13.1.3 The technology to be used in the activity

The importance of renewable energy has been outlined in **Section 10** and **11** above highlighting national, district and local support. Wind energy installations are also more suitable for the proposed site because of the high wind resource.

The generation of electricity from Solar PV within the proposed site is feasible in terms of the resources high Global Horizontal Irradiation (GHI) resource relevant to PV installations as well as the operational PV facilities within the greater area. However, the associated grid connection costs associated with establishing a new 400/132 kV Main Transmission Substation (MTS) located south of the WEF and adjacent to the Aggeneis – Aries 400 kV line would be not economically feasible for a solar PV development. The area in which the proposed WEF is to be developed is also relatively water scarce. It is therefore proposed that water be trucked to the proposed project site from the local municipality for consumptive and construction purposes, due to the scarcity of water in the greater Central Karoo area. Solar panels require regular cleaning in order to function optimally and therefore this would not be cost effective.

Wind turbine technology is developing at a rapid pace and could evolve by the time the project reached the construction phase. Therefore, various wind turbine designs and layouts will be considered for the site in order to maximise the electricity generation capacity and efficiency, whilst taking into account the environmental constraints. The turbine manufacturer and turbine model has not yet been determined and will not be decided upon until the completion of further wind analysis and competitive tendering.

Furthermore, from a policy perspective the 2019 IRP indicated a higher allocation target to wind energy compared to solar energy for new additional capacity from 2022 to 2030 (i.e. 14 400 MW as opposed to 6 000 MW) which further supports the development of a WEF at this location. Based on the above, a WEF at the proposed location is considered to be reasonable and feasible and therefore is selected as the preferred technology alternative as it would be able to generate sufficient energy to support an economically viable wind energy project.

13.1.4 Design or layout of the activity

Site layout alternatives will not be comparatively assessed, but rather a single layout will be refined as additional information becomes available throughout the EIA process (e.g. specialist input, additional site surveys, and ongoing stakeholder engagement). For example, the bat monitoring scoping report identified the need to relocate seven turbines out of the bat no-go areas, the final layouts will be amended and assessed during the EIR phase.

The development area presented in the Scoping Report has been selected as a practicable option for the Pofadder WEF 2 considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the initial screening studies.

13.1.5 No – go option

The option of not implementing the activity, or the “no-go” alternative, has been considered in the EIA process. South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although wind energy is not the only solution to solving the energy crisis in South Africa, not establishing the proposed WEF and associated infrastructure would be detrimental to the mandate that the government has set to promote the implementation of renewable energy. It is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa’s goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not developing the proposed Pofadder WEF 2. This alternative would result in no environmental, social or economic impacts (positive or negative) from the proposed project on the site or surrounding local area.

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

- No benefits will be realised from the implementation of an additional land-use being energy generation and livestock farming;
- No additional power will be generated or supplied through means of renewable energy wind resources at this project at this location;
- There will be lost opportunity for skills transfer and education/training of local communities;
- The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realized;
- There will be a loss of job creation opportunities from the construction and operation phases, where job creation is identified as a key priority;
- Not contributing to future demand for additional power generation in a most economic and rapid manner.
- Loss of economic benefit to participating landowners due to the revenue that will be gained from leasing the land to the developer. The landowners have been subjected to a severe drought severe drought over the past 7 years;
- No contribution to assist the government in addressing climate change, energy security and economic development.

Contrary to the above, the following benefits could occur if the no-go alternative is implemented, as identified in the specialist assessment:

- **Bats:** The No-Go alternative assumes that the proposed development will not go ahead and status quo at the site would therefore persist. There would therefore be no positive or negative impact on bats or their environment.
- **Avifauna:** The No-Go option would result in no wind farm and associated infrastructure being built on site. As a result, none of the impacts on birds described within the avifauna assessment would take place.
- **Socio-Economic:** The option of not having this project go ahead means that the social environment is not affected as the status quo remains. On a negative basis, it also means that all positive aspects associated with the project would not materialise. This would mean that there is

no job creation, no revenue streams into the local economy and no opportunity to enhance the National Grid with renewable source of energy.

- **Terrestrial Ecology:** No biodiversity (fauna and flora) will be removed or disturbed during the development of this proposed facility;
- **Aquatic Ecology:** No aquatic resources will be impacted upon during the construction of the proposed WEF and associated infrastructure;
- **Visual:** No additional visual intrusion on the rural landscape and on settlements in the area by wind turbines and related infrastructure;
- **Traffic:** If the proposed development does not materialise the increase in the traffic volume will not transpire and the status quo will persist;
- **Heritage:** If the project were not implemented then the site would stay as it currently is (impact significance of neutral). Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable in heritage terms.
- **Noise:** No noise or shadow flicker impacts will occur either during the construction phase or during the operational phase when wind turbines are rotating;

The no- go alternative is not currently the preferred alternative.

13.2 Details of Public Participation Process undertaken

Public participation is the cornerstone of any EIA. The principles of the National Environmental Management Act (NEMA) as well as the EIA Regulations (as amended 2017) govern the EIA process, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth. All documents relating to the PP process have been included in **Appendix 5**.

The aim of the Scoping phase is to collect the issues, concerns and queries of interested and affected parties (I&APs) and determine the scope of the following phase of the EIA. The main objective of the Scoping phase is to:

- Inform the stakeholders about the proposed project and the environmental assessment process to be followed;
- Provide opportunity to all parties to exchange information and express their views and concerns;
- Obtain contributions from stakeholders (including the client, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented;
- Evaluate the issues raised and identify the significant issues; and
- Provide comment on how these issues are to be assessed as part of the Environmental Impact Assessment Process.

The public scoping processes undertaken are in accordance with the required EIA procedures prescribed within national legislation.

13.2.1 Identification of Key Stakeholder and I&AP's

Liaison with the relevant authorities plays a crucial role in the successful completion of any environmental assessment process. In addition to the competent authority, DFFE, key stakeholders, the local municipality as well as other potentially affected I&APs, including adjacent property owners and dwellers, are identified.

The following key stakeholders were identified for this project:

Table 14: Key Stakeholders identified for the project

Agri SA – Northern Cape ;	Northern Cape Department of Sports, Arts and Culture
ATNS – Cape Town International Airport;	SANRAL
Birdlife South Africa;	Northern Cape Department of Roads and Public Works
Namakwa District Municipality	SAHRA Head Office
Z F Mgcawu District Municipality	South African Astronomical Observatory;
Ka !Garib Local Municipality	Square Kilometre Array
Khai-Ma Local Municipality	SA Civil Aviation Authority;
Eskom Transmission Limited;	Sentech;
Endangered Wildlife Trust	Telkom SA;
Northern Cape Department of Agriculture, Environmental Affairs, Land Reform and Rural Development	WESSA;
Department of Environmental Affairs and Biodiversity (Provincial and Northern Cape Department)	Transnet;
Department of Water and Sanitation;	National Department of Economic Development;
Department of Agriculture, Forestry and Fisheries (Provincial and Northern Cape Department)	Department of Transport;
Department of Mineral Resources;	Air Traffic Navigation Services;

This list will be updated as the project progresses and based on responses received.

13.2.2 Responsibilities of interested and affected parties (I&AP's)

Members of the public who want to participate in the assessment process need to register and are referred as I&AP's. Registered I&AP's are entitled to comment, in writing, on all written submissions to the authority and to raise any issues that they believe may be significant, provided that:

- Comments are submitted within the timeframes set by the competent authority or extensions of timeframes agreed to by the applicant, Environmental Assessment Practitioner (EAP) and competent authority.
- A copy of the comments submitted directly to the competent authority is served on the applicant or EAP.
- The I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

13.2.3 Steps taken to notify key stakeholders and potential I&APs

Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs in March 2022 respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).

- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on 8 March 2022 (proof included in the Scoping Report).
- Notification letters to be sent via E-mail or sms (if cellphone number / email is available, it is assuming the I&AP have an email or cellphone).
- Public notification of the EIA process will be advertised in a local newspaper (namely Die Gembok) in March 2022, and in a provincial newspaper (namely The Mercury) as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Final Scoping and and EIA Report.

Availability of report for review:

- Report available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following location:
 - Pofadder Library, Loop Street, Pofadder, Northern Cape, South Africa

13.2.4 Summary of issues raised

To be updated once the Scoping Phase Public Comment Period has been completed.

13.3 Impact Assessment

The potential impacts for the identified environmental aspects have been assessed and mitigation measures identified below (refer Appendix 6).

13.3.1 Planning

Environmental Aspect	Potential Impact during Construction	Mitigation
Visual	<ul style="list-style-type: none"> • Potential visual effect of wind turbines on the rural landscape and on surrounding farmsteads. • Potential shadow flicker caused by wind turbines to nearby receptors (early morning and late afternoon). (Note: Shadow Flicker Impacts are not assessed in this document) • Potential visual clutter of on-site substation/s, operations and maintenance structures (O&M structures) and connecting powerlines. • Potential visual intrusion caused by navigation lighting from turbines and security lighting at substations and O&M structures at night. 	<ul style="list-style-type: none"> • Aircraft Warning Lights (AWL) at night have the potential to significantly extend the project Zone of Visual Influence into the surrounding rural 'dark sky' sense of place. Light spillage reduction should be planned at the Pre-Construction design phase to assess the feasibility of the mitigation's options. While the remote nature of the locality would not require the use of radar technology, two mitigations options are proposed. The first option is to only place AWL on strategic outside points, thus reducing the number of lights to a strategic minimum. The second option that is sometimes used, is the utilisation of shields placed below the AWL to restrict light spillage to the ground users, while still allowing the necessary aircraft warning. • No large signage or advertising should be located on the wind turbines. • Location of the main layout down for the project away from scenic resources / farmstead localities. • To reduce visual contract, the turbines blade tips should not be painted red.

13.3.2 Construction Phase

Environmental Aspect	Potential Impact during Construction	Mitigation
Social	<ul style="list-style-type: none"> • Noise 	<ul style="list-style-type: none"> • Refer to mitigation measures suggested by noise specialist

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Increase in crime 	<ul style="list-style-type: none"> Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing. Fence off the construction sites and control access to these sites. Appoint an independent security company to monitor the site; Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. Prevent loitering within the vicinity of the construction camp as well as construction sites
	<ul style="list-style-type: none"> Increased risk of HIV infections 	<ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. Expose workers to a health and HIV/AIDS awareness educational program. Extend the HIV/AIDS program into the community with a specific focus on schools and youth clubs.
	<ul style="list-style-type: none"> Influx of construction workers 	<ul style="list-style-type: none"> Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy.
	<ul style="list-style-type: none"> Hazard exposure 	<ul style="list-style-type: none"> Ensure that all construction equipment and vehicles are properly maintained at all times. Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly. Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to.

Environmental Aspect	Potential Impact during Construction	Mitigation
		<ul style="list-style-type: none"> Make staff aware of the dangers of fire during regular toolbox talks.
	<ul style="list-style-type: none"> Disruption of daily living patterns 	<ul style="list-style-type: none"> Ensure that, at all times, people have access to their properties as well as to social facilities
	<ul style="list-style-type: none"> Disruptions to social and community infrastructure 	<ul style="list-style-type: none"> Regularly monitor the effect that construction is having on infrastructure and immediately report any damage to infrastructure to the appropriate authority. Ensure that where communities' access is obstructed that this access is restored to an acceptable state
	<ul style="list-style-type: none"> Job creation and skills development 	<ul style="list-style-type: none"> Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. Women should be given equal employment opportunities and encouraged to apply for positions. A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post construction.
	<ul style="list-style-type: none"> Socio-economic stimulation 	<ul style="list-style-type: none"> A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.
Visual	<ul style="list-style-type: none"> Potential scarring in the landscape caused by earthworks for access roads and assembly platforms, particularly on steeper slopes. Dust and noise during construction from heavy machinery and truck traffic. 	<ul style="list-style-type: none"> Topsoil excavated from the site should be stockpiled and utilised for rehabilitation of the site after construction. Windblown dust during construction should be monitored by the Environmental Officer (EO). Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the EO. Signage on the main access road should be moderated and natural colours used in the signage as much as possible while still providing the necessary information regarding the project. Any plant rescue identified measures identified by the botanical Specialist need to be implemented.

Environmental Aspect	Potential Impact during Construction	Mitigation
		<ul style="list-style-type: none"> • Topsoil from the building footprints should be stockpiled and utilised for rehabilitation of the laydown site (or the area around the buildings). • The buildings should be painted a grey-brown colour to assist in reducing colour contrast. • Fencing (if required) should be simple and appear transparent from a distance. The fences should be checked monthly for the collection of litter caught on the fence. • Soil erosion measures need to be adequately implemented and routinely monitored by the EO.
Avifaunal	<ul style="list-style-type: none"> • Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure. • Displacement of priority species due to habitat transformation associated with construction of the wind turbines and associated infrastructure. 	<ul style="list-style-type: none"> • Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible. • Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. • Measures to control noise and dust should be applied according to current best practice in the industry. • Placement of turbines in highly suitable Red Lark habitat to be avoided where possible. • Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. • The mitigation measures proposed by the biodiversity specialist, including rehabilitation, must be strictly implemented. • Placement of turbines in highly suitable Red Lark habitat to be avoided where possible.
Bat	<ul style="list-style-type: none"> • Vegetation clearing for access roads, turbines and their service areas and other infrastructure, as well as noise and dust generated during the construction phase, will indirectly impact bats by removing habitat used for foraging/commuting and through disturbance. 	<ul style="list-style-type: none"> • Minimise clearing of vegetation, rehabilitate all areas disturbed during construction (including aquatic habitat), no placement of turbines within no-go areas, avoid construction activities at night.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Construction of WEF infrastructure could result in destruction (direct impact) of bat roosts (trees, rock crevices) and disturbance (indirect impact) of bat roosts (trees, buildings, rock crevices) potentially resulting in roost abandonment. Bats may also roost in project infrastructure (e.g., buildings, turbines, road culverts) potentially attracting them to risky locations. 	<ul style="list-style-type: none"> Minimise disturbance and destruction of farm buildings on site, minimise removal of trees, minimise blasting and removal of rocky habitat on site, and where this is required, these features should be examined for roosting bats. No placement of turbines within no-go areas. Limit potential for bats to roost in project infrastructure (e.g., buildings, turbines, road culverts).
Agricultural	Compliance Statement	
Aquatic / Freshwater	<p><u>Disturbance to and loss of wetland vegetation</u></p> <p>Construction of infrastructure may lead to direct loss of vegetation, causing a localised or more extensive reduction in the overall extent of vegetation.</p> <p>Potential consequences include:</p> <ul style="list-style-type: none"> General loss of habitat for sensitive fauna and flora species; General reduction in biodiversity; Reduction in the ability of the wetlands to fulfil their ecological services and functions such as flood attenuation and the enhancement of water quality through the precipitation and storage of nitrates and toxicants; Disturbance to processes maintaining biodiversity and ecosystem goods and services; and Exposure of soil to erosion. 	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> Primary Ephemeral Wash and 100m Buffer; Larger Ephemeral Washes and 100m Buffers; Minor Ephemeral Washes and 50m Buffers; Depression Wetlands and 50m Buffers; and Drainage lines and 35m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p><u>Impact on freshwater resource systems through the possible increase in surface water runoff</u></p> <p>An increase in the surface water budget of the wetlands and watercourses, due to an increase in volume and velocity of surface water flow from the cleared construction areas into the wetlands, may result in the loss of natural</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> Primary Ephemeral Wash and 100 m Buffer; Larger Ephemeral Washes and 100 m Buffers; Minor Ephemeral Washes and 50 m Buffers; Depression Wetlands and 50 m Buffers; and

Environmental Aspect	Potential Impact during Construction	Mitigation
	wetland/aquatic vegetation and potentially expose the wetland/aquatic soils to erosion.	<ul style="list-style-type: none"> • Drainage lines and 35 m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p>Activities associated with the construction phase may potentially lead to some direct or indirect loss of or damage to the identified wetlands and watercourses. Impacts on these systems will most likely be:</p> <ul style="list-style-type: none"> • Vegetation clearing within the development area may result in an increase in surface water flow and expose areas prone to erosion and these areas may expand / spread into the wetlands. • The eroded material may enter the wetlands and may potentially impact these systems through siltation. 	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Primary Ephemeral Wash and 100 m Buffer; • Larger Ephemeral Washes and 100 m Buffers; • Minor Ephemeral Washes and 50 m Buffers; • Depression Wetlands and 50 m Buffers; and • Drainage lines and 35 m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p><u>Impact on localized surface water quality</u></p> <p>Chemical pollutants (hydrocarbons from equipment and vehicles, cleaning fluids, cement etc.) could potentially be washed downslope into the wetlands and potentially affect water quality.</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Primary Ephemeral Wash and 100 m Buffer; • Larger Ephemeral Washes and 100 m Buffers; • Minor Ephemeral Washes and 50 m Buffers; • Depression Wetlands and 50 m Buffers; and • Drainage lines and 35 m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p><u>Loss of habitat for fauna dependent on such habitats</u></p> <p>Fauna species of conservation concern are indirectly affected primarily by a loss of or alteration of habitat and associated resources. Animals are mobile and, in most</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Primary Ephemeral Wash and 100 m Buffer; • Larger Ephemeral Washes and 100 m Buffers;

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>cases, can move away from a potential threat, unless they are bound to a specific habitat that is also spatially limited, such as isolated, endorheic pans, and will be negatively impacted by a development.</p> <p>For any species, a loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. However, in the case of threatened animal species, loss of a suitable habitat, population, or individuals could lead to a direct change in the conservation status of the species. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations or the habitat that they depend on. Consequences may include:</p> <ul style="list-style-type: none"> • Loss of populations of affected species; • Reduction in area of occupancy of affected species; • Loss of genetic variation within affected species; and • Future extinction debt of a particular species. <p>There is SCC that may potentially utilized these habitat types.</p>	<ul style="list-style-type: none"> • Minor Ephemeral Washes and 50 m Buffers; • Depression Wetlands and 50 m Buffers; and • Drainage lines and 35 m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
Heritage	<p>Archaeological Resources Grubbing and excavations for roads, turbines and other infrastructure will directly impact on archaeological sites and artefacts</p> <p>Graves • Grubbing and excavations for roads, turbines and other infrastructure may directly impact on graves</p> <p>Cultural landscape and structures • Introduction of construction equipment and turbines directly alters landscape quality, sense of place and context of structures</p>	<ul style="list-style-type: none"> • Survey any unsampled parts of the approved layout. • Record and sample/excavate any affected archaeological sites <p>• Report graves found accidentally and follow required exhumation procedure</p> <ul style="list-style-type: none"> • Keep construction duration as short as possible. • Minimise landscape scarring. • Rehabilitate any areas not required during operation.

Environmental Aspect	Potential Impact during Construction	Mitigation
Heritage (Palaeontology)	If fossils of scientific value (rare, complete, index fossils) are present they might be destroyed when excavations for foundations commence	Follow the Fossil Chance Find Protocol and remove important fossils during excavations. These measures will be detailed in the EMPr.
Noise	<ul style="list-style-type: none"> Construction equipment and vehicle noise 	<ul style="list-style-type: none"> Conduct Noise Sensitivity Training for all construction staff where construction takes place close to sensitive receptors. No construction should occur during night-time hours (22:00-06:00). If possible, piling activities should occur during the hottest part of the day to take advantage of the unstable atmospheric conditions. Residual Noise Monitoring should be conducted during the construction phase at sensitive NSAs.
Terrestrial Ecology	<p><u>Disturbance to and loss of indigenous natural vegetation</u></p> <p>Construction of infrastructure will lead to direct loss of vegetation, causing a localised or more extensive reduction in the overall extent of vegetation. Consequences of the clearing and loss of indigenous semi – to near-natural vegetation occurring may include:</p> <ul style="list-style-type: none"> Increased vulnerability of remaining vegetation to future disturbance, including extreme climatic events; General loss of habitat for sensitive fauna and flora species; Loss in variation within sensitive habitats due to loss of portions of it; General reduction in biodiversity; Increased fragmentation (depending on the location of the impact) and associated reduced viability of species populations; Alteration of the habitat suitable for plant populations by altering surface structure. This will change species composition and associated species interactions; 	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> Inselberg classified as a CBA2 Structurally complex portions of ridges and outcrops <p>The only activities allowed within these areas are the use/upgrade of existing routes.</p>

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Disturbance to processes maintaining biodiversity and ecosystem goods and services; and Loss of ecosystem goods and services. 	
	<p><u>Disturbance or loss of threatened/protected plants.</u></p> <p>SCC could potentially occur in the study area. Flora is affected by an overall loss or alteration of habitat and due to its limited ability to extend or change its distribution range.</p> <p>In the case of SCC, a loss of a population or individuals could lead to a direct change in the conservation status of the species, possibly extinction. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations. Consequences of this may include:</p> <ul style="list-style-type: none"> Fragmentation and decline of populations of affected species; Reduction in the area of occupancy of affected species; Loss of genetic variation within affected species; Alteration of the habitat suitable for plant associations by altering of the surface structure. This will change species composition and associated species interactions and species ability to persist; and Future extinction debt of particular species of flora and fauna. <p>These may all lead to a negative change in conservation status of the affected species, which implies a reduction in the chance of survival of the species.</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> Inselberg classified as a CBA2 Structurally complex portions of ridges and outcrops <p>The only activities allowed within these areas are the use/upgrade of existing routes.</p> <p>SCC species have a distribution that include the study area and may potentially occur within the study area; the issue requires further investigation in the EIA phase.</p> <p>During the EIA Phase areas containing SCC may be identified and these areas will subsequently be upgraded to a higher sensitivity and will be accompanied with additional mitigation measures to avoid any potential detrimental impacts.</p>
	<p><u>Loss of habitat for fauna species of conservation concern</u></p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p>

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>Fauna species of conservation concern are indirectly affected primarily by a loss of or alteration of habitat and associated resources. Animals are mobile and, in most cases, can move away from a potential threat, unless they are bound to a specific habitat that is also spatially limited and will be negatively impacted by a development. Nevertheless, the proposed development will reduce the extent of habitat available to fauna.</p> <p>For any species, a loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. However, in the case of threatened animal species, loss of a suitable habitat, population, or individuals could lead to a direct change in the conservation status of the species. This may arise if the proposed infrastructure is located where it will impact on such individuals or populations or the habitat that they depend on. Consequences may include:</p> <ul style="list-style-type: none"> • Loss of populations of affected species; • Reduction in area of occupancy of affected species; • Loss of genetic variation within affected species; and • Future extinction debt of a particular species. <p>There are a number of red data species that have been recorded for the wider area within which the study area is located. Their presence and the necessity to keep their habitats intact in the study area needs to be confirmed during a field survey in the EIA phase.</p>	<ul style="list-style-type: none"> • Inselberg classified as a CBA2 • Structurally complex portions of ridges and outcrops <p>The only activities allowed within these areas are the use/upgrade of existing routes.</p> <p>SCC species have a distribution that include the study area and may potentially occur within the study area; the issue requires further investigation in the EIA phase.</p> <p>During the EIA Phase areas containing SCC may be identified and these areas will subsequently be upgraded to a higher sensitivity and will be accompanied with additional mitigation measures to avoid any potential detrimental impacts.</p>
	<p><u>Disturbance to migration routes and associated impacts to species populations</u></p> <p>Site preparation and construction activities may interfere with the current migration routes of fauna species. This may lead to:</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Larger ephemeral watercourses and associated smaller tributaries

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> • Reduced ability of species to move between breeding and foraging grounds, reducing breeding success rates; • Reduced genetic variation due to reduced interaction amongst individuals or populations as a result of fragmentation effects caused by the proposed developments 	<p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p><u>Impact on Critical Biodiversity Areas</u></p> <p>Development within the CBAs and ESAs may negatively impact biodiversity and the ecological functioning of these features.</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • CBA 1 (FEPA River and 500 m buffer); • CBA 2 (structurally important inselberg) • ESA (Kaboep River and 500 m buffer) <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
	<p><u>Establishment and spread of declared weeds and alien invader plants</u></p> <p>Major factors contributing to invasion by alien invader plants include excessive disturbance to vegetation, creating a window of opportunity for the establishment of alien invasive species. In addition, regenerative material of alien invasive species may be introduced to the site by machinery traversing through areas with such plants or materials that may contain regenerative materials of such species. Consequences of the establishment and spread of invasive plants include:</p> <ul style="list-style-type: none"> • Loss of indigenous vegetation; • Change in vegetation structure leading to change in or loss of various habitat characteristics; 	<p>No “no-go” areas have been identified to date but the potential for alien invasive species present in or around the study area is regarded as moderate.</p> <p>The extent to which the site contains alien plants will be determined in the EIA phase through detailed investigation and field-survey.</p>

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> • Change in plant species composition; • Altered and reduced food resources for fauna; • Change in soil chemical properties; • Loss or disturbance to individuals of rare, endangered, endemic and/or protected species; • Fragmentation of sensitive habitats; • Change in flammability of vegetation, depending on alien species; • Hydrological impacts due to increased transpiration and runoff; • Increased production and associated dispersal potential of alien invasive plants, especially to lower-lying wetland areas, and • Impairment of wetland function. 	

13.3.3 Operational Phase

Environmental Aspect	Potential Impact during Operation	Mitigation
Social	<ul style="list-style-type: none"> • Shadow flicker (associated with the energy facility and not the grid infrastructure) 	<ul style="list-style-type: none"> • Refer to mitigation measures suggested by noise specialist
	<ul style="list-style-type: none"> • Blade glint (associated with the energy facility and not the grid infrastructure) 	<ul style="list-style-type: none"> • Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing. • Fence off the construction sites and control access to these sites. • Appoint an independent security company to monitor the site; • Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. • Prevent loitering within the vicinity of the construction camp as well as construction sites

Environmental Aspect	Potential Impact during Operation	Mitigation
	<ul style="list-style-type: none"> Electromagnetic field and RF interference 	<ul style="list-style-type: none"> Wind turbine mechanisms will be elevated and the risk of EMFs will be minimal. Notwithstanding this, it would be pertinent to regularly monitor the levels of EMFs emitted by the turbines and, if necessary, make the appropriate adjustments to ensure that these levels remain within acceptable parameters. Ensure that power lines are not routed in close proximity (with 300 meters) of residential areas to limit the effect off EMFs. Consult with the appropriate telecommunication authorities to ensure that the telecommunication installations identified within the vicinity of the project are not comprised through RFI
	<ul style="list-style-type: none"> Hazard exposure 	<ul style="list-style-type: none"> Install early detection techniques to avoid or reduce structural damage Install lighting protection systems Install fire prevention and control measures
	<ul style="list-style-type: none"> Transformation of the sense of place 	<ul style="list-style-type: none"> Apply the mitigation measures suggested in the Visual Impact Assessment Report. Communicate the benefits associated with renewable energy to the broader community. Ensure that all affected landowners and tourist associations are regularly consulted. A Grievance Mechanism should be put in place and all grievances should be dealt with transparently. The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed
	<ul style="list-style-type: none"> Job creation and skills development 	<ul style="list-style-type: none"> Implement a training and skills development programme for locals. Work closely with the appropriate municipal structures regarding establishing a social responsibility programme.
	<ul style="list-style-type: none"> Socio-economic stimulation 	<ul style="list-style-type: none"> Ensure that the procurement policy supports local enterprises. Establish a social responsibility programme either in line with the REIPPP BID guidelines or equivalent. Work closely with the appropriate municipal structures regarding establishing a social responsibility programme.

Environmental Aspect	Potential Impact during Operation	Mitigation
		<ul style="list-style-type: none"> Ensure that any trusts or funds are strictly managed in respect of outcomes and funds.
Visual	<ul style="list-style-type: none"> Potential visual effect of wind turbines on the rural landscape and on surrounding farmsteads. Potential shadow flicker caused by wind turbines to nearby receptors (early morning and late afternoon). Potential visual clutter of on-site substation/s, operations and maintenance structures (O&M structures) and connecting powerlines. Potential visual intrusion caused by navigation lighting from turbines and security lighting at substations and O&M structures at night. 	<ul style="list-style-type: none"> Soil erosion measures need to be adequately monitored by the EO (monthly). Light spillage measures designed during pre-construction phase should be implemented and monitored by the EO to ensure that light spillage does not create a glowing effect.
Avifaunal	<ul style="list-style-type: none"> Mortality of priority species due to collisions with wind turbines. 	<ul style="list-style-type: none"> It is recommended that suitable pro-active mitigation be implemented at all turbines (if any) within a 5.2 km radius around all Verreaux's Eagle nests during daylight hours, once the wind farm commences with operations, to reduce the risk of collisions. Suitable pro-active mitigation measures should be selected prior to commencement of operation, informed by best-available information at the time of implementation. All infilling for road construction should be compacted and all loose rock piles at the base or periphery of such infilling should be covered and packed down so as to eliminate all potential crevices and shelter for small mammals such as Rock Hyraxes (the primary source of food for the Verreaux's Eagles). Live-bird monitoring and carcass searches should be implemented in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al. 2015) to assess collision rates. If estimated annual collision rates indicate unacceptable mortality levels of priority species, i.e., if it exceeds the mortality threshold determined by the avifaunal specialist after consultation with other avifaunal specialists and BirdLife South Africa, additional measures will have to be implemented which

Environmental Aspect	Potential Impact during Operation	Mitigation
		<p>could include shut down on demand or other proven mitigation measures.</p> <ul style="list-style-type: none"> • Placement of turbines in highly suitable Red Lark habitat to be avoided where possible. If avoidance is not possible, turbine cut in-speeds should be increased to 3m/s (measured at ground level) during daylight hours when a rainfall event of 10mm or higher is recorded at the site, for turbines located in areas of highly suitable Red Lark habitat, as determined by the avifaunal specialist. The increased cut-in speeds to be maintained for a period of six weeks after the rainfall event. • A 2km buffer no -turbine buffer must be implemented around the vulture roost on the HV line running to the south of the project area.
	<ul style="list-style-type: none"> • Mortality of priority species due to electrocution on the medium voltage internal reticulation network • During operation: Mortality of priority species due to collisions with the medium voltage internal reticulation network 	<ul style="list-style-type: none"> • A raptor-friendly pole design must be used, and the pole design must be approved by the avifaunal specialist. • All medium high voltage lines must be marked with Eskom approved Bird Flight Diverters according to the Eskom standard.
Bat	<ul style="list-style-type: none"> • Bat mortality (direct impact) through collisions and/or barotrauma with wind turbine blades 	<ul style="list-style-type: none"> • Implement post-construction fatality monitoring and apply curtailment or deterrents if fatality thresholds are exceeded.
	<ul style="list-style-type: none"> • The installation of lighting in the landscape at non-turbine project infrastructure can attract insects and in turn foraging bats, bringing them into the vicinity of wind turbines. Insects can also die at lighting infrastructure, removing bat prey resources. 	<ul style="list-style-type: none"> • Use as little lighting as possible, maximise use of motion-sensor lighting, avoid sky-glow by using hoods, use low pressure sodium and warm white LED lights.
Agricultural	Compliance Statement	
Aquatic / Freshwater	<p><u>Impact on freshwater resource systems through the possible increase in surface water runoff</u></p> <p>An increase in the surface water budget of the wetlands and watercourses, due to an increase in volume and velocity of surface water flow from the cleared areas and from any compacted and hard surfaces.</p>	<p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Primary Ephemeral Wash and 100 m Buffer; • Larger Ephemeral Washes and 100 m Buffers; • Minor Ephemeral Washes and 50 m Buffers; • Depression Wetlands and 50 m Buffers; and • Drainage lines and 35 m Buffers

Environmental Aspect	Potential Impact during Operation	Mitigation
	<p>This may result in:</p> <ul style="list-style-type: none"> • a change in vegetation composition and structure, • the exposure of wetland soils leaving these areas prone to soil erosion; • increase in sedimentation and subsequently a reduction in water quality; and • reduction in the ability of the wetlands to fulfil vital ecological functions and services such as flood attenuation and precipitation of minerals such as nitrates and toxicants. <p><u>Impact on localized surface water quality</u></p> <p>Chemical pollutants (hydrocarbons from service equipment and vehicles etc.) could potentially be washed downslope into these wetlands and potentially affect water quality.</p>	<p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p> <p>The following areas have been classified as “No-Go” areas for most of the activities associated with the proposed development:</p> <ul style="list-style-type: none"> • Primary Ephemeral Wash and 100 m Buffer; • Larger Ephemeral Washes and 100 m Buffers; • Minor Ephemeral Washes and 50 m Buffers; • Depression Wetlands and 50 m Buffers; and • Drainage lines and 35 m Buffers <p>The only activities allowed within these areas are the use/upgrade of existing routes and watercourse crossings (new routes only last resort) as well as underground cabling (within roads).</p>
Heritage	<p>Cultural landscape and structures</p> <ul style="list-style-type: none"> • Existence of the WEF in a rural/natural landscape directly alters landscape quality, sense of place and context of structures, including night time impacts from red flashing lights 	<ul style="list-style-type: none"> • No maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks. • If approved by SACAA at the time, use a warning system in which the red lights stay off at night until needed
Noise	<ul style="list-style-type: none"> • Mechanical and aerodynamic noise from the operation of the wind turbine components. 	<ul style="list-style-type: none"> • Wind Turbine Generators (WTGs) should not be placed within 500m of any occupied NSA. • If the night-time noise rating limit for rural areas (35dB(A)) is exceeded, the WTGs could be operated in a lower power mode at certain wind speeds or be relocated further away from an NSA.

Environmental Aspect	Potential Impact during Operation	Mitigation
Terrestrial Ecology	<p><u>Disturbance or loss of indigenous natural vegetation</u></p> <p>Hard and engineered surface create areas of altered surface characteristics, rainfall interception patterns. Consequently, it can be expected that within the Facility development footprint, the species composition and topsoil characteristics will change significantly. A sparser or less stable vegetation, together with the altered surface and runoff characteristics may lead to:</p> <ul style="list-style-type: none"> • Increased vulnerability of the remaining vegetation to future disturbance, including erosion; • General loss or significant alteration of habitats for sensitive species; • Loss in variation within sensitive habitats due to a loss of portions of it; • General reduction in biodiversity; • Increased fragmentation (depending on location of impact); • Future extinction debt of a particular species; • Disturbance to processes maintaining biodiversity and ecosystem goods and services; and • Loss of ecosystem goods and services. 	No “no-go” areas so far identified.
	<p><u>Altered runoff patterns due compacted areas</u></p> <p>Hard, engineered surfaces create surfaces of rainfall interception, where rainfall is collected and concentrated at the edges from where it then moves onto the ground in larger, concentrated quantities as opposed to small drops being directly intercepted and raindrop impact dispersed by vegetation, then absorbed by the ground. This may lead to a localised increase in runoff during rainfall events, which may result in localised accelerated erosion.</p>	No “no-go” areas regarding high risk erodible soils have been identified to date. This must be verified during a detailed investigation and field-survey as part of the EIA phase

Environmental Aspect	Potential Impact during Operation	Mitigation
	<p>Likewise, access roads and areas where soils have been compacted during construction will have a low rainfall infiltration rate, hence creating more localised runoff from those surfaces. Runoff will thus have to be monitored and channelled where necessary to prevent erosion over larger areas.</p> <p><u>Establishment and spread of declared weeds and alien invader plants</u></p> <p>The envisaged altered vegetation cover after construction and during the operation phase of the proposed development will create a window of opportunity for the establishment of alien invasive species. In addition, regenerative material of alien invasive species may be introduced to the site by machinery or persons traversing through areas with such plants or materials that may contain regenerative materials of such species. Consequences of the establishment and spread of invasive plants include:</p> <ul style="list-style-type: none"> • Loss of indigenous vegetation or change in vegetation structure leading to an even more significant change in or loss of various habitat characteristics; • Loss of plant resources available to fauna; • Change in soil chemical properties; • Loss or fragmentation of sensitive or restricted habitats; • Loss or disturbance to individuals of rare, endangered, endemic and/or protected species; • Change in flammability of vegetation, depending on alien species; • Hydrological impacts due to increased transpiration and runoff; 	<p>No “no-go” areas have been identified to date but the potential for alien invasive species present in or around the study area is regarded as moderate.</p> <p>The extent to which the site contains alien plants will be determined in the EIA phase through detailed investigation and field-survey.</p>

Environmental Aspect	Potential Impact during Operation	Mitigation
	<ul style="list-style-type: none"> Increased production and associated dispersal potential of alien invasive plants 	

13.3.4 Decommissioning

Environmental Aspect	Potential Impact during decommissioning	Mitigation
Social	<ul style="list-style-type: none"> Noise Increase in crime 	<ul style="list-style-type: none"> Refer to mitigation measures suggested by noise specialist Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing. Fence off the construction sites and control access to these sites. Appoint an independent security company to monitor the site; Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. Prevent loitering within the vicinity of the construction camp as well as construction sites
	<ul style="list-style-type: none"> Increased risk of HIV infections 	<ul style="list-style-type: none"> Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. Expose workers to a health and HIV/AIDS awareness educational program. Extend the HIV/AIDS program into the community with a specific focus on schools and youth clubs.
	<ul style="list-style-type: none"> Influx of construction workers 	<ul style="list-style-type: none"> Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy.
	<ul style="list-style-type: none"> Hazard exposure 	<ul style="list-style-type: none"> Ensure that all construction equipment and vehicles are properly maintained at all times.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
		<ul style="list-style-type: none"> • Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly. • Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to. • Make staff aware of the dangers of fire during regular toolbox talks.
	<ul style="list-style-type: none"> • Disruption of daily living patterns 	<ul style="list-style-type: none"> • Ensure that, at all times, people have access to their properties as well as to social facilities
	<ul style="list-style-type: none"> • Disruptions to social and community infrastructure 	<ul style="list-style-type: none"> • Regularly monitor the effect that construction is having on infrastructure and immediately report any damage to infrastructure to the appropriate authority. • Ensure that where communities' access is obstructed that this access is restored to an acceptable state
	<ul style="list-style-type: none"> • Job creation and skills development 	<ul style="list-style-type: none"> • Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. • Women should be given equal employment opportunities and encouraged to apply for positions. • A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere postconstruction.
	<ul style="list-style-type: none"> • Socio-economic stimulation 	<ul style="list-style-type: none"> • A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.
Visual	<ul style="list-style-type: none"> • Potential scarring in the landscape caused by earthworks for access roads and assembly platforms, particularly on steeper slopes. 	<ul style="list-style-type: none"> • All structural components not required for agricultural purposes post-closure should be removed and where possible, recycled or reused.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
	<ul style="list-style-type: none"> Dust and noise during construction from heavy machinery and truck traffic. Potential visual effect of wind turbines on the rural landscape and on surrounding farmsteads. Potential shadow flicker caused by wind turbines to nearby receptors (early morning and late afternoon). (Note: Shadow Flicker Impacts are not assessed in this document) Potential visual clutter of on-site substation/s, operations and maintenance structures (O&M structures) and connecting powerlines. Potential visual intrusion caused by navigation lighting from turbines and security lighting at substations and O&M structures at night. 	<ul style="list-style-type: none"> Building structures not required should be broken down (including foundations). The rubble should be managed according to the National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA) and deposited at a registered landfill if it cannot be recycled or reused. All compacted areas should be ripped and then rehabilitated according to a rehabilitation specialist. Monitoring for soil erosion should be undertaken on a bi-annual basis for a year following the completion of closure phase.
Avifaunal	n/a	n/a
Bat	<ul style="list-style-type: none"> Disturbance to bats due to decommissioning activities through noise and dust, and damage to vegetation 	<ul style="list-style-type: none"> Avoid decommissioning activities at nights, rehabilitate vegetation once project infrastructure removed.
Agricultural	Compliance Statement	
Aquatic / Freshwater	None identified	
Heritage	<p>Cultural landscape and structures</p> <ul style="list-style-type: none"> Introduction of construction equipment directly alters landscape quality, sense of place and context of structures. 	<ul style="list-style-type: none"> Keep decommissioning duration as short as possible. Ensure effective rehabilitation of all areas.
Noise	None identified	
Terrestrial Ecology	None identified	

13.3.5 Cumulative

The proposed WEF is located adjacent to several other WEFs within 35 km of Pofadder WEF 2. The information that could be obtained for the surrounding planned renewable energy developments was taken into account as part of the cumulative impact assessment.

The WEFs that were considered are indicated in the figure below:

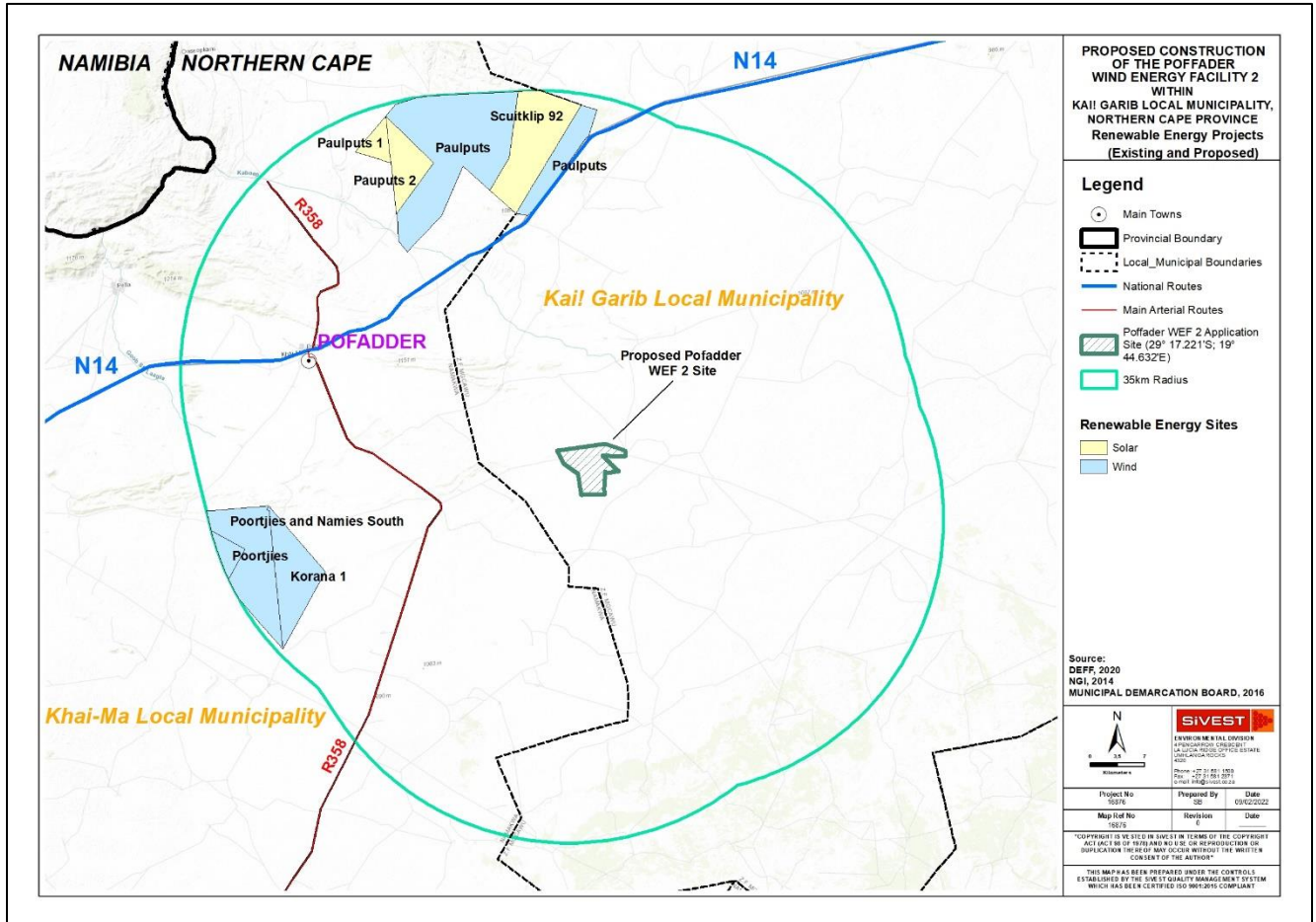


Figure 29: Renewable Energy Projects within 35km of the Pofadder WEF 2

Cumulative Impacts

Environmental Aspect	Potential Cumulative Impact	Mitigation
Social	None	n/a
Visual	None	n/a
Avifaunal	None	n/a
Bat	<ul style="list-style-type: none"> Vegetation clearing for access roads, turbines and their service areas and other infrastructure, as well as noise and dust generated during the construction phase, will indirectly impact bats by removing habitat used for foraging/commuting and through disturbance. 	<ul style="list-style-type: none"> Minimise clearing of vegetation, rehabilitate all areas disturbed during construction (including aquatic habitat), no placement of turbines within no-go areas, avoid construction activities at night.
	<ul style="list-style-type: none"> Construction of WEF infrastructure could result in destruction (direct impact) of bat roosts (trees, rock crevices) and disturbance (indirect impact) of bat roosts (trees, building, rock crevices) potentially resulting in roost abandonment. Bats may also roost in project infrastructure (e.g., buildings, turbines, road culverts) potentially attracting them to risky locations. 	<ul style="list-style-type: none"> Minimise disturbance and destruction of farm buildings on site, minimise removal of trees, minimise blasting and removal of rocky habitat on site, and where this is required, these features should be examined for roosting bats. No placement of turbines within no-go areas. Limit potential for bats to roost in project infrastructure (e.g., buildings, turbines, road culverts).
	<ul style="list-style-type: none"> Bat mortality (direct impact) through collisions and/or barotrauma with wind turbine blades 	<ul style="list-style-type: none"> Implement post-construction fatality monitoring and apply curtailment or deterrents if fatality thresholds are exceeded.
	<ul style="list-style-type: none"> The installation of lighting in the landscape at non-turbine project infrastructure can attract insects and in turn foraging bats, bringing them into the vicinity of wind turbines. Insects can also die at lighting infrastructure, removing bat prey resources. 	<ul style="list-style-type: none"> Use as little lighting as possible, maximise use of motion-sensor lighting, avoid sky-glow by using hoods, use low pressure sodium and warm white LED lights.
	<ul style="list-style-type: none"> Disturbance to bats due to decommissioning activities through noise and dust, and damage to vegetation. 	<ul style="list-style-type: none"> Avoid decommissioning activities at nights, rehabilitate vegetation once project infrastructure removed.
Agricultural	Compliance Statement	
Aquatic / Freshwater	The compromise of ecological processes as well as ecological functioning of these important freshwater resource habitats	<ul style="list-style-type: none"> The recommended buffer areas between the delineated freshwater resource features and proposed project activities should be maintained.

Environmental Aspect	Potential Cumulative Impact	Mitigation
	<ul style="list-style-type: none"> Transformation of intact habitat could potentially compromise ecological processes as well as ecological functioning of important habitats and would contribute to habitat fragmentation and potentially disruption of habitat connectivity and furthermore impair their ability to respond to environmental fluctuations. This is especially of relevance for larger watercourses and wetlands serving as important groundwater recharge and floodwater attenuation zones, important microhabitats for various organisms and important corridor zones for faunal movement 	<ul style="list-style-type: none"> Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared. The potential stormwater impacts of the proposed developments areas should be mitigated on-site to address any erosion or water quality impacts. Good housekeeping measures as stipulated in the EMPr for the project should be in place where construction activities take place to prevent contamination of any freshwater features. Where possible, infrastructure should coincide with existing infrastructure or areas of disturbance (such as existing roads). Disturbed areas should be rehabilitated through reshaping of the surface to resemble that prior to the disturbance and vegetated with suitable local indigenous vegetation.
Heritage	<p>All heritage resources</p> <ul style="list-style-type: none"> Grubbing of surface and introduction of WEF to the landscape directly impacts archaeology and alters landscape 	<ul style="list-style-type: none"> As per individual impacts above but with the addition of pre-construction surveys where there is any uncertainty or where layouts have changed since the original surveys
Heritage – Palaeontological	If fossils of scientific value (rare, complete, index fossils) are present they might be destroyed when excavations for foundations commence	Follow the Fossil Chance Find Protocol and remove important fossils during excavations. These measures will be detailed in the EMPr.
Noise	None	n/a
Terrestrial Ecology	The most significant cumulative impact that the proposed development will have is the potential impact on Broad-Scale Ecological processes and the impact on Ecological Support Areas.	<ul style="list-style-type: none"> Cumulative impacts of developments on population viability of species can be reduced significantly if new developments are kept as close as possible to existing developed and/or transformed areas or, where such is not possible, different sections of a development be kept as close together as possible. Thus, new power lines should follow routes of existing servitudes if such exist. Renewable energy facilities, like solar WEFs and PVs should be constructed as close as possible to existing infrastructure or substations, and if several developments are planned within close proximity,

Environmental Aspect	Potential Cumulative Impact	Mitigation
		<p>these developments should be situated as close together as possible, not scattered throughout the landscape.</p> <ul style="list-style-type: none"> • Excessive clearing of vegetation can and will influence runoff and stormwater flow patterns and dynamics, which could cause excessive accelerated erosion of plains, and this could also have detrimental effects on the downslope freshwater resource systems. <ul style="list-style-type: none"> ○ Rehabilitation and revegetation of all surfaces disturbed or altered during construction is desirable. ○ Runoff from sealed surfaces or surfaces that need to be kept clear of vegetation to facilitate operation of a development needs to be monitored regularly to ensure that erosion control and stormwater management measures are adequate to prevent the degradation of the surrounding environment. • Large-scale disturbance of indigenous vegetation creates a major opportunity for the establishment of invasive species and the uncontrolled spread of alien invasives into adjacent agricultural land and rangelands. <ul style="list-style-type: none"> ○ A regular monitoring and eradication protocol must be part of all developments long term management plans.

13.3.6 Comparative Assessment of Alternatives

Site layout alternatives will not be comparatively assessed, but rather a single layout will be refined as additional information becomes available throughout the EIA process (e.g. specialist input, additional site surveys, and ongoing stakeholder engagement). For example, the bat monitoring scoping report identified the need to relocate two turbines out of the bat no-go areas, the layouts will be amended and assessed during the EIR phase. All turbines, substations, laydown areas and auxiliary buildings will be removed from the sensitives areas that have been identified by the specialists.

The development area presented in the Scoping Report has been selected as a practicable option for the Pofadder WEF 2 considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the screening studies.

13.4 Concluding statement for preferred alternative

No activity alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view. Wind energy installations are more suitable for the site because of the high wind resource. The choice of technology selected for the Pofadder WEF 2 was based on environmental constraints as well as technical and economic considerations.

The preliminary layout has been assessed by the specialists in their respective specialist studies. All constraints identified to date as indicated in the sensitivity mapping below (**Figure 30**) have been taken into account and the turbines shifted where necessary to inform the proposed turbine layout for the Pofadder WEF 2 (**Figure 31**). Please note the layout doesn't include any supporting infrastructure such as roads, substations, MV cabling etc. The comprehensive site layout plan based on 6 months of wind measurement data, engineering input based on the outcome of the site visits and the avoidance of the environmental constraints will be finalized by the end of March 2022 and further assessed in the DEIR phase.

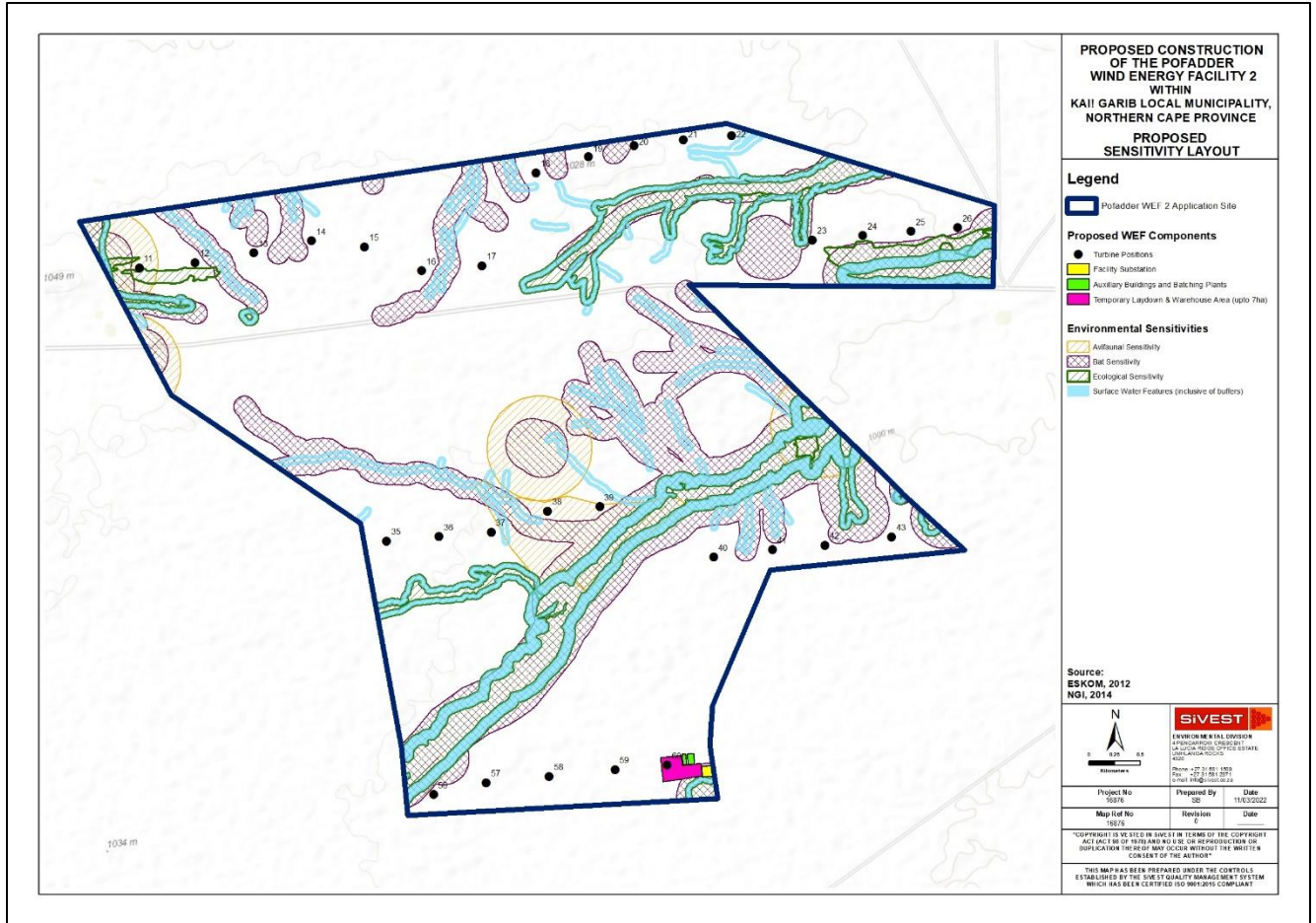


Figure 30: Sensitivity Mapping (infrastructure i.e. roads and caballing to be finalized and added in the EIA Phase)

Please note that turbine 11 is situated in an area that has been identified as very high sensitivity by the avifaunal specialist. This is as a result of a water trough within 500 m of the turbine. The avifaunal report indicated that the water trough could be relocated if it impacts on the proposed layout. Therefore, the water trough within 500m of turbine 11 will be relocated so as to allow the turbine position to remain in its location.

Turbines 38 and 39 have been identified in areas of medium sensitivity. Additional mitigation will be required for the placement of these turbines.

14. PLAN OF STUDY FOR EIA

This Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed Pofadder WEF 2 Project was prepared in accordance with Appendix 2 of GN No. 326 (7 April 2017).

The purpose of the EIA Phase is to:

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- *determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;*
- *describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;*
- *identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;*
- *determine the—*
 - (i) *nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and*
 - (ii) *degree to which these impacts—*
 - (aa) *can be reversed;*
 - (bb) *may cause irreplaceable loss of resources, and*
 - (cc) *can be avoided, managed or mitigated;*
- *identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;*
- *identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;*
- *identify suitable measures to avoid, manage or mitigate identified impacts; and*
- *identify residual risks that need to be managed and monitored.*

The EIA Phase consists of the following processes:

- Undertaking of specialist studies that provide additional information/assessments required to address the issues raised in the Scoping Phase.
- Undertaking of a PPP process where findings of the EIA Phase are communicated and discussed with I&APs and responses are documented.
- An assessment process whereby inputs are presented in an EIA Report that is submitted for approval to DFFE and other authorities.

14.1 Tasks to be undertaken

The EIA report will be informed by the scoping phase. The following steps will be undertaken as part of the EIA phase:

- The proposed final layout will be further investigated in order to avoid or minimize negative impacts and maximize potential benefits;
- Environmental impact statements regarding the potential significance of residual impacts, taking into account proposed mitigation measures will be provided in the EIA;
- An Environmental Management Programme (EMPr) covering construction and decommissioning phases of the proposed development will be prepared. The EMPr will include input from specialists and will incorporate recommendations for mitigation and monitoring.

14.2 Description of alternatives to be considered and assessed

The EIA phase will include a detailed analysis of the proposed layout for the project which will include environmental (with specialist input) and technical evaluations. Any additional alternatives identified through this process will be reported on in the EIA report.

14.2.1 Location Alternatives

As mentioned in Section 12.1.1, no location alternatives are being considered for the Pofadder WEF 2 as these sites were selected prior to the commencement of the EIA Process.

14.2.2 Layout Alternatives

The preliminary layout that was prepared for the Pofadder WEF 2 (**Figure 44**) has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists to date and the potential impacts identified, the preliminary layout has been updated to include constraints and turbines have been shifted where necessary (**Figure 31** below). The comprehensive site layout plan based on 6 months of wind measurement data, engineering input based on the outcome of the site visits and the avoidance of the environmental constraints will be finalized by the end of March 2022. The layout will also be further refined based on the outcomes of the public participation process of the Scoping phase and thereafter further assessed in the DEIR phase.

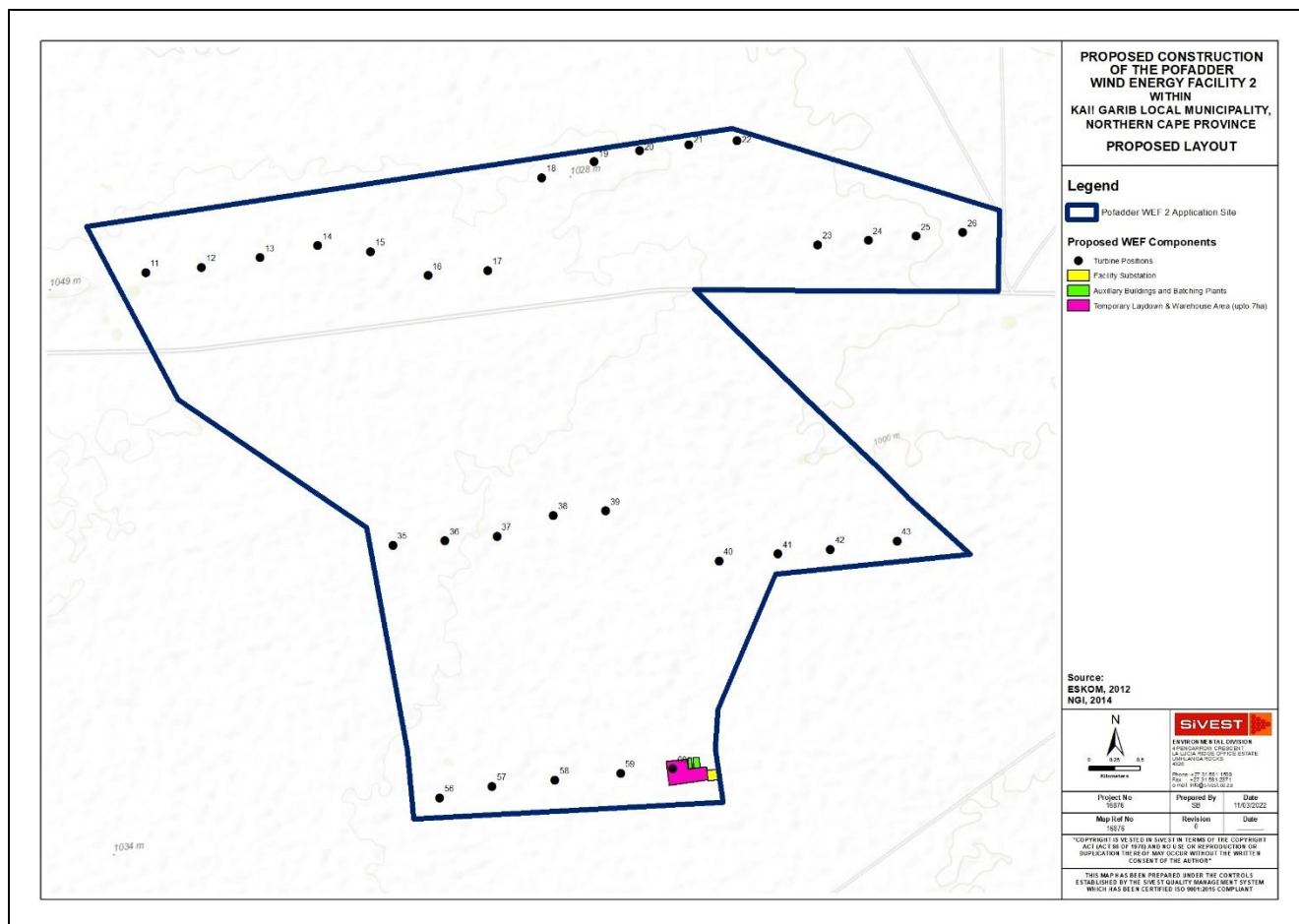


Figure 31: Proposed Layout of wind turbines (infrastructure i.e. roads and cabling to be finalized and added in the EIA Phase)

14.2.3 Technology Alternatives

No technology alternatives will be considered. The choice of turbine to be used will ultimately be determined by technological and economic factors at a later stage.

14.2.4 No-go Alternatives

The option of not implementing the activity, or the “no-go” alternative and associated potential impacts, have been discussed in **Section 12**. Based on the specialist’s assessment, no significant impacts have been identified from an ecological/bat/avifaunal perspective should the development of the WEF not proceed. There is however a high negative impact from a social perspective for the no-go alternative. As such, the no-go alternative will not be taken forward to the EIA phase for further assessment.

14.3 Specialist Studies

The following specialist studies have been undertaken for the project and the significant environmental aspects identified will be further assessed in the EIA Phase:

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- Desktop Geotechnical Assessment (to be included in EIA Phase);
- Social Impact Assessment;
- Transport Assessment (to be included in EIA Phase);
- Visual Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Agricultural Assessment;
- Surface Water Assessment;
- Heritage Assessment;
- Noise Assessment;
- Biodiversity Assessment;
- Shadow Flicker Impacts (SFI);
- Electromagnetic Interference (EMI) Path Loss and Risk Assessment Report (SKA Requirement).

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify further opportunities and constraints as associated with the site and the proposed development.

The specialists have undertaken the following scope of work:

Table 15: Specialist Scope of Work

Scope of Work
Specialists are requested to provide one (1) scoping phase report and / or compliance statement that provides an assessment of the proposed Pofadder WEF 2 and a separate report for the Grid connection infrastructure.
During the EIA phase, specialists will be required to update the scoping phase specialist report to provide a review of their findings in accordance with revised site layouts, to assess and rate significant impacts with mitigation measures and to address any comments or concerns arising from the public participation process.
The specialist report must include an explanation of the terms of reference (TOR) applicable to the specialist study. The gazetted Environmental Assessment Protocols of the NEMA EIA Regulations (2014, as amended), prescribes Procedures for the Assessment and Minimum Criteria for Reporting on the Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998. These procedures must be considered.
Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations; and any relevant legislation and guidelines deemed necessary
Where relevant, a table must be provided at the beginning of the specialist report, listing the requirements for specialist reports in accordance with Appendix 6 of the EIA Regulations, 2014 (as amended) and cross referencing these requirements with the relevant sections in the report.

14.4 EIA methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis. Refer to **Appendix 7** for the EIA methodology to be adopted.

14.5 Consultation with Competent Authority

SiVEST will consult with DFFE as follows:

- Pre-application meeting with DFFE.
- Submission of application form to obtain EIA reference number.
- The Draft Scoping report will be made available for comment to I&As, key stakeholders and the authorizing authority.
- After the Draft Scoping Report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will then be submitted to DFFE for approval.
- A site visit with DFFE is proposed once the Final Scoping Report has been submitted.
- Notify I&As and key stakeholders of acceptance of Final Scoping Report
- The Draft EIA report will be made available for comment to I&As, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&As of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

14.6 Public Participation Process to be undertaken for the EIA Phase

Public participation forms a critical component of the EIA process, as it provides all interested and affected parties with an opportunity to learn about a project, but more importantly to understand how a project will impact on them. The following will be undertaken during the EIA Phase.

14.6.1 Updating of IAP Database

The I&AP database will be updated as and when necessary during the execution of the EIA.

14.6.2 Review of Draft EIA Report

A 30-day period will be provided to IAPs to review the Draft EIA Report. Copies of the Draft EIA Report will be provided to the regulatory and commenting authorities as well. The Draft EIA Report will also be available for download on a link to be provided.

All parties on the IA&P database will be notified via email, sms or fax of the opportunity to review the Draft EIA Report, the review period and the process for submitting comments on the report.

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All comments received from I&APs and the responses thereto will be included in the final EIA Report, which will be submitted to DFFE.

14.6.3 Public meetings/consultation

No public meetings are proposed due to CoVID-19 Regulations. Virtual meetings if required will be conducted using an appropriate platform agreeable to all parties (such as Zoom, Skype or Microsoft Teams).

14.6.4 Inclusion of comments into the Final EIA

A Comments and Responses Report will be compiled and included in the EIA Report, which will record the date that issues were raised, a summary of each issue, and the response of the team to address the issue. The Final EIA report with all comments included will be submitted to DFFE for review and approval.

14.6.5 Notification of Environmental Authorisation

All I&APs will be notified via email, sms or fax after having received written notice from DFFE on the final decision on the application. These notifications will include the process required to lodge an appeal, as well as the prescribed timeframes in which documentation should be submitted.

15. EAP DECLARATION

The EAP declarations, CV's and qualifications for the EAP's responsible for the preparation of this report have been attached in **Appendix 1**.

16. INFORMATION REQUIRED BY CA (IF APPLICABLE)

Currently n/a.

17. CONCLUSION

This Scoping Report was compiled to meet the requirements of NEMA, with the primary aim of informing I&APs of the proposed project and allowing for an opportunity to comment on the project and the plan of study for the EIA Phase.

This Scoping Report has covered activities and findings related to the scoping process for the proposed Pofadder WEF 2 Project. Professional experience, specialist knowledge, relevant literature and local knowledge of the area have all been used to identify the potential issues associated with the proposed project. There is no guarantee that all the potential impacts arising from the proposed WEF project have been identified within the scoping phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

Based on the findings of the specialists and the potential impacts identified, the preliminary layout has been updated to include constraints (**Figure 30**). This layout will be further refined based on the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase.

18. WAY FORWARD

The Draft Scoping Report is currently being circulated for public participation for a period of 30 days (excluding public holidays) from **31st March 2022** until **3rd May 2022**.

All comments received will be responded to in a C&RR, which will be included prior to submission of the Final Scoping Report to the decision-making authority, namely the DFFE. Comments received on the report will be taken into consideration, incorporated into the report (where applicable) and will be used when compiling the Final Scoping and the Draft EIA Report.

All I&APs and key stakeholders are invited to register as I&APs in order to be kept informed throughout the process. To register as an I&AP / stakeholder and/or to obtain additional information, please submit your name, contact details (telephone number, postal address and email address) and the interest which you have in the application to SiVEST Environmental Division, as per the details below:

Contact: Hlengiwe Ntuli
✉ PO Box 2921, RIVONIA, 2128
☎ Phone: (011) 798 0600
✉ E-mail: sivest_ppp@sivest.co.za
☎ Fax: (011) 803 7272
Website: www.sivest.com

Please reference 'Pofadder WEF 2' in your correspondence, should your comments be project specific. SiVEST shall keep all registered I&APs / key stakeholders informed of the EIA process.



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