

**PROPOSED INYANDA - ROODEPLAAT WIND ENERGY PROJECT
SUNDAYS RIVER VALLEY MUNICIPALITY, CACADU DISTRICT,
EASTERN CAPE PROVINCE OF SOUTH AFRICA**

DEA Reference Number: 14/12/16/3/3/2/464

ENVIRONMENTAL SCOPING REPORT

DRAFT

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EXECUTIVE SUMMARY

Background

Inyanda Energy Projects (PTY) LTD (Inyanda Energy), a renewable energy company, plans to develop a wind energy facility (or 'wind farm' to be named the Inyanda - Roodeplaat WEF) between the towns of Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa (Figure 1 overleaf). According to Inyanda, available wind data in South Africa shows this area to have favourable wind conditions sufficient to support a wind farm. This has been confirmed by on site wind monitoring that has been ongoing since June 2012. The proposed project area consists of approximately 12 000 ha located on 24 property portions illustrated in the table below (Table 1).

Table 1: Farm name and property portions of the Proponent

Farm Number	Property Portion
170	Portion 3
245	Portion 1
246	Portion 1 and Remaining Extent
247	Portion 1
248	
277	Portion 1, Remaining Extent
278	Portion 1,2, 3, 4 and remaining Extent
279	Portion 3, 4 and remaining Extent
280	Portion 1
346	Remaining Extent
347	Portion 3
348	Portion 1
350	Portion 5 and 6
364	Portion 2 and 3
588	Portion 1 and 2

The proposed Inyanda - Roodeplaat WEF will consist of approximately 35 turbines each generating 1.8 - 6.15 Mega Watts (MW) of power depending on the model and size of turbine selected. The turbine footprints and associated facility infrastructure (internal access roads, substation, construction compound, batching plant and operations building) will potentially cover an area of approximately 60 ha depending on final layout design should the project proceed. An investigation of the wind regime of the site will decide the model of turbines to be installed. The facility will have a maximum generating output of approximately 140 MW.

Project motivation

Most of South Africa's energy comes from non-renewable sources like coal, petroleum, natural gas, propane, and uranium; however the proponents of renewable energy sources like biomass, geothermal energy, hydropower, solar energy, and wind energy is a major factor that the South African sector need to consider greatly. It is estimated that approximately only 1% of the country's electricity is currently generated from renewable energy sources. The energy sector in South Africa alone emits approximately 380 988Gg CO₂e (DEA 2011). South Africa's total emissions were estimated to be 461 million tonnes CO₂ equivalent in the year 2000. Approximately 83% of these emissions were associated with energy supply and consumption (380 988 Gg CO₂e), 7% from industrial processes, 8% from agriculture, and 2% from waste. .

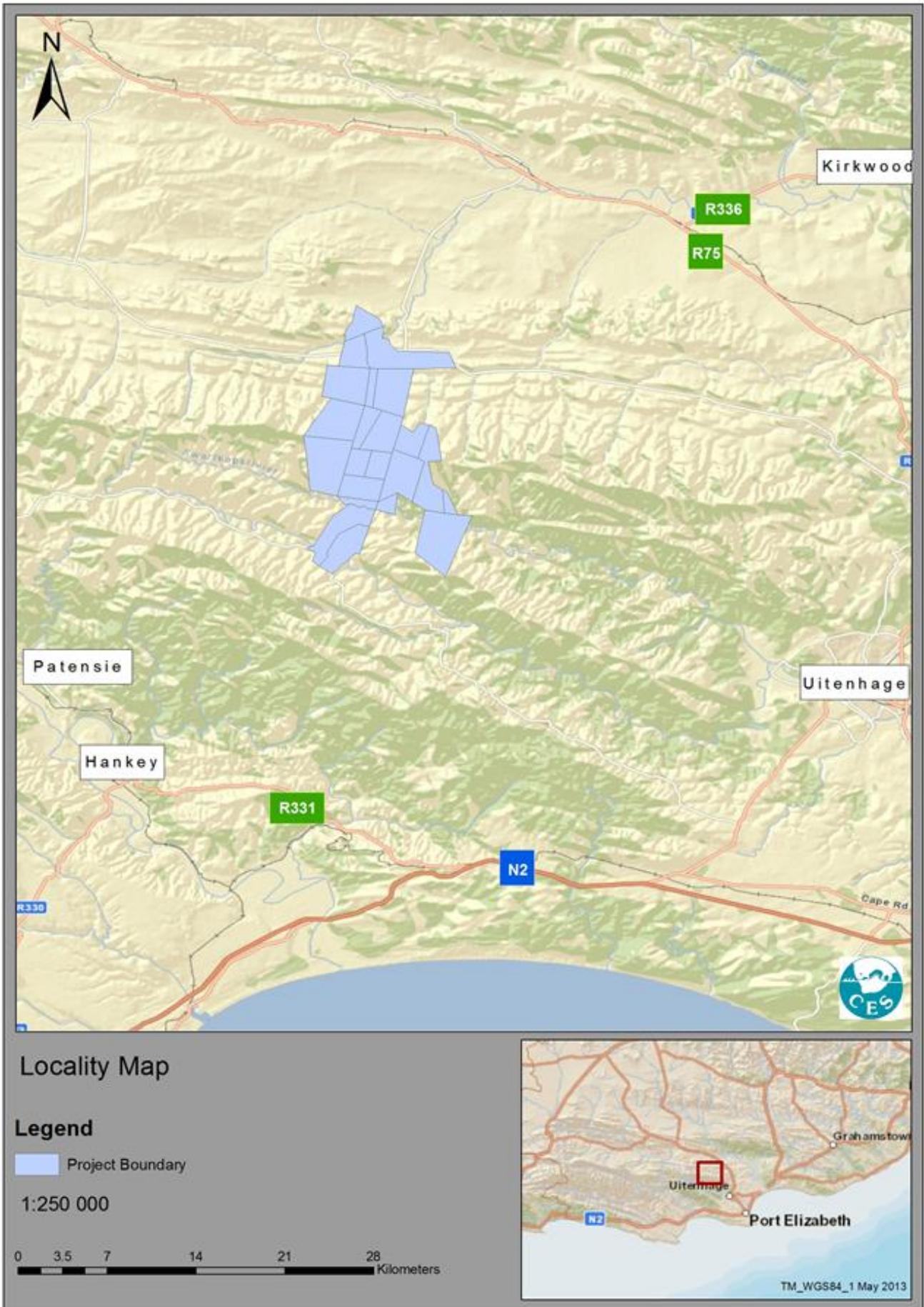


Figure 1: Locality Map indicating the study area property portions of the proposed Inyanda wind energy project relative to the surrounding towns of Uitenhage and Hankey.

Eskom currently generates 95% of the electricity used in South Africa with an approximate 40.87 GW net maximum installed capacity. By the year 2020 an additional 20 GW generation capacity would be required and up to 40 GW by 2030 to sustain the energy demands in the country. National energy policy has called for a change in the energy mix to reduce the dependency of the economy on fossil fuels and facilitate the uptake of renewable energy resources. This is in accordance with the prescriptions of the United Nations Convention on Climate Change 1994 (UNFCCC) and its associated Kyoto protocol of 1997, South Africa has put in place a long term mitigation scenario (LTMS) by which the country aims to develop a plan of action which is economically viable and internationally aligned to the world effort on climate change. During this period (2003-2050) South Africa will aim to take action to mitigate GHG emissions by 30% to 40% by the year 2050. This is a reduction of between 9000 tons and 17 500 tons of CO₂ by 2050. In January 2010, South Africa pledged to the UNFCCC, a 34% and 42% reduction against business as usual emissions growth trajectory by the year 2020 and 2025 respectively.

South Africa's current electricity generation and supply system is currently struggling to meet demand. Under the IPP Producer Procurement Programme, South Africa will seek to procure the first 3725 MW of renewable capacity by 2016 (1850 MW of on-shore wind) to meet the renewable energy target of 4000 MW by 2014 and 9000 MW by 2030. Fossil fuels supply 90% of South Africa's energy needs with demands on energy supply increasing by 3.5% in the next 20 years. The establishment of the proposed Inyanda Wind Energy Project will contribute to strengthening the existing electricity grid for the project area and is aligned with the policy objective of a 30% share of all new power generation being derived from Independent Power Producers (IPP).

The purported benefits of "green" electricity produced by wind turbines, as opposed to that of traditional coal powered stations, is the reduction of Carbon Dioxide (CO₂) and Sulphur Dioxide (SO₂) emissions and no water required for the operation thereof. Localised electricity production can also compensate for voltage losses resulting from transmitting this power over long distances from Mpumalanga Province where most coal fired power stations are located (and the bulk of South Africa's energy generation capacity resides). In addition to the above-mentioned potential benefits, the proposed project site was selected due to:

- Good wind resources suitable for the installation of a large wind energy facility.
- The proposed project site has a strong localised wind resource potentially intensified by a funnelling effect caused by surrounding topographical features.
- Proximity to available grid connection opportunities such as substations or High Voltage/Medium Voltage (HV/MV) overhead lines.
- The site is easily accessible from the R75 that will facilitate the transportation of wind turbines and construction traffic to the site.
- The immediate surrounding area is not densely populated.
- The land parcels constituting the project study area, which have been historically utilised for agriculture and livestock production, is gradually being turned over to conservation land uses. Inyanda Energy (and its associate members), have purchased the majority of these property portions and intends to fund conservation initiatives through the proposed WEF. It is the developer's intent to provide an unbroken land parcel corridor between the eastern and western portions of the Groendal Nature Reserve that adjoins sections of the study area. It is the developer's contention that the project will support strategic conservation objectives in the area through the establishment of this connectivity corridor.
- There is potential within the Sundays River Valley Local Municipality to engage with new technologies, industries and development opportunities.

Upgrading of the infrastructure (electrical grid and roads) will allow for connection of the Inyanda - Roodeplaas WEF, providing additional electricity and greater grid stability to the region. The local Municipality is the provider of electricity within Sundays River Valley Municipality and has recognised the supply of electricity as a priority issue in its Integrated Development Plan (IDP) based on the following identified weaknesses below:

- Scattered households impede electrification
- Some of the areas are inaccessible
- Limited substations, many areas far from the grid
- Load shedding by Eskom
- Electricity increases will affect affordability
- Over-subsidizing of consumers

Inyanda Energy intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project’s operational phase. A local community trust or organisation is intended to directly benefit from the project. .

Although historically utilised for agricultural and livestock production purposes, these land portions have mostly been purchased by Mr Ronnie Watson (one of Inyanda Energy’s associates), who is gradually converting these portions to game farming land uses. Mr Watson is investigating setting aside some of these portions as conservancy areas to offset the impact of the wind energy facility. In theory, the addition of these property portions to the disparate Groendal Nature Reserve portions will create a connection corridor between these two portions which would be desirable from a conservation perspective. Clearly, the potential, or even viability of this proposal, will need to be discussed with relevant parks and conservation bodies, at national and provincial level. It is intended to commence these focus group meetings in the Scoping phase and key stakeholders have been identified to initiate these discussions. Should the proposal be viable it would have to be subject to a biodiversity offset assessment process in the EIA phase of this reporting process.

Legal Requirements

The EIA process is guided by regulations made in terms of Chapter 5 of the National Environmental Management Act No. 107 of 1998 (NEMA). The regulations (GNR. 543) set out the procedures and criteria for the submission, processing and consideration of and decisions on applications for the environmental authorisation of activities. Three lists of activities, published on 02 August 2010, as Government Notice Numbers R.544 to 546, define the activities that require, either a Basic Assessment (applies to activities with limited environmental impacts (GN.R. 544) or within a prescribed geographical area – province (GN.R. 546)), or a Scoping and Environmental Impact Assessment (applies to activities which are significant in extent and duration) (GN.R. 545). The activities triggered by the proposed development are listed in Table 2 below.

Table 2: Listed activities potentially triggered by the proposed Inyanda Wind Energy Facility

The number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Description of each listed activity as per project description ¹ :
LISTING NOTICE 1		
Listing notice 1 of GNR 544 EIA regulations dated 18 June 2010.	(10) The construction 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;	A substation will be constructed on site which will collect power generated by the turbines, step up the voltage, and then transfer this power via an overhead power line to Eskom infrastructure (either a substation or a transmission line).
Listing notice 1 of GNR 544 EIA regulations dated 18 June 2010.	(18) The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: (i) a watercourse.	The project will involve the construction of roads and underground electrical cables which are likely to cross drainage lines or watercourses.
Listing Notice 1 of	(38) The expansion of facilities for the	Wherever practical underground cabling

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

R544 EIA Regulations dated 18 June 2010.	transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.	will link the turbines with an on-site substation proposed to be constructed as part of the facility. An overhead line will then link this substation with an Eskom substation or overhead line.
LISTING NOTICE 2		
Listing notice 2 of GNR 545 EIA regulations dated 18 June 2010.	(1) The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.	The exact amount of power to be produced by the facility will be specified in the EIR.
Listing Notice 2 of R545 EIA Regulations dated 18 June 2010.	(8) The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	Wherever practical underground cabling will link the turbines with an on-site substation proposed to be constructed as part of the facility. An overhead line will then link this substation with the nearest Eskom substation or overhead line.
Listing notice 2 of GNR 545 EIA regulations dated 18 June 2010.	(15) Physical alteration of undeveloped, vacant or derelict land for commercial and industrial use where the total area to be transformed is 20 hectares or more.	The exact construction phase footprint and operation phase footprint will be specified in the EIR.
LISTING NOTICE 3		
Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010.	(4) The construction of a road wider than 4 metres with a reserve less than 13,5 metres. (a) In the Eastern Cape: ii. Outside urban areas in: (bb) National Protected Areas Expansion Strategy Focus Areas (ee) Critical Biodiversity Areas as identified in systematic biodiversity plans (gg) Areas within 10 kilometers of National Parks	Roads will need to be constructed that will link the turbines and other infrastructure components. Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve.
Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010.	(14) The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a) In the Eastern Cape. i. All areas outside urban areas.	Vegetation will be cleared during the construction of access roads, hard standing areas, the substation and the turbine foundations. This is likely to amount to more than 5 hectares.
Listing Notice 3 of R546 EIA Regulations dated 18 June 2010.	(16) The construction of: iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse. (a) In Eastern Cape: ii. Outside urban areas. (bb) National Protected Areas Expansion Strategy Focus Areas (ff) Critical Biodiversity Areas as identified in systematic biodiversity plans (hh) Areas within 10 kilometers of National Parks	Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve.
Listing notice 3 of GNR 546 EIA	(19) The widening of a road by more than 4 metres, or the lengthening of a road by	Existing farm roads will be utilised where possible to minimise the project footprint.

regulations dated 18 June 2010.	<p>more than 1 kilometre.</p> <p>(a) In the Eastern Cape:</p> <p>ii. Outside urban areas in:</p> <p>(bb) National Protected Areas Expansion Strategy Focus Areas</p> <p>(ee) Critical Biodiversity Areas as identified in systematic biodiversity plans</p> <p>(gg) Areas within 10 kilometers of National Parks</p>	<p>These roads will need to be upgraded (widened and re-surfaced) to allow access for large trucks transporting turbine components.</p> <p>Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve.</p>
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Because the proposed development triggers listed activities from GNR.545, it will require a full Scoping and EIA. This process is regulated by Part 3 of Chapter 3 of the 2010 EIA Regulations and described in detail in this report. It is important to note that, in addition to the requirements for an authorisation in terms of the NEMA, there may be additional legislative requirements that need to be considered prior to commencing with the activity, for example: the National Heritage Resources Act (Act No 25 of 1999), the National Water Act (Act No 36 of 1998), Civil Aviation Act (Act No 74 of 1962) as amended, National Environmental Management Biodiversity Act 10 of 2004, National Forests Act 84 of 1998 and the Eastern Cape Nature and Environmental Conservation Ordinance 19 of 1974 to name the most relevant.

The Environmental Impact Assessment

Coastal & Environmental Services (CES), a well-established specialist environmental consulting firm with offices in Grahamstown, East London, Port Elizabeth, Cape Town and Maputo, Mozambique. CES have been appointed by Inyanda Energy to conduct the Environmental Impact Assessment (EIA).

The competent authority that must consider and decide on the application for authorisation in respect of the activities listed in Table 1 is the Department of Environmental Affairs (DEA), as the Department has reached agreement with all Provinces that all electricity-related projects, including generation, transmission and distribution, are to be submitted to DEA, irrespective of the nature of the applicant. This decision has been made in terms of Section 24(C)(3) of the NEMA (Act No 107 of 1998). The decision is effective for all projects initiated before, and up until, approximately 2015.

The EIA process is divided into two key phases - Scoping and Environmental Impact Assessment. This Draft Environmental Scoping Report (DSR) presents the outcomes of the first phase of the environmental impact assessment process. The Scoping Process has been undertaken to identify and describe:

- The nature of the proposed project;
- The legal, policy and planning context for the proposed project;
- Important biophysical and socio-economic characteristics of the affected environment;
- Potential environmental issues or impacts, so they may be addressed in the EIA phase;
- Feasible alternatives that must be assessed in the EIA phase;
- The Plan of Study (POS) for the EIA phase.

Provision has been made in the Scoping Phase for the involvement of Interested and Affected Parties (I&APs) in the forthcoming EIA process.

Project Description

The term wind energy describes the process by which wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. Typical turbine subsystems include:

- A rotor or blades – the portion of the wind turbine that collects energy from the wind and converts this wind energy into rotational shaft energy to turn the generator.
- A nacelle (enclosure) containing a drive train, usually including a gearbox (some turbines do not require a gearbox) and a generator which converts the turning motion of a wind turbine's blades (mechanical energy) into electricity.
- A tower, to support the rotor and drive train - the tower on which a wind turbine is mounted is not only a support structure, but it also raises the wind turbine so that its blades safely clear the ground and so it can reach the stronger winds at higher elevations.
- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.
- Turbine step-up transformer that can be externally sited, depending on the turbine model.

The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of turbines with 3 blades each up to 65m in length, therefore rotor diameters of up to 130 meters, mounted atop an 80 - 120 meter high steel or hybrid steel/concrete tower. The electricity will be fed into the national Eskom grid.

Typically, the development of the wind energy facility is divided into various phases:-

- *Pre-feasibility:* Inyanda conducts surveys and consultations to determine project permitting and feasibility study requirements. This includes visits to local authorities, civil aviation authorities, identifying local communities, wind resource evaluation from existing data, grid connectivity, environmental impact assessment requirements, logistical and project phasing requirements.
- *Feasibility* Inyanda will firm up and carry out thorough investigations to establish the actual costs, and economic viability of the project by designing the financial model with financial institutions, verifying wind resources by onsite measurement, ensuring grid connection is economical and feasible in the time frames of the project.
- *Wind Measurement:* Prior to the establishment of the full facility, it will be necessary to erect a number of wind measurement masts to gather wind speed data and correlate these measurements with other meteorological data in order to produce a final wind model of the proposed project site. The measurement campaign will last not less than 12 months in order to ensure verifiable data is used for the economics of the project.
- *Implementation:* Building of a wind farm comprises-

Civil works:

1. Roads: An internal road network will be constructed for access to each turbine and to the substation during the construction phase by construction vehicles and equipment (bulldozers, trucks, cranes etc.).
2. Platforms: An area of approximately 40mx30m (depending on the turbine type) will be established for each turbine to allow the turbine lifting and enough spacing for the cranes.
3. Turbine foundations: These will be of approximately 20mx20mx5m.
4. Cabling: Underground 22kV or 33kV electrical cables will be entrenched adjacent to the access roads wherever practical (about 1m in depth) to connect the turbines to the electrical substation to be constructed on site.
5. Civil works for the 22/132kV or 33/132kV electrical substation, including relevant buildings.

Erection/commissioning:

1. Wind turbine erection: Each turbine will be erected by utilising suitable cranes.
2. Electrical equipment: Step-up transformer, switchgears, busbars and ancillary equipment will be installed in the electrical substation.

3. Commissioning and start-up: Once connected to the Eskom distribution grid, the commissioning of the wind farm with all relevant functional tests will be carried out up until the final start-up of the whole wind farm.

Commercial operation

During the period when the turbines are operational, there are only a few crews who carry out routine maintenance requiring only light vehicles to access the site. Only major breakdowns would necessitate the use of cranes and trucks.

➤ *Timing Estimation:*

The overall wind farm construction schedule will be about 18-24 months, dependant on the procurement and delivery times of the turbine components and main equipment. Described below is a typical schedule:

- Platforms/Roads/cables laydown = 35 weeks;
 - Turbines foundations = 10 weeks for each foundation (including 8 weeks to let the foundation concrete dry – these activities are conducted simultaneously for multiple turbine foundations);
 - Civil works for the substation = 16 weeks;
 - Wind turbines/electrical substation erection = 2 turbines/week (in good low wind weather conditions);
 - Substation erection = 8 weeks; and
 - Commissioning and electrical connection = 20 weeks.
- *Refurbishment and rehabilitation of the site after operation:* Current wind turbines are designed to last for 20-25 years and this is the figure that has been used to plan the life span of a modern wind farm. If refurbishment is economical, the facility life span could be expanded by another 20-25 years. If required, decommissioning of the wind energy facility at the end of its lifespan will be undertaken in agreement with the landowners and according to the land use agreement and relevant legislation.

The Affected Environment

Climate

The Eastern Cape Province of South Africa has a complex climate due to its location at the confluence of several climatic regimes, namely temperate and subtropical. As a result there are wide variations in temperature, rainfall and wind patterns, mainly as a result of movements of air masses, altitude, mountain orientation and the proximity of the Indian Ocean.

Rainfall is distributed equally over the year with the highest rainfall generally occurring in March and November. The average annual rainfall is 451 mm with the southern slopes being wetter (average annual rainfall: 461 mm) than the northern slopes (435 mm). Thunderstorms are frequent. Temperatures as high as 44°C are not uncommon, occurring as a result of warm winds from the high plateau. In low lying areas, the average maximum temperature recorded is 32°C in January and 18°C in July. The average minimum temperature is 15°C in January and 5°C in July. Frost is experienced in winter.

Geology and topography

The Eastern Cape Province contains a wide variety of landscapes, from the stark Karoo (the semi-desert region of the central interior) to mountain ranges and gentle hills rolling down to the sea. The climate and topography gives rise to the great diversity of vegetation types and habitats found in the region.

The site characterised by a steep hills arranged on an east-west axis, with slopes facing north and south. The elevation ranges between 280 and 1400 meters above sea level. The study area is has steep hills with high summits. The site is transected by three rivers which flow in an easterly direction across the site. Furthest south is the Elands River. In approximately the centre of the site is the Kwazungu River. Furthest north is the Kariega River. The rivers are fed by numerous streams draining off the surrounding slopes.

The dominant geological feature in this area is the east-west trending Cape Fold Belt. These mountain ranges consist mostly of the folded strata of the Cape Supergroup. The study area is found to be underlain by the Table Mountain and Bokkeveld Groups, these being groups within the Cape Supergroup sequence of rocks. The coarse textured rocks of the Table Mountain Group, typically found in sharply folded mountain systems, combined with steep slopes and a high percentage of quartz sand gives rise to coarse, unstructured, shallow and nutrient poor soils.

Current land use

The study area is currently predominantly utilised for agricultural, animal husbandry and game farming purposes. The majority owner of the study area land portions in question has removed livestock from his property to stock game, and consequently, the vegetation is in fairly good condition, as indicated by the resurgence of antelope species that have begun to recolonize the area.

Vegetation and flora

The vegetation of the Eastern Cape is complex and is transitional between the Cape and subtropical floras and many taxa of diverse phytogeographical affinities reach the limits of their distribution in this region. The region is best described as a tension zone where four major biomes converge and overlap (Lubke *et al.* 1988). The dominant vegetation is Succulent Thicket (Spekboomveld or Valley Bushveld), a dense spiny vegetation type unique to this region. While species in the canopy are of subtropical affinities, and generally widespread species, the succulents and geophytes that comprise the understorey are of karroid affinities and are often localised endemics.

There are three main vegetation classifications for the area. These are Mucina and Rutherford (2006), the Subtropical Thicket Ecosystem Project (STEP) and the Succulent Karoo Ecosystem Plan (SKEP). There are five Mucina and Rutherford (2006) and six STEP Vegetation types for the general project area. Mucina and Rutherford vegetation types include: Sundays Thicket, Albany Alluvial Vegetation, Kouga Grassy Sandstone Fynbos, Kouga Sandstone Fynbos and Groot Thicket. STEP vegetation types for the area include: Baviaans Spekboom Thicket, Cockscomb Mountain Fynbos Thicket, Zuurberg Forest Thicket, Sundays Spekboomveld, Sundays Doringveld and Kromme Fynbos/Renosterveld Mosaic

Fauna

Amphibians and reptiles are well represented in sub-Saharan Africa. However, distribution patterns in southern Africa are uneven both in terms of species distribution and in population numbers (du Preez and Carruthers, 2009). Climate, centres of origin and range restriction are the three main factors that determine species distribution. The eastern coast of South Africa has the highest amphibian diversity and endemism while reptile diversity is generally highest in the north eastern extremes of South Africa and declines to the south and west (Alexander and Marais, 2010).

The Eastern Cape is home to 133 reptile species including 21 snakes, 27 lizards and eight chelonians (tortoises and turtles) (Branch,1998). The majority of these are found in Mesic Succulent Thicket and riverine habitats.

Consultation of the Animal Demography Unit historical records indicates that 15 species of reptiles are likely to occur in the project site. One of these (*Bradypodion taeniabronchum* – Elandsberg Dwarf Chameleon) is classified as Critically Endangered IUCN Red Data List.

According to historical records, 12 species of frog have been documented in the Quarter Degree Squares that the project area falls in. No species of conservation concern occur in the project area.

Nine bird species are endemic to South Africa, but there are no Eastern Cape endemics. However, there are 62 threatened species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000). Historical records indicate that there is one **Endangered** species, three **Vulnerable** species and three **Near Threatened** Species likely to be found in the area.

Large game makes up less than 15% of the mammal species in South Africa and a much smaller percentage in numbers and biomass. In developed and farming areas, this percentage is greatly reduced, with the vast majority of mammals present being small or medium-sized. The conservation status of South African mammals has recently been re-assessed and a number of species have been downgraded, for example, the African wild cat, Aardvark, Blue duiker, and Honey badger are no longer considered threatened.

Of conservation importance in the Bavianskloof Mega Reserve is the presence of leopard populations. Internationally this species is classified as Near Threatened. In South Africa this species is listed by NEM:BA (2004) as **vulnerable** meaning that it faces “a high risk of extinction in the wild in the medium-term future, although they are not critically endangered”.

The Centre for African Conservation Ecology (ACE) estimate that there are between 10-17 individuals living in the BMR and that one of the major threats to this population is its vulnerability to becoming genetically isolated. Recent studies on leopard populations in the south eastern and western region of South Africa suggest that at least 21 individuals occur in the Cape Fold Mountains with nearly half of these originating between Addo Elephant National Park in the east and Uniondale in the west (Jeanine McManus pers. comm.; 2013). The data collected from this study raises concerns that further habitat fragmentation in this area will result in further isolating these populations, especially since leopards are territorial animals with large home ranges (30 000ha for males and 15 000 for females).

According to NEM:BA, three protected mammal species and one vulnerable species have distributions that coincide with the project area. Based on habitat availability it is likely that all four of these species are likely to occur on site (Stuart and Stuart, 2007).

Socio-economic description

The proposed Inyanda Wind Energy Facility is to be developed in the Sundays River Valley Municipality situated within the Cacadu District Municipality, Eastern Cape Province. The Sundays River Municipality is located approximately 80 km north and east of the Nelson Mandela Bay Municipality and includes the coastal zone between Alexandria and the Sundays River Mouth as well as inland areas that extend to the Klein Winterhoek and Zuurberg Mountains. The main activities in the area include high intensity irrigation farming, eco-tourism and game farming.

The population in this region is diversified across race groups and cultures, and is characterised by varying socio-economic levels of development. These statistics show a predominantly black population with the majority of the population being employed or not economically active. Children constitute 26.1 % of Sunday's River Valley population, the economically active population is at 65.8 % and persons aged 65 and older is at 5.6 %.

The Cacadu District Municipality Integrated Development Plan (IDP) and the Sundays River Municipality IDP both recognize that although the electricity network within the District is generally

regarded as reasonable, there are slight disparities that exist between the different local municipalities due to their location. While the majority of the communities of most Local Municipalities have direct access to electricity there are backlogs with respect to electricity provision that need to be addressed. It is noted in the IDP that significant capital outlays will be required to upgrade both the urban and rural networks if they are to meet their target of ensuring universal access to electricity by 2014. The Sundays River Municipality recognises the need to develop alternative energy sources to meet these requirements.

The Public Participation Process

During the Scoping Phase a public participation process (PPP) will be undertaken to allow Interested and Affected Parties (I&APs) to voice their concerns and raise issues regarding the proposed project. The key elements of the process include:

- Development and distribution of a Background Information Documents (BID);
- Informing I&APs of the proposed development through newspaper advertisements, site notice boards and notification letters,
- A public meeting will be held during the 40 day public review of the Draft ESR. The availability of the report for review will be advertised in The Herald, Die Burger and the UD News, and all registered I&APs will be notified in writing of the review period and of the public meeting to be held.

Throughout this process, a register of I&APs will be compiled and maintained, together with a record of their comments and responses from the project proponent and the Environmental Assessment Practitioner. The Draft ESR will be made available to DEA and all I&APs to provide I&APs with an opportunity to review and comment on the report before it is finalised. This Draft ESR will take into account any comments received during the review period, and these will be included in the Final ESR that will be submitted to the DEA.

Issues and Concerns

Any issues identified and raised during the public consultation process, and responses thereto by the EAP, will be provided in Chapter 6 of the final scoping report.

Identification of Alternatives

Since the core business area of the project proponent is wind farm development for the generation of electricity, the fundamental alternative of a development other than to construct and operate a wind farm is not viable in this case, and will not be considered further in the EIA. Modifications or variations to the design of the wind farm that will facilitate the reduction or minimisation of environmental impacts i.e. incremental alternatives will be investigated, including modifications to the design or layout, technology and operational aspects of the proposed project.

The EIA Phase will also examine the impact of no development (i.e. the “No Go” option). The no-go alternative will be used as a baseline throughout the environmental assessment process against which potential impacts will be compared in an objective manner and will be fully assessed in the EIR.

The Way Forward – EIA Phase

This Draft Scoping Report (DSR) includes the outline of a Plan of Study (PoS) for the EIA phase, which includes Terms of Reference (ToR) for specialist studies as they are currently envisaged and the methodology that will be used to assess impacts and rate their significance. Consultation with DEA will be on going throughout this EIA. However, it is anticipated that DEA will provide relevant comment with respect to the adequacy of this Plan of Study for the EIA, as it informs the content of the Environmental Impact Report (EIR) and sufficiency thereof. The following specialist studies are

proposed for the EIA Phase of the assessment:-

- Avifaunal Assessment (and 12 month/4 season preconstruction monitoring)
- Bat Assessment (and 12 month/4 season preconstruction monitoring)
- Noise Impact Assessment
- Visual Impact Assessment
- Heritage Impact Assessment
- Archaeological Impact Assessment
- Paleontological Impact Assessment
- Ecological Impact Assessment (incorporating flora and fauna)
- Agricultural Assessment
- Socio-economic Assessment
- Water-use general authorisation

The significance of impacts will be assessed based on specialist input using a standardised rating methodology. “Significance” includes the spatial and temporal scales of impacts, the likelihood of impacts occurring, and the severity of impacts or potential benefits.

An EIR will be prepared that will describe the nature of the proposed project and its environmental setting, summarise the results of the specialist studies, and recommend practical and reasonable mitigation measures to avoid, minimise or offset any negative impacts from the development. In this regard the EIA Phase will actively engage and contribute to the planning process so as to mitigate environmental impacts through improved design and layout. The overall objective of the EIR is to provide DEA with sufficient information about the proposed project and its associated environmental and social impacts on which to make an informed decision.

An Environmental Management Programme (EMPr) will be prepared that provides practical and actionable management, monitoring and institutional measures to be undertaken during the construction, operation and decommissioning of the proposed wind energy facility. Such measures are designed to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The public participation process initiated in the Scoping Phase will continue throughout the EIA Phase.

In this regard a critical milestone of the EIA phase will be the Draft EIR and Draft EMPr. These reports will be released for public review and comment, and will also be presented to I&APs during public meetings, before they are finalised and presented to DEA. An environmental authorisation may be granted or rejected by the authority based on the review of these reports. The decision will be advertised, and registered I&APs will also be informed in writing and given the opportunity to engage in the appeal process.

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LIST OF ABBREVIATIONS

BID:	Background Information Document
CES:	Coastal and Environmental Services
CITES:	Committee for International Trade in Endangered Species
DEA:	Department of Environmental Affairs
DWA:	Department of Water Affairs
EAP:	Environmental Assessment Practitioner
EIA:	Environmental Impact Assessment
EIR:	Environmental Impact Report
EMPr:	Environmental Management Programme
ESR:	Environmental Scoping Report
GNR:	Government Notice Regulation
ha:	Hectare
I&APs:	Interested and Affected Parties
IPP:	Independent Power Producer
kV	Kilovolt
Ltd:	Limited
MW:	Mega Watts
NEMA:	National Environmental Management Act 107 of 1998 as amended in 2006
NERSA:	National Energy Regulator of South Africa
PNCO:	Provincial Nature Conservation Ordinance
PoS:	Plan of Study
PPA:	Power Purchase Agreement
PPP:	Public Participation Process
RDB:	Red Data Book
REFIT:	Renewable Feed In Tariff
SSC:	Species of Special Concern
ToR:	Terms of Reference
WT:	Wind Turbine

1. INTRODUCTION

1.1. BACKGROUND TO THE STUDY

Inyanda Energy Projects (PTY) LTD - Inyanda Energy - a renewable energy company, plans to develop a wind energy facility (or 'wind farm' to be named the Inyanda - Roodeplaat WEF) between the towns of Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa (Figure 1 overleaf). According to Inyanda, available wind data in South Africa shows this area to have favourable wind conditions sufficient to support a wind farm. This has been confirmed by on site wind monitoring that has been ongoing since June 2012. The proposed project area consists of approximately 12 000 ha located on 24 property portions illustrated in the table below (Table 1-1).

Table 1-1: Farm name and property portions comprising the study area

Farm Number	Property Portion
170	Portion 3
245	Portion 1
246	Portion 1 and Remaining Extent
247	Portion 1
248	
277	Portion 1, Remaining Extent
278	Portion 1,2, 3, 4 and remaining Extent
279	Portion 3, 4 and remaining Extent
280	Portion 1
346	Remaining Extent
347	Portion 3
348	Portion 1
350	Portion 5 and 6
364	Portion 2 and 3
588	Portion 1 and 2

The proposed Inyanda - Roodeplaat WEF will consist of approximately 35 turbines each capable of generating 1.8 – 6.15 Mega Watts (MW) of power depending on the model and size of turbine selected. The turbine footprints and associated facility infrastructure (internal access roads, substation, construction compound, batching plant and operations building) will potentially cover an area of approximately 60 ha depending on final layout design should the project proceed. An investigation of the wind regime of the site will decide the model of turbines to be installed. The facility will have a maximum generating output of up to 140 MW.

In accordance with the requirements of the National Environmental Management Act No. 107 of 1998, and relevant Environmental Impact Assessment (EIA) regulations made in terms of this Act (Government Notice No R.543) promulgated in 2010, the proposed project requires a full Scoping and EIA process to be conducted. Coastal & Environmental Services (CES) have been appointed by Inyanda Energy to conduct the EIA process.

1.2. THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The EIA process is guided by regulations made in terms of Chapter 5 of the National Environmental Management Act No. 107 of 1998 (NEMA), published as Government Notice No R.543 in Government Gazette No 33306 of 2 August 2010. The regulations set out the procedures

and criteria for the submission, processing and consideration of and decisions on applications for the environmental authorisation of activities.

Three lists of activities, published on 2 August 2010, as Government Notice Numbers R.544, R.545 and R.546, define the activities that require, respectively, a Basic Assessment (applies to activities with limited environmental impacts), or a Scoping and Environmental Impact Assessment (applies to activities which are significant in extent and duration).

The activities triggered by the proposed Inyanda - Roodeplaat wind energy project are listed in Table 1-2 below.

Table 1-2: Listed activities potentially triggered by the proposed Inyanda - Roodeplaat Wind Energy Project

The number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Description of each listed activity as per project description ² :
LISTING NOTICE 1		
Listing notice 1 of GNR 544 EIA regulations dated 18 June 2010.	(10) The construction 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;	A substation will be constructed on site which will collect power generated by the turbines, step up the voltage, and then transfer this power via an overhead power line to Eskom infrastructure (either a substation or a transmission line).
Listing notice 1 of GNR 544 EIA regulations dated 18 June 2010.	(18) The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: (i) a watercourse.	The project will involve the construction of roads and underground electrical cables which are likely to cross drainage lines or watercourses.
Listing Notice 1 of R544 EIA Regulations dated 18 June 2010.	(38) The expansion of facilities for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.	Wherever possible underground cabling will link the turbines with an on-site substation proposed to be constructed as part of the facility. An overhead line will then link this substation with an Eskom substation or overhead line.
LISTING NOTICE 2		
Listing notice 2 of GNR 545 EIA regulations dated 18 June 2010.	(1) The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.	The exact amount of power to be produced by the facility will be specified in the EIR.
Listing Notice 2 of R545 EIA Regulations dated 18 June 2010.	(8) The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	Wherever possible underground cabling will link the turbines with an on-site substation proposed to be constructed as part of the facility. An overhead line will then link this substation with the nearest Eskom substation or overhead line.
Listing notice 2 of GNR 545 EIA regulations dated 18 June 2010.	(15) Physical alteration of undeveloped, vacant or derelict land for commercial and industrial use where the total area to be transformed is 20 hectares or more.	The exact construction phase footprint and operation phase footprint will be specified in the EIR.
LISTING NOTICE 3		
Listing notice 3 of GNR 546 EIA regulations dated	(4) The construction of a road wider than 4 metres with a reserve less than 13,5 metres.	Roads will need to be constructed that will link the turbines and other infrastructure components.

² Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

<p>18 June 2010.</p>	<p>(a) In the Eastern Cape: ii. Outside urban areas in: (bb) National Protected Areas Expansion Strategy Focus Areas (ee) Critical Biodiversity Areas as identified in systematic biodiversity plans (gg) Areas within 10 kilometers of National Parks</p>	<p>Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve. Refer to Figure 1-1 overleaf.</p>
<p>Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010.</p>	<p>(14) The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a) In the Eastern Cape. i. All areas outside urban areas.</p>	<p>Vegetation will be cleared during the construction of access roads, hard stand areas, the substation and the turbine foundations. This is likely to amount to more than 5 hectares.</p>
<p>Listing Notice 3 of R546 EIA Regulations dated 18 June 2010.</p>	<p>(16)The construction of: iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse. (a) In Eastern Cape: ii. Outside urban areas. (bb) National Protected Areas Expansion Strategy Focus Areas (ff) Critical Biodiversity Areas as identified in systematic biodiversity plans (hh) Areas within 10 kilometers of National Parks</p>	<p>Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve. Refer to Figure 1-1 overleaf.</p>
<p>Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010.</p>	<p>(19) The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (a) In the Eastern Cape: ii. Outside urban areas in: (bb) National Protected Areas Expansion Strategy Focus Areas (ee) Critical Biodiversity Areas as identified in systematic biodiversity plans (gg) Areas within 10 kilometers of National Parks</p>	<p>Existing farm roads will be utilised where possible to minimise the project footprint. These roads will need to be upgraded (widened and re-surfaced) to allow access for large trucks transporting turbine components. Parts of the site are identified as focus areas for the expansion of National Parks. Parts of the site are identified as a CBA 1. The site is within 10 kilometers of the Groendal Nature Reserve.</p>

Because the proposed development triggers a number of listed activities from GNR.545, it will require a full Scoping and EIA. This process (Figure 1-2) is regulated by Chapter 3 of Part 3 of the EIA regulations and described in detail in Appendix A of this report.

The competent authority that must consider and decide on the application for authorisation in respect of the activities listed in Table 1-1 is the Department of Environmental Affairs (DEA), as the Department has reached agreement with all Provinces that all electricity-related projects, including generation, transmission and distribution, are to be submitted to DEA, irrespective of the nature of the applicant. This decision has been made in terms of Section 24(C)(3) of the National Environmental Management Act (Act No 107 of 1998). The decision is effective for all projects initiated before, and up until, approximately 2015.

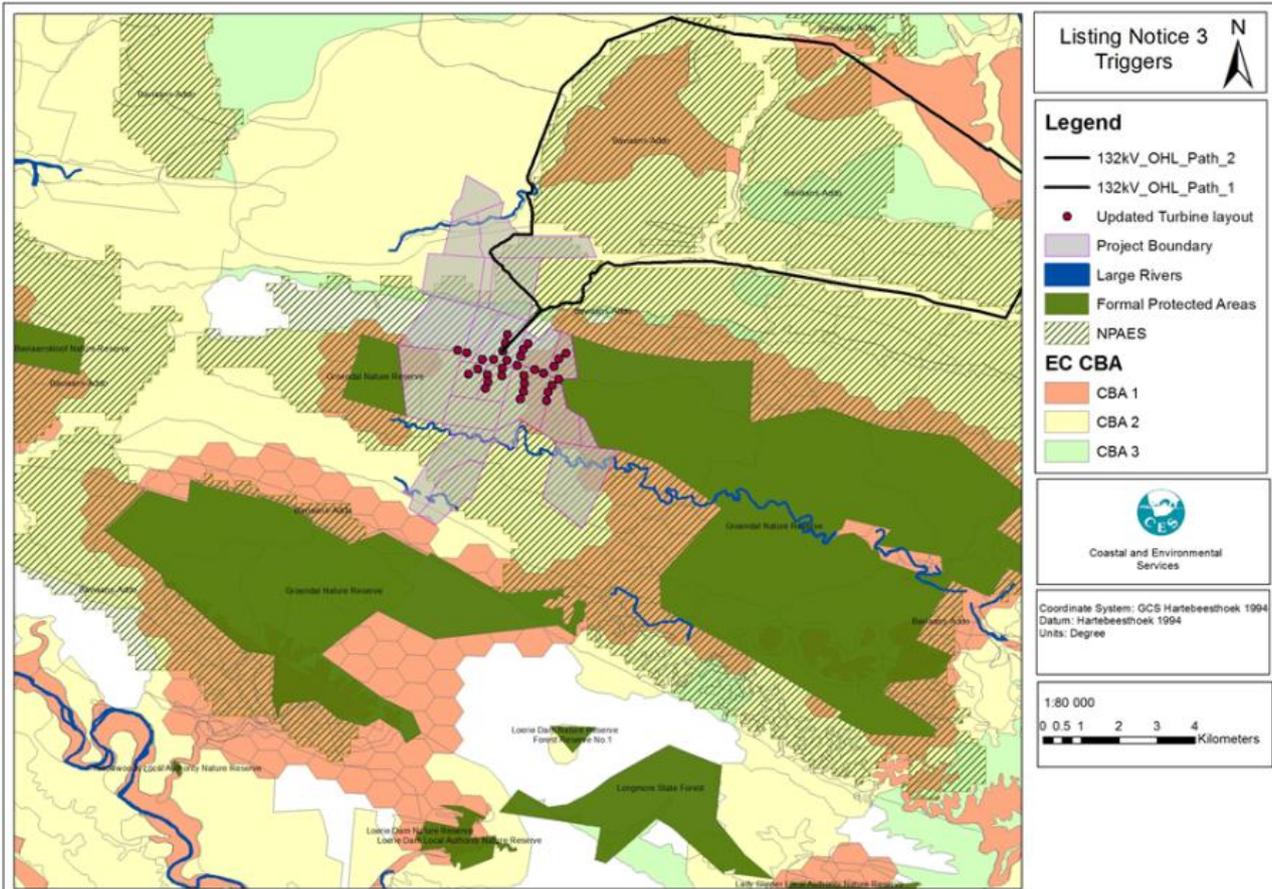


Figure 1-1: Protected Areas, National Protected Expansion Strategy Areas and Critical Biodiversity Areas found within or near the project site and which trigger Listing Notice 3. Note Groendal Nature Reserve that adjoins the project study area on the eastern and western boundaries.

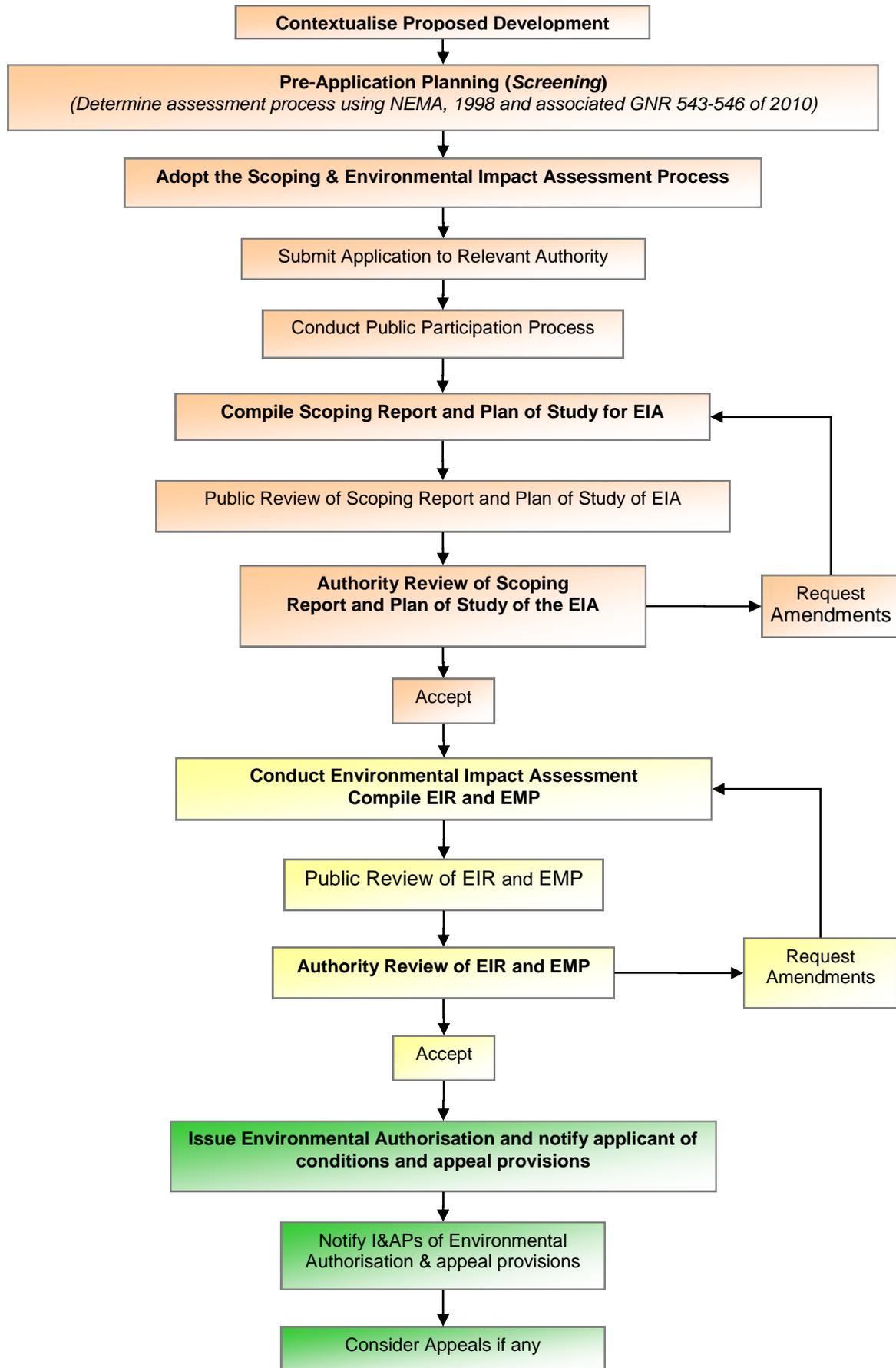


Figure 1-2: The EIA process under current legislation (NEMA 1998)

In addition to the requirements for an authorisation in terms of the NEMA, there may be additional legislative requirements that need to be considered prior to commencing with the activity, for example: the National Heritage Resources Act (Act No 25 of 1999), the National Water Act (Act No 36 of 1998), Civil Aviation Act (Act No 74 of 1962) as amended, National Environmental Management Biodiversity Act 10 of 2004, National Forests Act 84 of 1998 and the Eastern Cape Nature and Environmental Conservation Ordinance 19 of 1974 to name the most relevant. These are discussed in detail in Chapter 3 of this report.

1.3. MOTIVATION FOR ACTIVITY

According to regulation 28 (1) of the EIA regulations (2010), *A scoping report must include –*
ii) a description of the need and desirability of the proposed activity

Electricity supply

According to the project proponent, the establishment of the proposed WEF will contribute to strengthening the existing electricity grid for the area and will aid the government in achieving its goal of a 30% share of all new power generation being derived from Independent Power Producers (IPPs). In addition to the above-mentioned potential benefits, the proposed project site was selected due to:

- Good wind resources suitable for the installation of a large wind energy facility.
- The proposed project site has localised wind potentially intensified by a funnelling effect caused by surrounding topographical features.
- The site is accessible from gravel roads off the R75 which will assist in the transportation of wind turbine components to the site.
- The surrounding area is not densely populated.
- There is potential and a desire within the Sundays River Valley Local Municipality to engage with new technologies and industries.

The Inyanda - Roodeplaat WEF will provide additional electricity and greater grid stability. Upgrading of the local electricity supply infrastructure may be required depending on the actual maximum installed capacity of the WEF. The local Municipality is the provider of electricity within Sundays River Valley Municipality and has identified the supply of electricity as a priority issue in its Integrated Development Plan (IDP) based on the weaknesses specific to electricity supply below:

- Scattered households impede electrification
- Some of the areas are inaccessible
- Limited substations, many areas far from the grid
- Load shedding by Eskom
- Electricity increases will affect affordability
- Over-subsidizing of consumers

Climate change

Most of South Africa's energy comes from non-renewable sources like coal, petroleum, natural gas, propane, and uranium; however the proponents of renewable energy sources like biomass, geothermal energy, hydropower, solar energy, and wind energy is a major factor that the South African sector need to consider greatly. It is estimated that approximately 1% only of the country's electricity is currently generated from renewable energy sources. The energy sector in South Africa alone emits approximately 380 988.41 Green House Gases (GHGs) (Eastern Cape Climate Change Conference, 2011). South Africa's total emissions was estimated to be 461 million tonnes CO₂ equivalent in the year 2000. Approximately 83% of these emissions were associated with energy supply and consumption (380 988.41 GHGs), 7% from industrial processes, 8% from agriculture, and 2% from waste. Eskom currently generates 95% of the electricity used in South Africa with an approximate 40.87 GW net maximum installed capacity.

By the year 2020 an additional 20 GW generation capacity would be required and up to 40 GW by 2030 to sustain the energy demands in the country. National energy policy has called for a change in the energy mix to reduce the dependency of the economy on fossil fuels and facilitate the uptake of renewable energy resources. This is in accordance with the prescriptions of the United Nations Convention on Climate Change 1994 (UNFCCC) and its associated Kyoto protocol of 1997, South Africa has put in place a long term mitigation scenario (LTMS) by which the country aims to develop a plan of action which is economically viable and internationally aligned to the world effort on climate change. During this period (2003-2050) South Africa will aim to take action to mitigate GHG emissions by 30% to 40% by the year 2050. This is a reduction of between 9000 tons and 17 500 tons of CO₂ by 2050. In January 2010, South Africa pledged to the UNFCCC, a 34% and 42% reduction against business as usual emissions growth trajectory by the year 2020 and 2025 respectively.

Due to concerns such as climate change, and the on-going exploitation of non-renewable resources, there is increasing international pressure on countries to increase their share of renewable energy generation. The South African Government (White Paper on Renewable Energy, 2003) has recognised the country's high level of untapped renewable energy potential and the equally high level of current fossil-fired power generation, and has placed targets of 10 000 GWh of renewable energy (biomass, wind, solar and small hydro) by 2013 in order to begin to redress the balance..

South Africa's current electricity generation and supply system is over stretched with the Eastern Cape Province constrained by the availability and stability of electricity supply reliant on the import of power. Under the IPP Producer Procurement Programme, South Africa will seek to procure the first 3725 MW of renewable capacity by 2016 (1850 MW of on-shore wind) to meet the renewable energy target of 4000 MW by 2014 and 9000 MW by 2030. Fossil fuels supply 90% of South Africa's energy needs with demands on energy supply increasing by 3.5% in the next 20 years. The establishment of the proposed Inyanda - Roodeplaat WEF will assist in strengthening the existing electricity grid for the area and contribute to government achieving its goal of a 30% share of all new power generation being derived from Independent Power Producers (IPP).

Social and economic development

Inyanda Energy intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the projects operational phase. A local community trust or organisation is intended to directly benefit from the project.

Conservation potential

As noted above, the proposed wind energy facility is located within an area designated as a National Protected Areas Expansion Strategy Area (PAES). The project study area forms a contiguous corridor linking two disparate sections of the adjacent Groendal Nature Reserve (Figure 1-1). Although historically utilised for agricultural and livestock production purposes, these land portions have mostly been purchased by Mr Ronnie Watson (one of Inyanda Energy's associates), who is gradually converting these portions to game farming land uses. Mr Watson is investigating setting aside some of these portions as conservancy areas to offset the impact of the wind energy facility. In theory, the addition of these property portions to the disparate Groendal Nature Reserve portions will create a connection corridor between these two portions which would be desirable from a conservation perspective. The potential, or even viability of this proposal, will need to be discussed with relevant parks and conservation bodies, at national and provincial level. It is intended to commence these focus group meetings in the Scoping phase and key stakeholders have been identified to initiate these discussions. Should the proposal be viable it would have to be subject to a biodiversity offset process assessment in the EIA phase of this reporting process.

1.4. SCOPING PHASE

The proposed project is currently in the Scoping Phase. The aim of this phase is to determine, in detail, the scope of the EIA required for the proposed activities. The principal objectives of the Scoping Phase in accordance with the regulatory requirements are to:

- Describe the nature of the proposed project;
- Enable preliminary identification and assessment of potential environmental issues or impacts to be addressed in the subsequent EIA phase;
- Define the legal, policy and planning context for the proposed project;
- Describe important biophysical and socio-economic characteristics of the affected environment;
- Undertake a public participation process that provides opportunities for all Interested and Affected Parties (I&APs) to be involved;
- Identify feasible alternatives that must be assessed in the EIA phase; and
- Define the Plan of Study (PoS) for the EIA phase.

1.5. THE SCOPING REPORT

This report is the first of a number of reports that will be produced in the EIA process (see Figure 1-2 above). The scoping report has been produced in accordance with the requirements as stipulated in Section 28 of the EIA regulations (GNR 543), which clearly outlines the content of a scoping report, and Sections 54-57 which cover the activities necessary for a successful Public Participation Process (PPP). Section 1.5.1 below provides the detailed structure of this scoping report and section 1.5.2 that follows outlines the limitations and assumptions under which this report was compiled.

1.5.1. Structure

The structure of the report is as follows:

Chapter 1 - Introduction: Provides background information on the proposed project, a brief description of the EIA process required by NEMA and its associated regulations, and describes the key steps in the EIA process that have been undertaken thus far, and those that will be undertaken in the future. The details and expertise of the Environmental Assessment Practitioner (EAP) who prepared this report are also provided in this Chapter.

Chapter 2 – Project description: Provides a description of the proposed development, the property on which the development is to be undertaken and the location of the development on the property. The technical details of the process to be undertaken are also provided in this Chapter.

Chapter 3 – Relevant Legislation: Identifies all the legislation and guidelines that have been considered in the preparation of this scoping report.

Chapter 4 – Description of the affected environment: Provides a brief overview of the biophysical and socio-economic characteristics of the site and its environs that may be affected by the proposed development compiled largely from published information, but supplemented by information from a site visit.

Chapter 5 – Public Participation Process: Provides details of the public participation process conducted in terms of Regulation 28(a) including:

- The measures undertaken thus far to notify I&APs of the application;
- Proof that notice boards, advertisements and notices notifying potential I&APs of the application have been displayed, placed or given;
- A list of all persons and organisations that were identified and registered in terms of Regulation 57 as I&APs in relation to the application.

Chapter 6 – Issues identified during Scoping: Provides a description of the key issues that have been identified by the project team and through discussions with I&APs thus far in the Scoping Phase, and that will be assessed in the EIA phase.

Chapter 7 - Alternatives: Provides a brief discussion of the feasible and reasonable alternatives to the proposed project that have been identified and considered, some of which will be investigated further in the EIA Phase.

Chapter 8 - Plan of Study: Sets out the proposed approach to the environmental impact assessment of the proposed project including:

- A description of the scope of work that will be undertaken as part of the EIA phase, including any specialist reports or specialised processes, and the manner in which the described scope of work will be undertaken;
- An indication of the stages at which the competent authority will be consulted;
- A description of the proposed methodology for assessing the environmental issues and alternatives, including the option of not proceeding with the proposed development;
- Particulars of the public participation process that will be conducted during the EIA phase; and
- Any specific information required by the authority.

References: Cites any texts referred to during preparation of this report.

Appendices: Containing all supporting information

1.5.2. Assumptions and Limitations

This report is based on currently available information and, as a result, the following limitations and assumptions are implicit in it:

- Descriptions of the natural and social environments are based on limited fieldwork and available literature. More information will be provided in the EIA phase based on the outcomes of the specialist studies.
- The report is based on a project description taken from preliminary design specifications and site layouts for the proposed wind energy facility that have not yet been finalised and are likely to undergo a number of iterations and refinements before they can be regarded as definitive. All potential turbine array alternatives will, however, be contained within the property boundaries of the study area.
- The preliminary turbine site layout and associated infrastructure will be presented in the EIA phase and subject to the necessary specialist assessments. It is anticipated that this preliminary layout will be further refined as per the outcomes of these studies and overall EIA findings.

1.6. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

According to regulation 17 of the EIA regulations (2010), *An EAP must –*
(a) be independent; and
(b) have expertise in conducting environmental impact assessments, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity

In fulfilment of the above-mentioned legislative requirement, provided below are the details of the Environmental Assessment Practitioner (EAP) that prepared this final scoping report as well as the expertise of the individual members of the study team.

1.6.1. Details of the Environmental Consultant

Coastal and Environmental Services (CES)

Physical Address: 67 African Street, Grahamstown 6139
Postal Address: P.O. Box 934, Grahamstown 6140
Telephone: +27 46 622 2364
Fax: +27 46 622 6564
Website: www.cesnet.co.za
Email: info@cesnet.co.za

1.6.2. Expertise of the Consultancy and Environmental Assessment Practitioner (EAP)

CES is a specialist environmental consulting firms in southern Africa. Established in 1990, and with offices in Grahamstown, East London, Port Elizabeth, Cape Town and Maputo, they primarily specialise in assessing the impacts of development on the natural, social and economic environments. CES's core expertise lies in the fields of strategic environmental assessment, environmental management plans, environmental management systems, ecological/environmental water requirements, environmental risk assessment, environmental auditing and monitoring, integrated coastal zone management, social impact assessment and state of environment reporting. In addition to adhering to all relevant national legislative requirements, CES is often required to review and summarise for specific projects, acquisition of equity funding from the majority of financial institutions demands that developments must meet certain minimum standards that are generally benchmarked against the Policy and Performance Standards of the International Finance Corporation and the World Bank Operational Directives and Policies. CES has worked on large projects in throughout Africa and the Indian Ocean islands.

Provided below are short *curriculum vitae* (CVs) of each of the team members involved in the proposed project EIA to date, as well as the EAP and Project Leader, Marc Hardy.

Dr. Kevin Whittington-Jones

(Role: Report Review)

Kevin holds a PhD in Environmental Biotechnology and an MSc in Zoology (marine ecology) and is a Director at CES. His professional interests include environmental business risk, management systems, waste management and climate change. Prior to joining CES he held various academic posts at Rhodes University, including that of Senior Lecturer at the Rhodes Investec Business School. Kevin has consulted extensively on environmental issues throughout Africa, including South Africa, Namibia, Swaziland, Mozambique, Sierra Leone, Kenya, Madagascar and Egypt. In addition to routine environmental impact assessments, waste management specialist studies and environmental due diligence and site contamination assessments, he has been actively involved in a number of climate change-related projects. These include the climate change risk assessment for all South African ports, the Greenhouse Gas Assessments for two biofuel projects and a heavy mineral mining operation and the climate change strategy for the Eastern Cape Province of South Africa. He has also been involved in EIAs for numerous wind farm projects around South Africa.

Mr Marc Hardy

(Role: Project Leader and Environmental Assessment Practitioner - EAP)

Marc holds a M. Phil (Environmental Management) from the University of Stellenbosch's School of Public Management and Planning. His professional interests include environmental impact reporting for linear, energy and bulk infrastructure projects, strategic environmental policy development and reporting, compliance monitoring and environmental auditing. Before entering the consulting field he gained extensive experience in the EIA regulatory field whilst in the employ of the Gauteng Department of Agriculture, Conservation and Environment being responsible for the review of infrastructure projects such as the Gautrain Rapid Rail Link and representing the Department on various spatial and environmental planning project steering committees. Prior to joining CES Marc has been project manager for, amongst others, the Dinokeng EMF (Gauteng), the Milnerton Refinery to Ankerlig Power Station Liquid Fuels Transportation Infrastructure Project (on behalf of Eskom Generation – Cape Town), numerous Eskom Transmission and Distribution power line and substation EIAs countrywide, mining EMPR compliance audits, the Return-To-Service compliance audits for Camden, Grootvlei and Komati Power Stations (Mpumalanga Province) and the new high hazard waste management facility for the Coega Development

Corporation (Coega IDZ). He is currently managing the EIA processes for numerous large infrastructure, renewable energy and mining developments throughout Africa.

Ms Amber Jackson

(Role: Project Manager and report production)

Ms Amber Jackson, has an M.Phil in Environmental Management from the University of Cape Town. Topics covered included environmental management theory, social and ecological systems, climate change and environmental law. With a dissertation in food security that investigated the complex food system of soft vegetables produced in the Philippi Horticultural Area and the soft vegetables purchased at different links, both formal and informal, in the food system. Prior to this she obtained a BSc degree in Zoology and 'Ecology, Conservation and Environment' and a BSc (Hons) in 'Ecology, Conservation and Environment' from the University of the Witwatersrand. Her honours thesis title was: Landscape Effects on the Richness and Abundance of the Herpetofauna in the Kruger National Park.

Ms Tarryn Martin

(Role: Report Production and botanical specialist)

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and a MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C₃ and C₄ Panicoid and non-Panicoid grasses within the context of climate change. She conducts vegetation assessments including vegetation and sensitivity mapping to guide developments, thereby minimising their impacts on sensitive vegetation. Her experience includes local South African Projects as well as international projects in Mozambique.

Mr Justin Green

(Role: Public Participation and report production)

Justin has a B.Sc. degree in Zoology and Entomology as well as a Post Graduate Diploma in Enterprise Management from Rhodes University. Justin's research interests include a broad range of environmental conservation focussing on African mammology and estuarine ecology with the main focus on invertebrate faunal community structure. Justin is currently employed in the Grahamstown office of CES.

2. PROJECT DESCRIPTION

According to regulation 28 (1) of the EIA regulations (2010), A scoping report must include –

- (b) a description of the proposed activity;
- (d) a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is –
 - (i) a linear activity, a description of the route of the activity; or
 - (ii) an ocean-based activity, the coordinates where the activity is to be undertaken

This chapter identifies the location and size of the site of the proposed Inyanda-Roodeplaar WEF, and provides a description of its various infrastructure components and arrangements on the site.

2.1. LOCATION AND SITE DESCRIPTION OF THE PROPOSED PROJECT

The proposed wind farm is located in the Sundays River Valley Municipality within the Cacadu District Municipality, Eastern Cape Province, South Africa (Figure 2-1 and 2-2). The project has a study area of approximately 12 000 ha located on 24 property portions which are listed in Table 1-1. These farms are currently used for animal husbandry and agriculture, primarily the grazing of domestic and game animals, as well as for conservation and tourism. A more detailed description of the activities associated with the proposed wind energy facility is contained in Section 2.2.

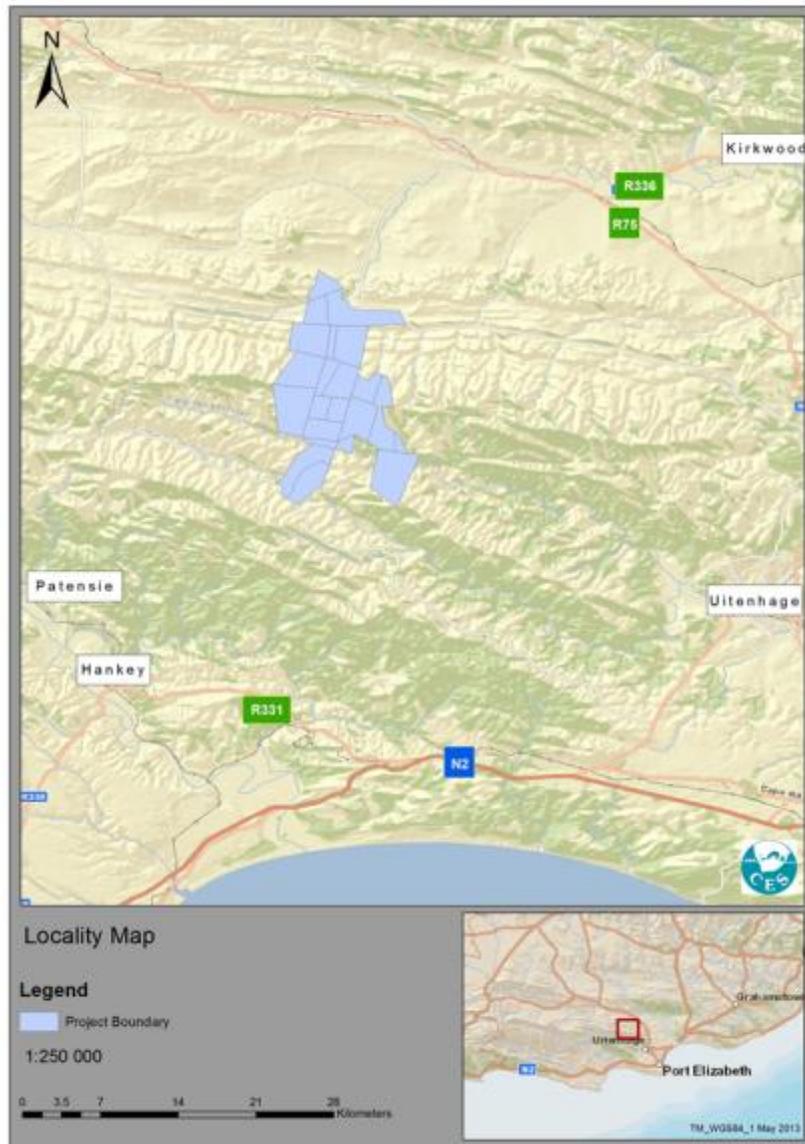


Figure 2-1: Location of the proposed Inyanda-Roodeplaar wind energy project.

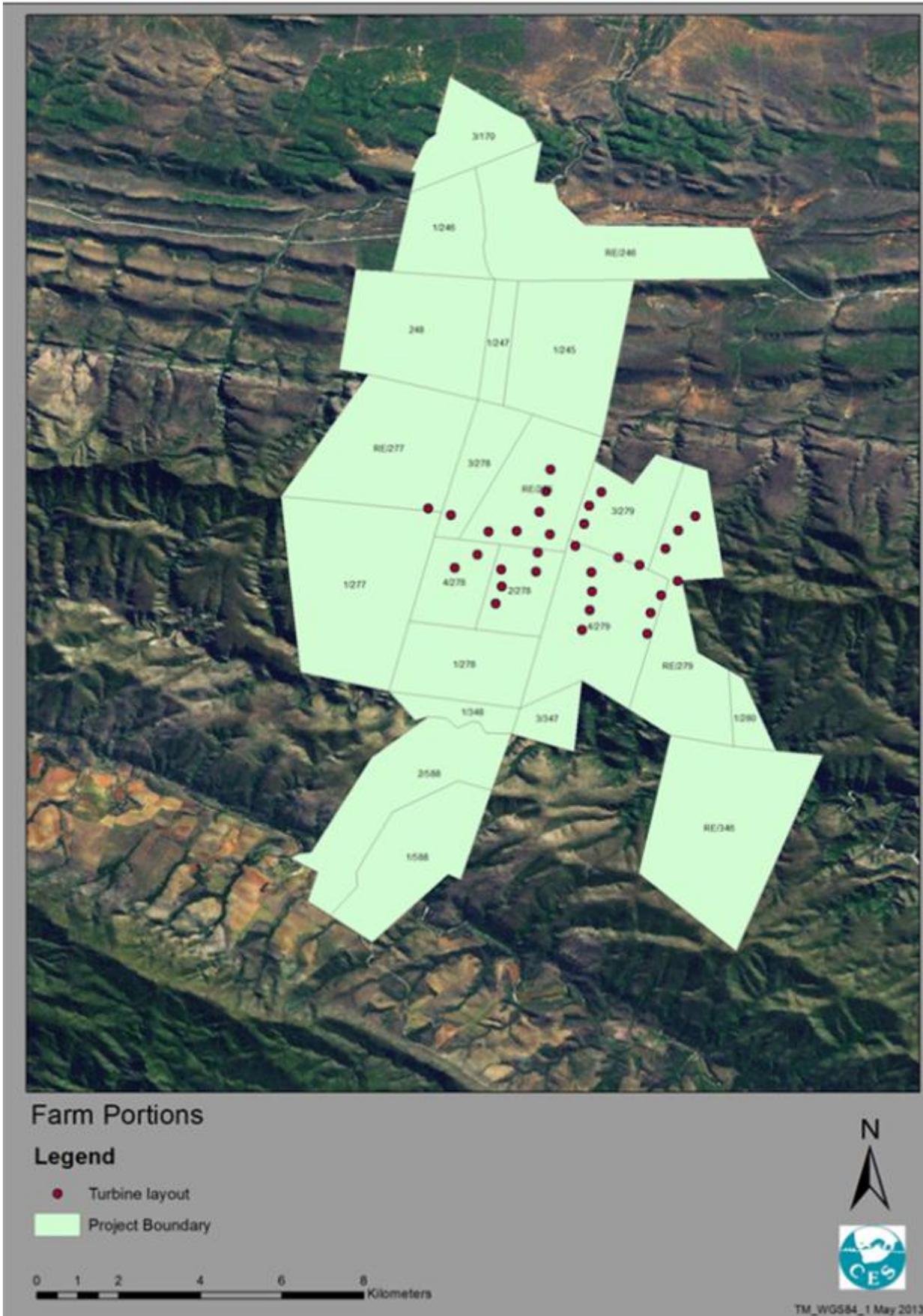


Figure 2-2: The property portions and turbine locations of the proposed Inyanda-Roodeplaats WEF. Road and cable layouts still need to be defined but will follow the turbine arrays as closely as possible. Road access to the project area is from the north (R75)..

2.2. DETAILED DESCRIPTION OF THE PROPOSED PROJECT

The wind energy facility which will be spread over 24 adjacent property portions in the project area. These land portions are planned to host up to 35 turbines, each with a nominal power output ranging between –1.8 – 6.15 Mega Watts (MW). The maximum total potential output of the wind farm would be up to 140 MW, which will serve to further support the regional and national power balance. The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of 3 blades each up to 65m in length therefore creating rotor diameters of up to 130 meters mounted atop a 80 - 120 meter high steel (or hybrid steel/concrete) tower. Other infrastructure components associated with the proposed wind energy facility are *inter alia*:

- Concrete or rock adaptor foundations to support the wind turbine towers.
- Internal access roads to each turbine - approximately 6 meters wide.
- Underground cables connecting the wind turbines wherever practical.
- 132kV electrical substation.
- Possible upgrading of existing roads for the transportation of the turbines to the wind energy facility.
- Buildings to house the control instrumentation, as well as a store room for the maintenance equipment.
- Construction compound and batching plant

2.2.1. Production of electricity from wind

Wind energy is a form of solar energy. Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and rotation of the earth. Wind flow patterns are modified by the earth's terrain, bodies of water, and vegetation. This wind flow or motion energy (kinetic energy) can be used for generating electricity. The term “wind energy” describes the process by which wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. A typical wind turbine consists of (refer to Figure 2-3):

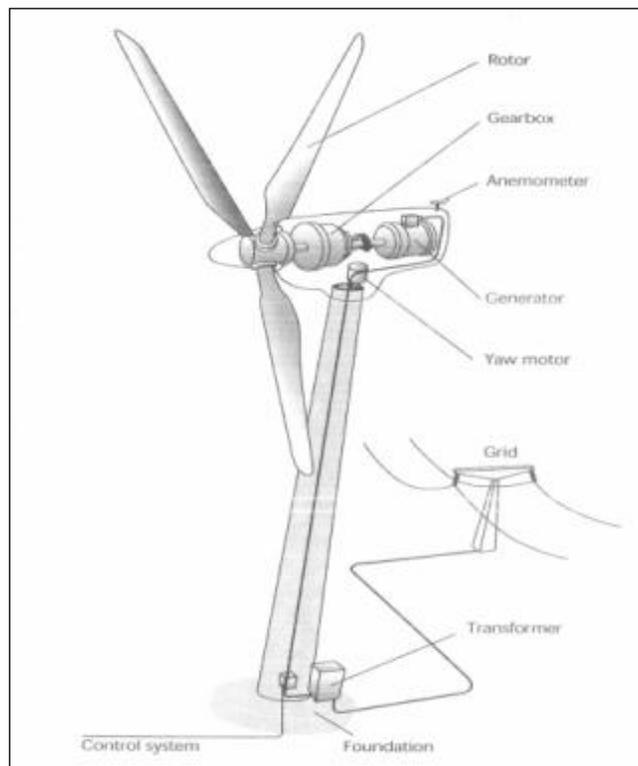


Figure 2-3: Illustration of the main components of a typical wind turbine. Note that certain models have an internal transformer.

- A *rotor*, with 3 blades, which react with the wind and convert the energy into rotational motion;
- A *nacelle* which houses the equipment at the top of the tower;
- A *tower*, to support the nacelle and rotor;
- *Electronic equipment* i.e. controls, transformers, electrical cables and switchgear, ground support equipment, and interconnection equipment; and
- Turbine step-up transformer which can be externally sited to the turbine (refer to Plate 2-1), alternatively, depending on the turbine model this may be inside the turbine structure.

The amount of energy which the wind transfers to the rotor depends on the density of the air (the heavier the air, the more energy received by the turbine), the rotor area (the bigger the rotor diameter, the more energy received by the turbine), and the wind speed (the faster the wind, the more energy received by the turbine). Provided in the sections that follow, is a detailed discussion on the various components of the proposed project.



Plate 2-1: Photographs illustrating the external turbine step-up transformer

2.2.2. Stages of wind farm development

Typically, the development of a wind farm is divided into four phases namely:-

- Pre-feasibility

- Feasibility
- Wind Measurement
- Implementation

Each of the above-mentioned phases is described in detail in sections below.

2.2.3. Pre-feasibility

During the pre-feasibility phase, the proponent conducts surveys to ensure that obvious issues surrounding the project should not impact on the progress and the final acceptance of the project. This includes visits to local authorities, civil aviation authorities, identifying local communities, wind resource evaluation from existing data, grid connectivity, environmental impact assessment, logistical and project phasing requirements.

2.2.4. Feasibility

During the feasibility phase the proponent will firm up and carry out thorough investigations to establish the actual costs, and economic viability of the project by designing the financial model with financial institutions, verifying wind resources by onsite measurement, ensuring grid connection is economical and feasible in the timeframes of the project and identifying possible off-takers for the electricity. Once the feasibility studies are complete the proponent will identify which parts of the project will be constructed first. Then, in an organised fashion the project will be expanded according to the availability of grid capacity and turbines.

2.2.5. Wind Measurement

It is necessary to erect a wind measurement mast to gather wind speed data and correlate these measurements with other meteorological data in order to produce a final wind model of the proposed project site. A measurement campaign of at least 12 months in duration is necessary to ensure verifiable data is obtained. The project proponent has already erected two masts (a 60 m and 80 m mast) in the project study area in June 2012 (Plate 2-2) and has commenced with the data capturing campaign. This data will advise on the economics of the project and finalise the positions of the wind turbines. The masts are 'marked' as per the requirements of the Civil Aviation Authority.



Plate 2-2: An example of a meteorological mast

2.2.6. Implementation

The construction of a wind farm is divided into three phases namely:-

- Civil works
- Erection/commissioning
- Operational

Each of the above-mentioned phases is described in detail below.

Civil works

A temporary 'crane hardstanding' is required at each turbine foundation site to ensure safe and stable access by heavy machinery and equipment (bulldozers, trucks, cranes etc.) during the construction phase. These platforms will be connected by access roads (if none currently exists) that must meet the following requirements:

- Approximately 5 m width running surface on straight sections with 0.5 m shoulder clearance on either side of the road (6 m clearance) (excluding drainage where necessary);
- Running surface depth typically 250-450mm suitable stone material;
- Maximum 11% slope; and

Geotechnical studies and foundation works

A geotechnical study of the area is always undertaken for safety purposes, usually after the environmental authorisation has been secured. This comprises drilling, penetration and pressure assessments. For the purpose of the foundations, approximately 500 m³ of spoil substrate would need to be excavated for each turbine of the dimensions described above. These excavations are then filled with steel-reinforced concrete (Plate 2-3). The foundations can vary according to the quality of the soil. The main dimensions for the foundation of a 3MW/100m high wind turbine are shown in Figure 2-4 with underground foundation, tower base, above ground foundation, and ground level.



Plate 2-3: Concrete pouring of a turbine foundation – note the tower base collar in the foreground

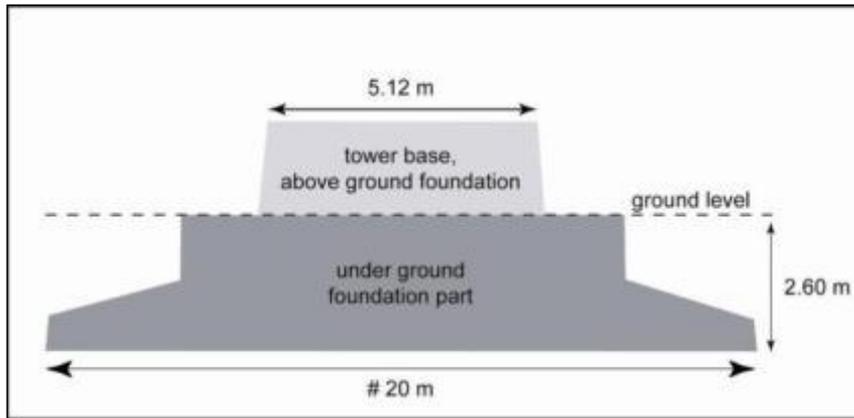


Figure 2-4: The main dimensions for the foundation of a 3MW/100m high wind turbine

Electrical cabling and substation

Electrical and communication cables will be entrenched (approximately 1m deep) and be routed adjacent to the access roads.

The 132kV substation will comprise an area of about 5 000 m² (0.5 ha) which will be fenced. Standard foundations for the electrical equipment will be constructed.

Erection/commissioning

Turbine erection

The process for erection is around 3 days per turbine if the weather conditions permit and utilises heavy lift cranes in the assembly process (Plate 2-4).

Electrical connection

Each turbine is often fitted with its own transformer that steps up the voltage usually to 22kV or 33kV. The entire wind farm is then connected to the “point of interconnection” which is the electrical boundary between the wind farm and the municipal or national grid. Most of these works will typically be carried out by and in agreement with the transmission or distribution company (line upgrade, connection to the sub-station, burial of the cables etc.) Eskom, the local Municipality, or an independent system operator as the case may be, although installation of the substation and burying 22kV or 33kV cables will typically be undertaken by the project owner. . The electricity will be fed into the national ESKOM grid.

The interconnection of the wind farm to the Eskom Distribution electrical grid will require the construction of a 132kV substation on the project site to step up the 22kV or 33kV turbine supply. Various route alternatives for the power lines and project substation site alternatives line will be presented in the EIR phase.

2.2.7. Operational phase

During the period when the turbines are operational, on-site human activity drops to a minimum, and includes routine maintenance requiring only light vehicles to access the site. Only major breakdowns would necessitate the use of cranes and trucks.

2.2.8. Timing estimation

Based on existing publications, the development, construction and implementation of a wind farm of these approximate dimensions would require about 18-24 months, depending on the delivery

times of the main equipment. Described below is a typical schedule:

- Platforms/Roads/cables laydown = 35 weeks;
- Turbines foundations = 10 weeks for each foundation (including 8 weeks to let the foundation concrete dry – these activities are conducted simultaneously for multiple turbine foundations);
- Civil works for the substation = 16 weeks;
- Wind turbines/electrical substation erection = 2 turbines/week (in good low wind weather conditions);
- Substation erection = 8 weeks; and
- Commissioning and electrical connection = 20 weeks.



Plate 2-4: Assembly and erection of the tower sections using cranes

2.2.9. Refurbishment and rehabilitation of the site after operation

Current wind turbines are designed to last for over 25 years and this is the figure that has been used to plan the life span of a modern wind farm. Should the re-powering of the wind farm be financially, environmental and socially viable, the life span can be extended by another 20-25 years. Should the wind farm be decommissioned, Inyanda Energy Projects (PTY) LTD undertakes to dismantle all wind turbines and foundations in line with all relevant legislation.

2.2.10. Conceptual layout

Figure 2-2 is the preliminary layout that has been developed taking the local social and ecological sensitivities identified to date into account (refer to chapter 4). The final road layout and cable routing will be defined at a later stage based on the definition of the final locations of the turbines. The final layout will maximise the use of existing tracks where possible.

3. RELEVANT LEGISLATION

According to regulation 28 (1) and (2) of the EIA regulations (2010), *A scoping report must include –*
 1(f) *an identification of all legislation and guidelines that have been considered in the preparation of the scoping report*
 (2) *In addition, a scoping report must take into account any guidelines applicable to the kind of activity which is the subject of the application.*

In line with the above-mentioned legislative requirement, the development of the proposed Inyanda-Roodeplaat wind energy project, described in Chapter 2 above, will be subject to the requirements of a number of laws both international and national. These include:

3.1. INTERNATIONAL

3.1.1. *The 1992 United Nations Framework Convention on Climate Change (UNFCCC)*

The UNFCCC is a framework convention which was adopted at the 1992 Rio Earth Summit. South Africa signed the UNFCCC in 1993 and ratified it in August 1997 (Glazwesky, 2005). The stated purpose of the UNFCCC is to, “*achieve....stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system*”.

Relevance to the proposed project:

The UNFCCC is relevant in that the proposed project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity, and will assist South Africa to begin demonstrating its commitment to meeting international obligations.

3.1.2. *The Kyoto Protocol (2002)*

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

Relevance to the proposed project:

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

3.2. NATIONAL

3.2.1. *The Constitution Act (108 of 1996)*

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

- a) *To an environment that is not harmful to their health or well-being; and*
- b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:
 - (i) *Prevent pollution and ecological degradation;*
 - (ii) *Promote conservation; and*

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

Relevance to the proposed project:

Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and
Obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.

3.2.2. The National Environmental Management Act (NEMA) (107 of 1998)

The objective of NEMA is: “*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; and to provide for matters connected therewith.*” A key aspect of NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. The proposed development must be assessed in terms of possible conflicts or compliance with these principles. As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with these principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

NEMA introduces the duty of care concept, which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution, and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons. Employees who refuse to perform environmentally hazardous work, or whistle blowers, are protected in terms of NEMA. In addition NEMA introduces a new framework for environmental impact assessments, the EIA Regulations (2010) discussed previously.

Relevance to the proposed project:

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

3.2.3. The National Environment Management: Biodiversity Act (10 of 2004)

This Act provides for the management and conservation of South Africa’s biodiversity within the framework of the National Environmental Management Act 107 of 1998 (see Box 2). In terms of the Biodiversity Act, the developer has a responsibility for:

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

The objectives of this Act are:

- d) *To provide, within the framework of the National Environmental Management Act, for –*
 - (iv) *The management and conservation of biological diversity within the Republic;*
 - (v) *The use of indigenous biological resources in a sustainable manner.*

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations, which were promulgated in February 2007.

Relevance to the proposed project:

The proposed development must conserve endangered ecosystems and protect and promote biodiversity; It must assess the impacts of the proposed development on endangered ecosystems; No protected species may be removed or damaged without a permit; and The proposed site must be cleared of alien vegetation using appropriate means.

3.2.4. The National Forests Act (84 of 1998)

The objective of this Act is to monitor and manage the sustainable use of forests. In terms of Section 12 (1) (d) of this Act and GN No. 1012 (promulgated under the National Forests Act), no person may, except under licence:

- Cut, disturb, damage or destroy a protected tree; or
- Possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree.

Relevance to the proposed project:

If any protected trees in terms of this Act occur on site, the developer will require a licence from the DAFF to perform any of the above-listed activities.

3.2.5. National Heritage Resources Act (25 of 1999)

The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. *“Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority”.*

Relevance to the proposed project:

An archaeological and paleontological impact assessment must be undertaken during the detailed EIR phase of the proposed project.
No person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or paleontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority.
No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.

3.2.6. National Environmental Management: Air Quality Act (39 of 2004)

As with the Atmospheric Pollution Prevention Act 45 of 1965, the objective of the new Air Quality Act is to protect the environment by providing the necessary legislation for the prevention of air pollution. However, in terms of the proposed project it is not expected that any of the Act's provisions will be applicable.

3.2.7. Integrated Energy Plan for the Republic of South Africa, March 2003

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

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

Relevance to the proposed project:

The proposed Wind Farm project is in line with the IEP with regards to diversification of energy supply and the promotion of universal access to clean energy.

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

The Electricity Regulation Act (Act No. 4 of 2006) became operation on 1 August 2006 and the objectives of this Act are to:

- Facilitate universal access to electricity;
- Promote the use of diverse energy sources and energy efficiencies, and;
- Promote competitiveness and customer and end user choice.

Relevance to the proposed project:

The proposed Wind Farm project is in line with the call of the Electricity Regulation Act No. 4 of 2006 as it is has the potential to improve energy security of supply through diversification.

3.2.9. Electricity Regulation on New Generation Capacity (Government Gazette No 32378 of 5 August 2009)

On 5 August 2009 the government of the Republic of South Africa promulgated the Electricity Regulations on New Generation Capacity (Government Gazette No 32378) which were made by the Department of Energy in terms of the Electricity Regulation Act 2006 (see 3.2.11 above), and are applicable to:- (a) all types of generation technology including renewable generation and co-generation technology (i.e. landfill gas, small hydro (less than 10 MW), wind and concentrated solar power (with storage)) but excluding nuclear power generation technology; (b) base load, mid-merit and peak generation; and (c) take effect from the date of promulgation, unless otherwise indicated. The objectives of these regulations are:

- The regulation of entry by a buyer and an Independent Power Producer (IPP) into a power purchase agreement;
- The facilitation of fair treatment and the non-discrimination between IPP generators and the buyer;
- The facilitation of the full recovery by the buyer of all costs incurred by it under or in connection with the power purchase agreement and an appropriate return based on the risks assumed by the buyer there under and, for this purpose to ensure the transparency and cost reflectivity in the determination of electricity tariffs;
- The establishment of rules and guidelines that are applicable in the undertaking of an IPP bid programme and the procurement of an IPP for purposes of new generation capacity;

- The provision of a framework for the reimbursement by the regulator, of costs incurred by the buyer and the system operator in the power purchase agreement, and;
- The regulation of the framework of approving the IPP bid programme, the procurement process, the Renewable Feed in Tariff (REFIT) programme, and the relevant agreements to be concluded.

The Guidelines describe the basic structure of the REFIT programme, including the roles of various parties in the programme, namely National Energy Regulator of South Africa (NERSA), Eskom and renewable energy generators. Pursuant to the Guidelines, Eskom’s “Single Buyer Office” is to be appointed as the Renewable Energy Purchasing Agency (REPA), the exclusive buyer of power under the REFIT programme. Generators participating in the REFIT scheme are required to sell power generated by renewable technologies to Eskom as the REPA under a Power Purchase Agreement, and are entitled to receive regulated tariffs, based on the particular generation technology. NERSA is tasked with the administration of the REFIT programme, including setting the tariffs and verifying that generation is genuinely from renewable energy sources.

While the Regulations deal generally with procurement under an IPP bid programme (defined in the Regulations to mean a bidding process for the procurement of new generation capacity and/or ancillary services from IPPs), and specify the use of a bidding process involving requests for prequalification, requests for proposals and negotiations with the preferred bidder, the Regulations set out a special process for the procurement of renewable energy and cogeneration under the REFIT programme, described in Regulation 7. This Regulation states that NERSA is to, “develop rules related to the criteria for the selection of “renewable energy IPPs... that qualify for a licence” and sets out a list of matters that the criteria prescribed by NERSA should take account of. These include:

- Compliance with the integrated resource plan and the preferred technologies;
- Acceptance by the IPP of a standardised power purchase agreement;
- Preference for a plant location that contributes to grid stabilisation and mitigates against transmission losses;
- Preference for a plant technology and location that contributes to local economic development;
- Compliance with legislation in respect of the advancement of historically disadvantaged individuals;
- Preference for projects with viable network integration requirements;
- Preference for projects with advanced environmental approvals;
- Preference for projects demonstrating the ability to raise finance;
- Preference for small distributed generators over centralized generators; and
- Preference for generators that can be commissioned in the shortest time.

According to Dewey & LeBouef (August, 2009), it appears, therefore, that successful REFIT projects may not be selected through a conventional bidding process, but instead, applications will be selected on the basis of prescribed criteria. Just what such criteria are, and how they will be applied and weighted is not yet clear, but it is expected that this will be set out in the rules to be developed by NERSA as required by Regulation 7(2)(a).

Relevance to the proposed project:

The proposed project is required to comply with any guidelines relating to the IPP bid programme and the REFIT programme.

3.2.10. Aviation Act (Act No. 74 of 1962): 13th Amendment of the Civil Aviation Regulations 1997

Section 14 of obstacle limitations and marking outside aerodrome or heliport (CAR Part 139.01.33) under this Act specifically deals with wind turbine generators (wind farms). According to this

section, “A wind turbine generator is a special type of aviation obstruction due to the fact that at least the top third of the generator is continuously variable and offers a peculiar problem in as much marking by night is concerned. The Act emphasizes that, when wind turbine generators are grouped in numbers of three or more they will be referred to as “wind farms”.

Of particular importance to the proposed project are the following:-

- **Wind farm placement:** Due to the potential of wind turbine generators to interfere on radio navigation equipment, no wind farm should be built closer than 35km from an aerodrome. In addition, much care should be taken to consider visual flight rules routes, proximity of known recreational flight activity such as hang gliders, en route navigational facilities etc.
- **Wind farm Markings:** Wind turbines shall be painted bright white to provide the maximum daytime conspicuousness. The colours grey, blue and darker shades of white should be avoided altogether. If such colours have been used, the wind turbines shall be supplemented with daytime lighting, as required.
- **Wind farm Lighting:** Wind farm (3 or more units) Lighting: In determining the required lighting of a wind farm, it is important to identify the layout of the wind farm first. This will allow the proper approach to be taken when identifying which turbines need to be lit. Any special consideration to the site’s location in proximity to aerodromes or known corridors, as well as any special terrain considerations, must be identified and addressed at this time.

Relevance to the proposed project:

The proposed wind farm project is required to get authorization from the Civil Aviation Authority for the construction of wind turbines.

3.2.11. Occupational Health and Safety Act (85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, “as far as reasonably practicable, employers must ensure that their activities do not expose non-employees to health hazards” (Glazewski, 2005: 575). The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed wind energy project. These cover, among other issues, noise and lighting.

Relevance to the proposed project:

The developer must be mindful of the principles and broad liability and implications contained in the OHS Act and mitigate any potential impacts.

3.2.12. Other relevant legislation

Other legislation that may be relevant to the proposed Inyanda wind energy project includes:-

- The National Water Act 36 of 1998 regulates all matters relating to water including water use permitting or licensing requirements;
- The Conservation of Agricultural Resources Act 43 of 1983 controls and regulates the conservation of agriculture and lists all regulated invasive species;
- The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters;
- The Mountain Catchment Areas Act 63 of 1970 provides for catchment conservation;
- The Environmental Conservation Act 73 of 1989 provides for effective protection, control and utilisation of the environment;
- The Development Facilitation Act 67 of 1995 provides for development and planning;
- The Telecommunication Act (1966) which has certain requirements with regard to potential impacts on signal reception;

- The Physical Planning Act 135 of 1991 provides land use planning;
- The Tourism Act 72 of 1993 provides for the promotion of tourism and regulates the tourism industry;
- The Skills Development Act 97 of 1998 promotes the development of skills; and
- Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974), which lists species of special concern which require permits for removal.

In addition to the above, aside from the environmental authorisation, there are other permits, contracts and licenses that will need to be obtained by the project proponent for the proposed project some of which fall outside the scope of the EIA. However, for the purposes of completeness, these include:-

- Local Municipality: Land Rezoning Permit. LUPO Ordinance 15 of 1985
- National Energy Regulator of South Africa (NERSA): Generation License
- Eskom: Connection agreement and Power Purchase Agreement (PPA)

How the above statutory considerations are relevant to the IPP procurement and bidding process are detailed below.

3.3. PROCUREMENT PROCESS – INDEPENDENT POWER PRODUCERS (IPP)

Under the Department of Energy's current procurement policy for renewable energy, Independent Power Producers (IPPs) have to comply with the requirements as detailed in the Request for Proposal (RFP) document that was released in August 2011. 3725 megawatts (MW) are to be allocated to renewable energy resources to ensure the continued uninterrupted supply of electricity. This 3725 MW is broadly in accordance with the capacity allocated to renewable energy generation in Integrated Resources Plan (IRP) 2010-2030. The RFP document underpins five rounds of a competitive bid process to which a total of 1850 MW for wind energy projects has been allocated. The first round of bid submissions were made in November 2011, while subsequent windows are March 2012 and August 2013 as identified to date.

In what is effectively a substantial vetting process, IPPs are required to meet the minimum requirements set out in five volumes of the RFP document covering legal, technical (of which the EIA process forms a part), financial and economic development criteria. A critical imperative of the procurement process is that all successful projects are operational by 2016. Over and above the necessary environmental authorisation for a project the aspects listed below also require review and the associated application, reporting and permitting processes to be conducted as part of the bid process.

3.3.1. Heritage

In terms of the National Heritage Resources Act (25 of 1999) the protection of archaeological and paleontological resources is the responsibility of a provincial (or national) heritage resources authority. All archaeological objects, paleontological material and meteorites are the property of the State. The project is required to undertake the relevant heritage permitting processes and requirements identified by the provincial heritage authority.

3.3.2. Water

Authorisations are needed in terms of section 21(c) & (i) of the National Water Act (36 of 1998) whenever new roads and/or cables cross watercourses (even dry headwaters), and when upgrades to existing causeways/bridges are required to allow transportation of long/heavy components and equipment: This is defined as a "water use" in terms of the Act. Currently, the water use authorisation activities are at a screening phase. The purpose of this phase is to:

- Undertake a site visit to determine the number of crossings likely to require Section 21 (c) & (i) authorisation,
- Introduce the relevant DWA officials to the project at an early stage, and to
- Ascertain, based on the site visit and the initial findings of the Scoping Report, whether the water uses can be authorised in terms of a General Authorisation (appropriate when the impacts of the crossings is collectively low) or if a water use licence submission will be required (appropriate when there is greater ecological sensitivity).

3.3.3. Civil Aviation Authority

In terms of the Civil Aviation Act (Act 13 of 2009) prescriptions listed above the project proponent is required to secure the relevant permits and clearances from the Civil Aviation authority. A mapping exercise applying the relevant buffer zones around aerodromes, air space, flight paths, and communication/navigation/surveillance assets will be carried out, ongoing into the EIA phase. The CAA will require submission of a final layout prior to full approval being granted.

3.3.4. Agriculture

In terms of the Conservation of Agricultural Resources Act (43 of 1983) and the Subdivision of Agricultural Land Act (70 of 1970) all projects that impact on agricultural resources require comment from the national and/or provincial agriculture departments. This will be secured from the national and provincial departments for this project.

3.4. MUNICIPAL BY-LAWS

Certain activities related to the proposed development may, in addition to National legislation, be subject to control by municipal by-laws. Relevant by-laws will be identified as part of the various specialist studies during the EIA Phase. These are generally applicable to land use consent processes that will have to be entered into if the project receives environmental authorisation and continues to the bid phase.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

According to regulation 28 (1) of the EIA regulations (2010), *A scoping report must include –*

(e) a description of the environment that may be affected by the activity and the manner in which the activity may be affected by the environment

In line with the above-mentioned legislative requirement, this chapter provides a description of the natural and socio-economic environments that could potentially be impacted by the proposed Inyanda-Roodeplaat wind energy project.

Descriptions of the flora are based on a survey of the relevant literature to determine what could be expected to be found on or near the site. A socio-economic profile of the Sundays River Valley - the area that will be most directly affected by the construction and operation of the proposed wind energy project is presented in Section 4.2 of this chapter. The profile includes basic demographic data on the municipal area.

4.1. GEOLOGY AND LANDFORM

The Eastern Cape Province contains a wide variety of landscapes, from the stark Karoo (the semi-desert region of the central interior) to mountain ranges and gentle hills rolling down to the sea. The climate and topography gives rise to the great diversity of vegetation types and habitats found in the region.

The mountainous area on the northern border forms part of the Great Escarpment. Another part of the escarpment lies just north of Bisho, Somerset East and Graaff-Reinet. In the south of the province, the Cape Fold Mountains start between East London and Port Elizabeth and continue westward into the Western Cape. As is the situation in KwaZulu-Natal, the Eastern Cape is characterised by a large number of short, deeply incised rivers flowing parallel to each other.



Plate 4-1: Photographs illustrating the general topography of the area

Topography

The site is an area of steep hills arranged on an east-west axis, with slopes facing north and south. The elevation ranges between 280 and 1400 meters above sea level with steep hills and high summits. The site is transected by three rivers which flow in an easterly direction across the site. Furthest south is the Elands River. In approximately the centre of the site is the Kwazungu River. Furthest north is the Kariega River. The rivers are fed by numerous streams draining off the surrounding slopes.

Geology

The dominant geological feature in these biomes is the east-west trending Cape Fold Belt. These mountain ranges consist mostly of the folded strata of the Cape Supergroup. The study area is found to be underlain by the Table Mountain and Bokkeveld Groups, these being groups within the Cape Supergroup sequence of rocks. The coarse textured rocks of the Table Mountain Group, typically found in sharply folded mountain systems, combined with steep slopes and a high percentage of quartz sand gives rise to coarse, unstructured soils that are shallow and nutrient poor.

4.2. CLIMATE

The Eastern Cape Province of South Africa has a complex climate due to its location at the confluence of several climatic regimes, namely temperate and subtropical. As a result there are wide variations in temperature, rainfall and wind patterns, mainly as a result of movements of air masses, altitude, mountain orientation and the proximity of the Indian Ocean.

The climatic data described here has been obtained from a scholarly article describing the nearby Baviaanskloof Nature Reserve, and as such is relevant to the project site. Rainfall is distributed equally over the year with the highest rainfall generally occurring in March and November. The average annual rainfall is 451 mm with the southern slopes being wetter (average annual rainfall: 461 mm) than the northern slopes (435 mm) (Buckle, 1989). Thunderstorms are frequent. Temperatures as high as 44°C are not uncommon, occurring as a result of warm winds from the high plateau. In low lying areas, the average maximum temperature recorded is 32°C in January and 18°C in July. The average minimum temperature is 15°C in January and 5°C in July. Frost is experienced in winter. In summer the prevailing wind direction is south to south-east. In winter the prevailing wind direction is northwest (Buckle, 1989).

4.3. CURRENT LAND USE

The majority of study area is currently used as a private lodge and game farm by the landowner. The owner has removed livestock from his property. Consequently, the vegetation is in fairly good condition and as a result antelope species have begun to recolonize the area.

4.4. VEGETATION OF THE STUDY AREA

4.4.1. Regional Vegetation

Mucina and Rutherford

Mucina and Rutherford (2006) have developed the National Vegetation map as part of a South African National Biodiversity Institute (SANBI) funded project: "It was compiled in order to provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before." The map was developed using a wealth of data from several contributors and has allowed for the best national vegetation map to date, the last being that of Acocks developed over 50 years ago. This map forms the base of finer scale bioregional plans such as STEP. This SANBI Vegmap project has two main aims:

- * “to determine the variation in and units of southern African vegetation based on the analysis and synthesis of data from vegetation studies throughout the region, and
- * to compile a vegetation map. The map was to accurately reflect the distribution and variation on the vegetation and indicate the relationship of the vegetation with the environment. For this reason the collective expertise of vegetation scientists from universities and state departments were harnessed to make this project as comprehensive as possible.”

The map and accompanying book describe each vegetation type in detail, along with the most important species including endemic species and those that are biogeographically important. This is the most comprehensive data for vegetation types in South Africa.

Mucina and Rutherford (2006) define the following vegetation types that occur within the 500m buffer zone (Figure 4-1) and from which source these descriptions are derived:

Sundays Thicket

This vegetation type occurs in the Eastern Cape Province and is characterised by undulating plains and low mountains and foothills covered with tall dense thicket. The Sundays Thicket is composed of a mosaic of predominantly spinescent species that include trees, shrubs and succulents. It is classified as **Least Threatened** with a conservation target of 19%. 6% has been transformed by cultivation and urban development. This vegetation type occurs in the northern section of the project site and is unaffected by the wind energy facility.

Albany Alluvial Vegetation

Albany Alluvial Vegetation occurs in the Eastern Cape between East London and Cape St. Francis. Thornveld and riverine thicket are the two major vegetation types that occur in Albany Alluvial vegetation type. It is classified as **Endangered** with a conservation target of 31%. Only 6% has been statutorily conserved. A small section of this vegetation type occurs in the northern section of the project site. However, as with the Sundays Thicket, this vegetation type is unaffected by the wind energy facility.

Kouga Grassy Sandstone Fynbos

This vegetation type occurs between Uniondale and Uitenhage in the Western and Eastern Cape Provinces respectively. It is characterised by low shrubland with sparse, emergent tall shrubs and an understorey dominated by grasses or grassland with scattered ericoid shrubs. It is classified as **Least Threatened** with a conservation target of 23%. Approximately 20% is conserved and 9% has been transformed. This is one of the dominant vegetation types in the project area occurring from the middle of the project site and down to the south. This vegetation type will be impacted by the wind energy facility.

Kouga Sandstone Fynbos

The Kouga Sandstone Fynbos occurs in the Western and Eastern Cape along moderately steep to gentle slopes. The high altitude slopes support communities dominated by low fynbos and the intermediate slopes support three strata with Proteaceae shrubs forming the dominant tall shrub stratum. This vegetation type is classified as **Least Threatened** with a conservation target of 23%. About 40% is statutorily conserved. A narrow band of this vegetation type traverses the project site through the middle. This vegetation type will also be impacted by the wind energy facility.

Groot Thicket

This vegetation type occurs in the Eastern Cape Province along moderate to steep slopes on the ridges of the mountain ranges dominated by a low succulent thicket, usually fairly dense and closed. It is classified as **Least Threatened** with a conservation target of 19%. Approximately 11% is currently statutorily conserved. This vegetation type occurs as a narrow band, separating the Sundays Thicket from the Kouga Grassy Sandstone Fynbos. A small section of this vegetation type may be affected by the wind energy facility.

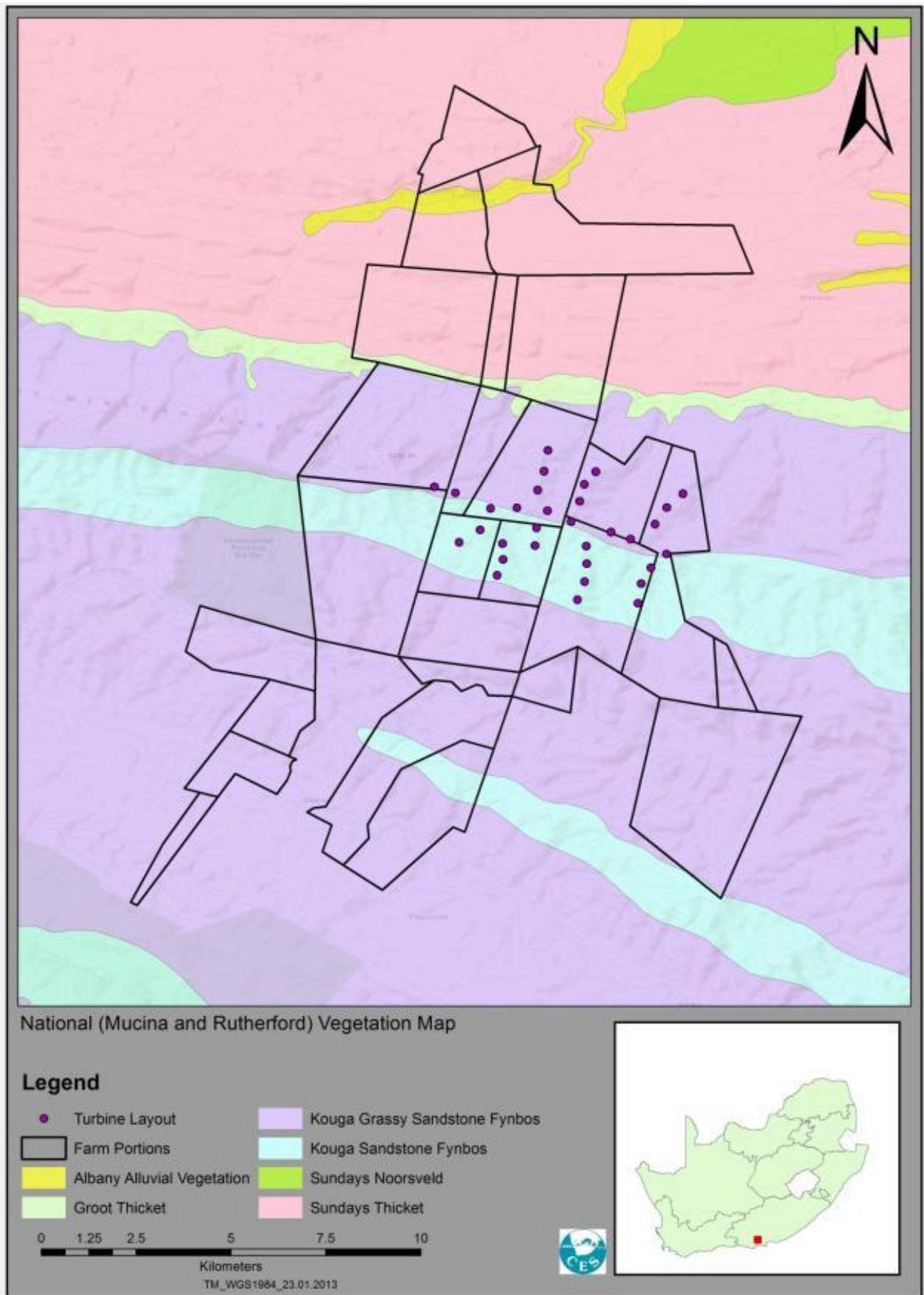


Figure 4-1: Mucina and Rutherford vegetation map of the study area

Subtropical Ecosystem Planning (STEP) Project

The Subtropical Ecosystem Planning (STEP) Project aims to identify priority areas that would ensure the long-term conservation of the subtropical thicket biome and to ensure that the conservation of this biome is considered in the policies and practices of the private and public sector that are responsible for land-use planning and the management of natural resources in the region (Pierce *et al.* 2005). STEP (Figure 4-2) identifies four vegetation types in this region. Pierce and Mader (2006) define the following vegetation types from which source these descriptions are derived:

Baviaans Spekboom Thicket

Baviaans Spekboom Thicket is a type of valley thicket dominated by *Portulacaria afra* and *Pappea capensis* and typified by the abundance of *Aloe speciosa*. This vegetation type is listed as **Vulnerable** by STEP. This vegetation type occurs as a thin band that traverses the northern section of the study area and separates the Sundays Spekboomveld from the Cockscomb Mountain Fynbos Thicket. A small section of this vegetation type may be impacted by the wind energy facility.

Cockscomb Mountain Fynbos Thicket

The Cockscomb Mountain Fynbos Thicket is a mosaic of different vegetation types growing in the Elandsberg and Groot Winterhoek Mountains. The lower south facing slopes are characterised as being grassy while the proteas and cone-bushes are common at higher altitudes and in the wetter south-eastern parts. The lower north-facing slopes are generally sparse. This vegetation type is listed as **Currently Not Vulnerable**. This is the dominant vegetation type that occurs within the study site and will be impacted on by the wind energy facility.

Zuurberg Forest Thicket

The Zuurberg Forest Thicket is characterised as being tall and dense with species typical of the Sundays Thicket but including patches of temperate forest, with species such as *Afrocarpus falcatus* and *Ekebergia capensis*, occurring on the wetter slopes. This vegetation type is listed as **Currently Not Vulnerable**. A small section of this vegetation type occurs towards the south east section of the study site. This vegetation will remain unaffected by the turbines.

Sundays Spekboomveld

This vegetation type is dominated by *Pappea capensis* and *Portulacaria afra* while *Euphorbia coerulescens* and *Crassula ovata* are abundant succulent plants that characterise this vegetation type. This spekboomveld is distinguished from adjacent noorsveld by the relatively high cover of *Portulacaria afra*, *Pappea capensis* and *Schotia afra*. This vegetation type is listed as **Endangered**. This vegetation type occurs in the northern section of the project site and is unlikely to be affected by the wind energy facility.

Sundays Doringveld

Sundays Doringveld is characterised by a mosaic of thicket clumps and a Nama-karoo matrix. Thicket clumps often have a low species diversity with species that are typical of the Sundays Valley Thicket. Dominant species in the Nama-karoo matrix comprise of *Acacia karoo*, *Lycium sp.* and *Cynodon dactylon* and include a suite of succulents, some of which are rare endemics such as *Haworthia sordida*. This vegetation type is listed as **Vulnerable**. A small section of this vegetation type occurs in the northern section of the study site. This vegetation is unlikely to be affected by the wind energy facility.

Kromme Fynbos/Renosterveld Mosaic

The Kromme Fynbos/Renosterveld Mosaic forms part of the fynbos biome and comprises a mosaic of grassland, grassy fynbos and renosterveld that is dominated by *Elytropappus rhinocerotis*, *Cliffortia linearifolia* and *Themeda triandra*. This vegetation type is listed as **Vulnerable** by STEP. This vegetation type occurs along the southern boundary of the study site. It is unaffected by the wind energy facility but may be affected by potential access roads.

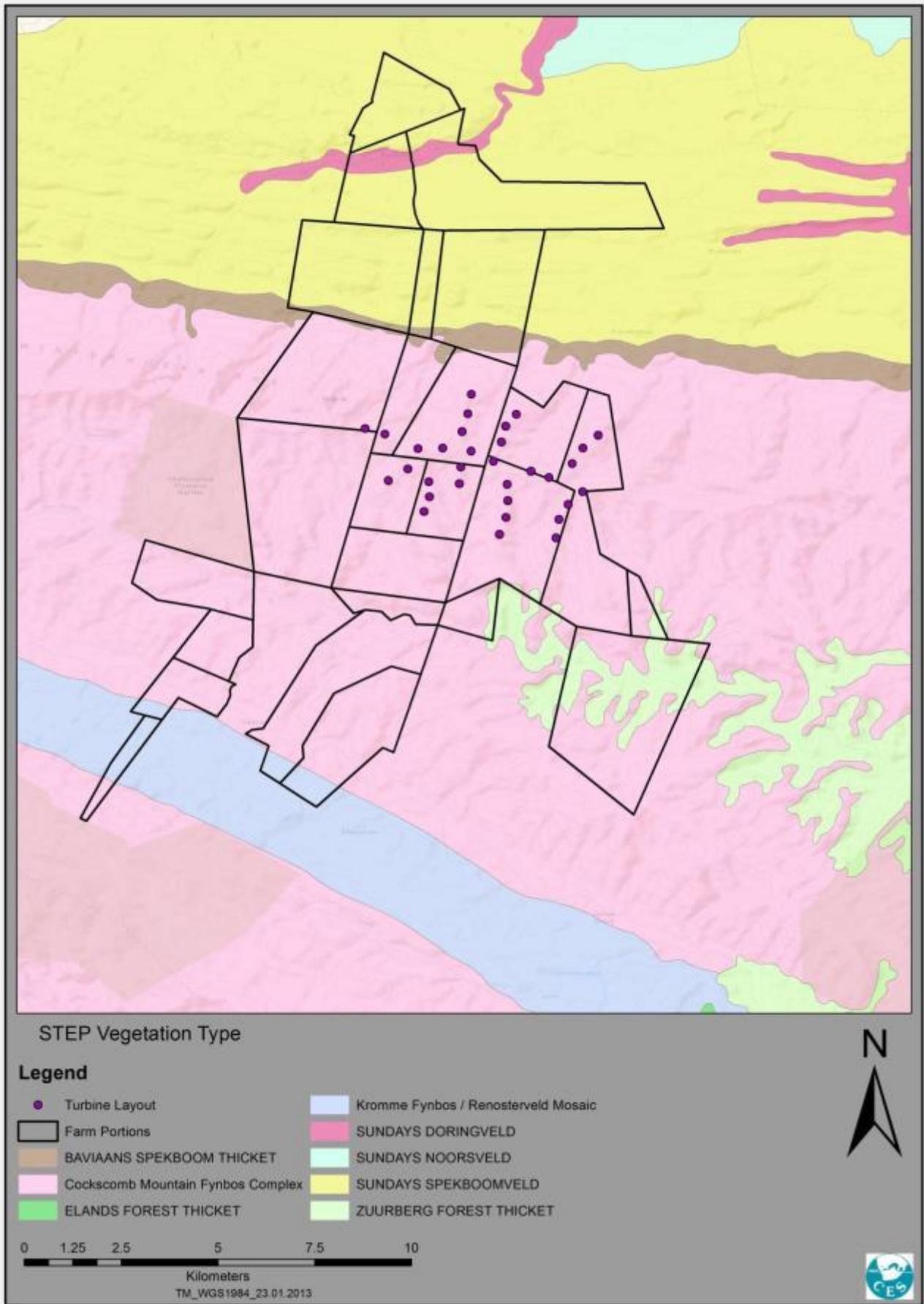


Figure 4-2: STEP vegetation map of the study area

Succulent Karoo Ecosystem Plan (SKEP)

The Succulent Karoo biome extends from the south-west through to the north west of South Africa and up into Namibia (Driver *et al.*; 2003). It is classified as one of the 25 internationally recognised biodiversity hotspots and is the world's only arid hotspot. It is remarkably diverse with 6 356 plant species, 40% of which are endemic and 17% of which are listed on the Red Data list. Despite this rich diversity and high level of endemism, only 3.5% of the biome is formally conserved. As a result the biome's diversity is under pressure from human impacts, especially mining, agriculture, overgrazing and climate change. The goal of the Succulent Karoo Ecosystem Plan (SKEP) is therefore to provide a framework to guide conservation efforts of this unique biome (Driver *et al.*; 2003). The three main aims of the project are to:

- “provide a hierarchy of priority actions to guide conservation efforts and donor investment in the biome (both on and off formal reserves);
- build human resource capacity to implement the plan by including training and mentorship activities as part of the planning process;
- generate the institutional and government support required to ensure its effective implementation”

Four of the six vegetation types described by SKEP are found in the project area (Figure 4-3):

- Quartz and Gravel patch Succulent Karoo
- Thicket
- Lowland Succulent Karoo
- Fynbos

4.5. FLORISTICS

The vegetation of the Eastern Cape is complex and is transitional between the Cape and subtropical floras, and many taxa of diverse phytogeographical affinities reach the limits of their distribution in this region. The region is best described as a tension zone where four major biomes converge and overlap (Lubke *et al.* 1988). The dominant vegetation is Succulent Thicket (Spekboomveld or Valley Bushveld), a dense spiny vegetation type unique to this region. While species in the canopy are of subtropical affinities, and generally widespread species, the succulents and geophytes that comprise the understory are of karroid affinities and are often localised endemics.

The study area falls within the Cape Floristic Kingdom which covers nearly 90 000km² and stretches from the Cederberg in the north-west, down to the Western Cape coast and into the Eastern Cape. The Cape Floristic Kingdom is a biodiversity hotspot with over 9 600 recorded plant species, 70% of which are endemic to the area.

Species endemic to the area are described by Mucina and Rutherford (2006). In addition to the endemic taxa, there are also a number of species expected to be found in the study area, some of which are listed as protected by various conservation bodies. The list is not complete as many species and taxa require additional study. The taxa with many data deficient species include specifically the Mesembryanthemaceae family, as well as members of the Amaryllidaceae (Amaryllids), Iridaceae (Irises), Orchidaceae (Orchids) and Apocynaceae (Lianas), as well as members of the genus Aloe.

Potential SSC include all those plants listed in terms of the IUCN, CITES and both national and provincial legislation that may occur in the area of study. The list of potential SSC includes an estimated 450 species which are listed individually by the IUCN red data list, the South African National Biodiversity Institute (SANBI) and the Forests Act. Table 4-1 is a summary of the number of potential SSC that could occur in the area under each conservation body. Based on historical records for the region, it is likely that approximately twenty-five threatened species occur in this area (Table 4-2) (SIBIS, 2013). A full list of species of special concern is included in Appendix A.

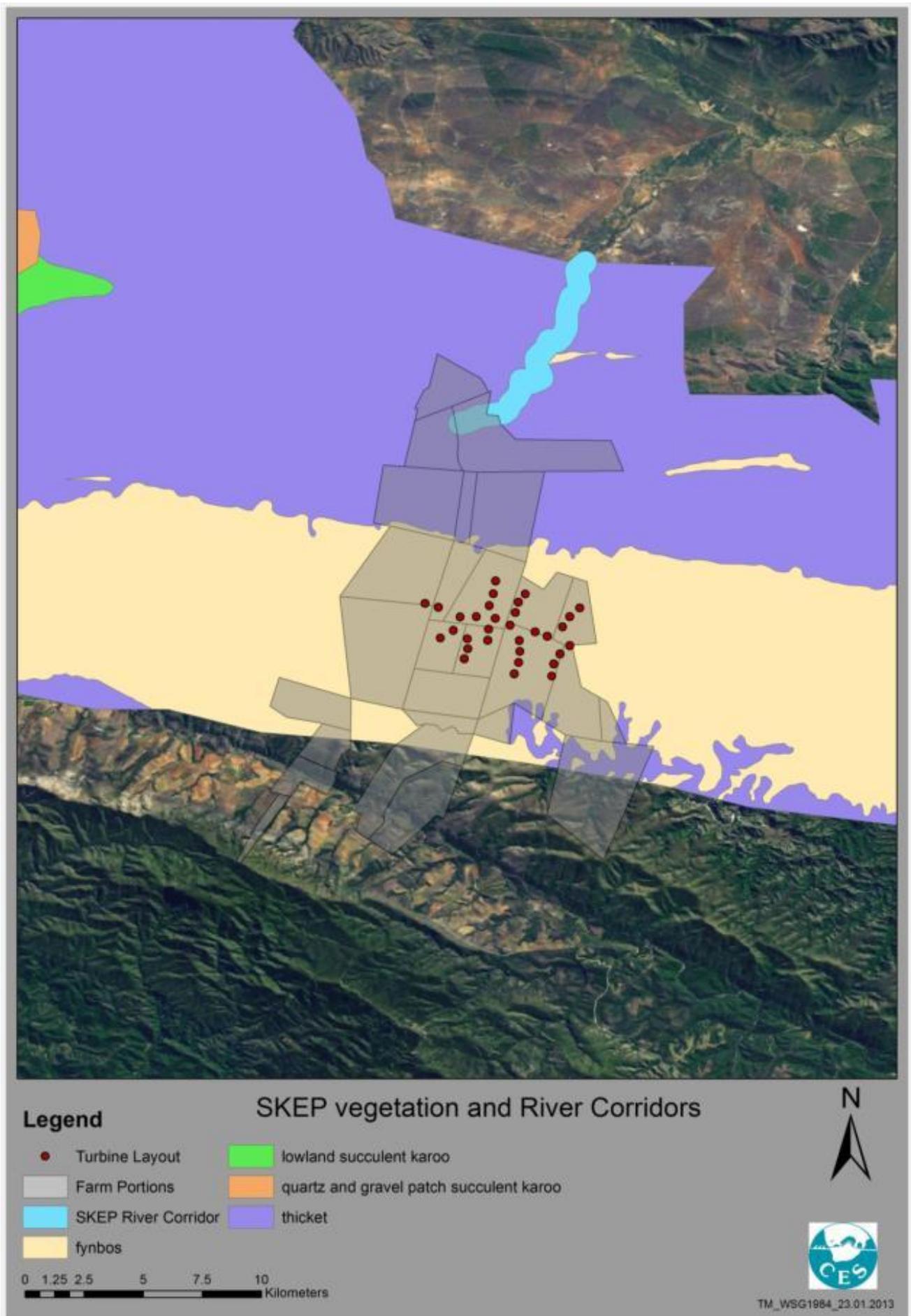


Figure 4-3: SKEP vegetation map of the study area

Table 4-1: A summary of the number of plant species that occur on the various conservation bodies lists

Conservation Body	IUCN	Number of Species
IUCN	Vulnerable	1
	Near Threatened	1
	Data Deficient	1
SA Red Data List	Critically Endangered	4
	Endangered	8
	Vulnerable	13
	Near Threatened	12
	Rare	12
	Declining	6
	Data Deficient	10
NEMBA	Protected	1
CITES	Appendix II	21
PNCO	Schedule 3	1
	Schedule 4	138
Protected Trees		5

Table 4-2: Threatened Species that are likely to occur within the study site (SIBIS, 2013)

Scientific Name	IUCN	Red List Status	NEMBA	CITES	PNCO	Protected Trees
<i>Haworthia cooperi</i>	-	Critically Rare	-	-	-	-
<i>Leucadendron comosum</i>	-	Critically Rare	-	-	Schedule 4	-
<i>Crassula perforata</i>	-	Critically Rare	-	-	-	-
<i>Ornithogalum juncifolium</i>	-	Critically Rare	-	-	-	-
<i>Adromischus mammillaris</i>	-	Endangered	-	-	-	-
<i>Argyrobium crassifolium</i>	-	Endangered	-	-	-	-
<i>Euphorbia globosa</i>	-	Endangered	-	li	Schedule 4	-
<i>Haworthia longiana</i>	-	Endangered	-	-	-	-
<i>Leucadendron orientale</i>	-	Endangered	-	-	Schedule 4	-
<i>Paranomus reflexus</i>	-	Endangered	-	-	Schedule 4	-
<i>Protea rupicola</i>	-	Endangered	-	-	-	-
<i>Senecio scaposus</i>	-	Endangered	-	-	-	-
<i>Agathosma microcarpa</i>	-	Vulnerable	-	-	-	-
<i>Agathosma stenopetala</i>	-	Vulnerable	-	-	-	-
<i>Aloe ciliaris</i>	-	Vulnerable	-	-	-	-
<i>Aloe striata</i>	-	Vulnerable	-	-	-	-

<i>Cotyledon tomentosa</i>	-	Vulnerable	-	-	-	-
<i>Crassula obovata</i>	-	Vulnerable	-	-	-	-
<i>Cullumia cirsioides</i>	-	Vulnerable	-	-	-	-
<i>Dioscorea sylvatica</i>	-	Vulnerable	-	-	-	-
<i>Erica glandulosa</i>	-	Vulnerable	-	-	Schedule 4	-
<i>Erica inconstans</i>	-	Vulnerable	-	-	Schedule 4	-
<i>Gladiolus leptosiphon</i>	-	Vulnerable	-	-	Schedule 4	-
<i>Gymnosporia elliptica</i>	-	Vulnerable	-	-	-	-
<i>Leucadendron spissifolium</i>	-	Vulnerable	-	-	Schedule 4	-

4.6. ANIMAL SPECIES

4.6.1. Amphibians and Reptiles

Amphibians and reptiles are well represented in sub-Saharan Africa. However, distribution patterns in southern Africa are uneven both in terms of species distribution and in population numbers (du Preez and Carruthers, 2009). Climate, centres of origin and range restrictions are the three main factors that determine species distribution. The eastern coast of South Africa has the highest amphibian diversity and endemism while reptile diversity is generally highest in the north eastern extremes of South Africa and declines to the south and west (Alexander and Marais, 2010).

Reptiles

South Africa has 350 species of reptiles, comprising 213 lizards, 9 worm lizards, 105 snakes, 13 terrestrial tortoises, 5 freshwater terrapins, 2 breeding species of sea turtle and 1 crocodile (Branch, 1998). Of those 350 reptile species, the Eastern Cape is home to 133 which include 21 snakes, 27 lizards and eight chelonians (tortoises and turtles). The majority of these are found in Mesic Succulent Thicket and riverine habitats. Consultation of the Animal Demography Unit historical records indicates that 15 species of reptiles are likely to occur in the project site. One of these (*Bradypodion taeniabronchum* – Elandsberg Dwarf Chameleon) is classified as Critically Endangered IUCN Red Data List.

Amphibians

Amphibians are important in wetland systems, particularly where fish are excluded or of minor importance. In these habitats, frogs are dominant predators of invertebrates, many of which are disease vectors for malaria and bilharzia. Reports of declining amphibian populations continue to increase globally, even in pristine protected areas (Phillips 1994). These declines are not simple cyclic events; for example, frogs have been identified as bio-indicator species that reflect the wellbeing of aquatic ecosystems (Poynton and Broadley 1991). Frog abundance and diversity is a poignant reflection of the general health and well-being of aquatic ecosystems. According to historical records, 12 species of frog have been documented in the Quarter Degree Squares that the project area falls in. No species of conservation concern occur in the area.

4.6.2. Birds

Nine bird species are endemic to South Africa, but there are no Eastern Cape endemics. However, there are 62 threatened species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000). Historical records indicate that there is one **Endangered** species, three **Vulnerable** species and three **Near Threatened** species likely to be found in the area (Table 4-3)

Table 4-3: Threatened bird species that are likely to occur in the project area (BirdlifeSA, 2012).

Family	Scientific Name	Common name	Red List status	CITES	NEMBA
ACCIPITRIDAE	<i>Circus maurus</i>	Black Harrier	Vulnerable	-	-
ACCIPITRIDAE	<i>Polemaetus bellicosus</i>	Martial Eagle	Near Threatened	-	Vulnerable
ACCIPITRIDAE	<i>Sagittarius serpentarius</i>	Secretary Bird	Vulnerable	-	-
GRUIDAE	<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable	Appendix II	Endangered
OTIDIDAE	<i>Neotis denhami</i>	Denham's Bustard	Near Threatened	Appendix II	-
OTIDIDAE	<i>Neotis ludwigii</i>	Ludwig's Bustard	Endangered	Appendix II	Vulnerable
PICIDAE	<i>Campethera notata</i>	Knysna Woodpecker	Near Threatened	-	-

The Important Bird Areas of Southern Africa (IBA) directory was compiled in 1998 and identified within South Africa 122 IBAs containing 59 threatened and 64 near-threatened bird species. All these IBAs were objectively determined using established and globally accepted criteria. An IBA is selected on the presence of the following bird species in a geographic area:

- Bird species of global or regional conservation concern;
- Assemblages of restricted-range bird species;
- Assemblages of biome-restricted bird species; and
- Concentrations of numbers of congregatory bird species.

The rationale behind the IBA Programme is that in order to conserve species of conservation concern you need to conserve the habitat that the species occupies and uses. The development does not fall within an IBA however, IBAs identified nearby include: Kouga-Baviaans Complex and Maitland Gamtoos Coast (Figure 4-4).

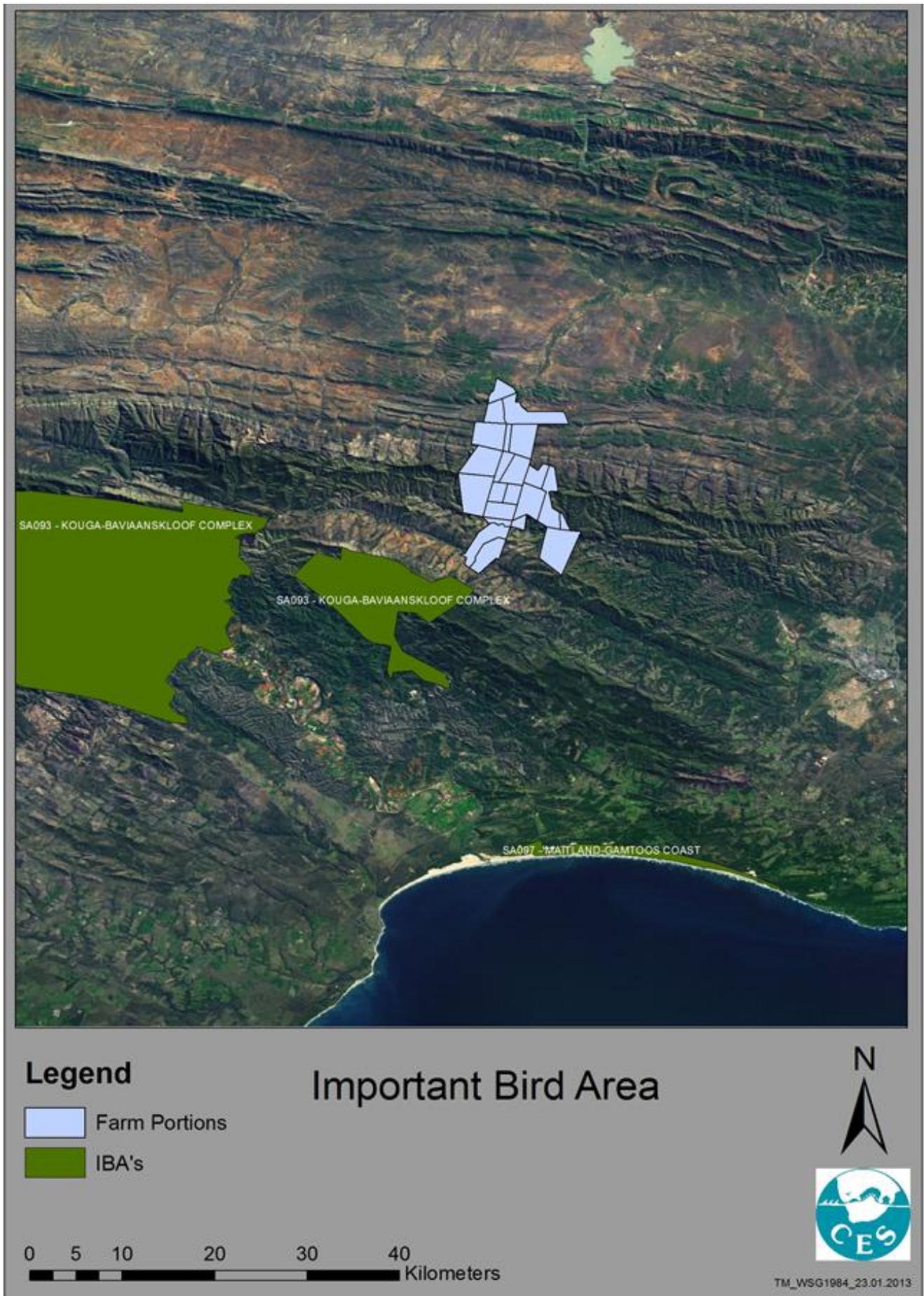


Figure 4-4: Important Bird Areas in close proximity to the Study Area

4.6.3. Mammals

Large game makes up less than 15% of the mammal species in South Africa and a much smaller percentage in numbers and biomass. In developed and farming areas, this percentage is greatly reduced, with the vast majority of mammals present being small or medium-sized. The conservation status of South African mammals has recently been re-assessed and a number of species have been downgraded, for example, the African wild cat, Aardvark, Blue duiker, and Honey badger are no longer considered threatened.

According to NEMBA, three protected mammal species and one vulnerable species have distributions that coincide with the project area (Table 4-4). Based on habitat availability it is likely that all four of these species are likely to occur on site (Stuart and Stuart, 2007).

The species list was run through the IUCN data base. Two species with distributions that occur in the project area are listed as Near Threatened (Leopard and Schreibers Long-fingered bat) and one species (the White tailed mouse) is listed as Endangered.

Table 4-4: Mammals of conservation concern likely to be found within the project site.

Scientific Name	Common Name	IUCN	NEMBA
<i>Atelerix frontalis</i>	South African hedgehog	-	Protected
<i>Miniopterus schreibersii</i>	Schreibers Long-fingered bat	NT	
<i>Mystromys albicaudatus</i>	White-tailed mouse	EN	
<i>Panthera pardus</i>	Leopard	NT	Vulnerable
<i>Mellivora capensis</i>	Honey Badger	-	Protected
<i>Vulpes chama</i>	Cape Fox	LC	Protected

Of conservation importance in the Bavianskloof Mega Reserve is the presence of leopard populations. Internationally this species is classified as Near Threatened. In South Africa this species is listed by NEM:BA (2004) as vulnerable meaning that it faces “a high risk of extinction in the wild in the medium-term future, although they are not critically endangered”.

The Centre for African Conservation Ecology (ACE) estimate that there are between 10-17 individuals living in the BMR and that one of the major threats to this population is its vulnerability to becoming genetically isolated. Recent studies on leopard populations in the south eastern and western region of South Africa suggest that at least 21 individuals occur in the Cape Fold Mountains with nearly half of these originating between Addo Elephant National Park in the east and Uniondale in the west (Jeanine McManus pers. comm.; 2013).

The data collected from this study raises concerns that further habitat fragmentation in this area will result in further isolating these populations, especially since leopards are territorial animals with large home ranges (30 000ha for males and 15 000 for females).

4.7. CONSERVATION AND SPATIAL PLANNING TOOLS

Several conservation planning tools are available for the area. These tools allow for the determination of any sensitive and important areas from a vegetation and faunal point of view at the early stage of a development. They allow for the fine-tuning of plans and turbine layouts with a view to reducing potential environmental impacts at the planning stage of the development.

The tools used are outlined in Table 4-5 below.

Table 4-5: Conservation and planning tools considered for the proposed Inyanda Wind Energy Project

Tool	Motivation	Relevancy	Implications
NATIONAL			
Protected Areas	Protected areas are areas that are already conserved. Areas in close proximity to the proposed development may be affected by the development and thus must be taken into account.	Relevant. The study site falls between 3 portions of the Groendal Nature Reserve (Figure 4-5).	<p>Since the study area is less than 10km from a national protected area the activity will trigger activities on Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010. Identified activities that will be triggered are reproduced in Table 1-2.</p> <p>See section 4.2 for further details.</p> <p>An ecological assessment will be conducted during the EIA phase.</p>
Protected Areas Expansion Strategy	The objective of the PAES is to form an overarching strategic framework for a protected area network that ‘conserves a comprehensive, representative and adequate sample of biodiversity and maintains key ecological processes across the landscape and seascape.’ The areas earmarked by this study should be protected.	Relevant. The study site falls within the Bavians-Addo NPAES (Figure 4-5).	<p>Since this development occurs in areas designated as part of the Protected Areas Expansion Strategy it will trigger activities on Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010. Identified activities that will be triggered are reproduced in Table 1-2.</p> <p>See section 4.3 for further details.</p> <p>PAES and their relevance will be discussed in further detail in the ecological specialist study.</p>
National Wetlands Inventory	Wetlands are very important aspects of the ecosystem as they are process areas. Not only do they form habitat for both flora and fauna, they also perform vital ecosystem functions. It is for this reason that wetlands are always rated with a high sensitivity and should be conserved.	Relevant. The cables and access roads are likely to cross at least one water course (Figure 4-6).	<p>Listing Notice 1 of GNR 544 EIA regulations dated 18 June 2010 and Listing Notice 3 of R546 EIA Regulations dated 18 June 2010 will be triggered by this development. The project will involve the construction of roads and underground electrical cables which are likely to cross drainage lines.</p> <p>This will be discussed in further detail during the EIA phase.</p>
National List of Ecosystems that are Threatened and in need of Protection. (NEMBA, Act 10 of 2004)	The National Environmental Management: Biodiversity Act provides a list of threatened terrestrial ecosystems. This has been established as little attention has historically been paid to the protection of ecosystems outside of protected areas. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further	Irrelevant. No threatened ecosystems occur within the project site (Figure 4-6).	N/A

Tool	Motivation	Relevancy	Implications
	degradation and loss of structure, function and composition of threatened ecosystems.		
Important Bird Area (IBA)	Important Bird Areas are globally recognized areas essential for the protection of bird species. In order to be classified as an IBA, an area must contain globally threatened species, restricted range species, biome restricted species or congregations of species.	Relevant. The study site occurs less than 10km from an important bird area (Figure 4-4).	An avifaunal specialist study will be required during the EIA phase of the project.
Provincial			
STEP	The Subtropical Thicket Ecosystem Planning Project maps vegetation and assigns each of these a conservation criterion. It is very important in determining sensitivity.	Relevant. The northern portion of the project site falls into the STEP category ENDANGERED and VULNERABLE. A small section of the southern portion of the project site is classified as VULNERABLE. The rest of the area is classified as CURRENTLY NOT VULNERABLE (Figure 4-7).	Ecosystems are classified as Endangered when their original extent has been severely reduced, and whose health, functioning and existence is endangered. This is considered to be Class II land which can withstand minimal loss of natural area through disturbance or development Ecosystems are classified as Vulnerable if they cover much of their original extent but where further disturbance or destruction could harm their health and functioning. This is considered to be Class III land which can withstand limited loss of area through disturbance or development. See section 4.4 for further details. This will be further assessed during the EIA phase.
The Eastern Cape Biodiversity Conservation Plan (ECBCP)	The Eastern Cape Biodiversity Conservation Plan (ECBCP) is responsible for mapping areas that are priorities for conservation in the province, as well as assigning land use categories to the existing land depending on the state that it is in (Berliner et al. 2007). Critical Biodiversity Areas (CBAs) are defined as "terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning".	Relevant. The proposed project site occurs in areas classified as Critical Biodiversity Areas (CBA) 1 and 2 (Figure 4-8).	Since this development occurs in areas classified as CBA's it will trigger activities on Listing notice 3 of GNR 546 EIA regulations dated 18 June 2010. Identified activities that will be triggered are reproduced in Table 1-2. CBA's and their relevance to the project will be further discussed during the EIA phase.

4.7.1. Protected Areas

According to the National Environmental Management: Protected Areas (Act No 57 of 2003) the declaration of protected areas is:

- *“to protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes in a system of protected area;*
- *to preserve the ecological integrity of these areas;*
- *to conserve biodiversity in these areas;*
- *to protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;*
- *to protect South Africa's threatened or rare species;*
- *to protect an area which is vulnerable or ecologically sensitive;*
- *to assist in ensuring the sustained supply of environmental goods and services*
- *to provide for the sustainable use of natural or biological resources;*
- *to create or augment destinations for nature based tourism;*
- *to manage the inter-relationship between natural environment biodiversity, human settlement and economic development;*
- *generally to contribute to human, social, cultural, spiritual and economic development;*
- *to rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species”*

4.7.2. Protected Areas Expansion strategy

A National Spatial Biodiversity Assessment was conducted in 2004, revealing a lack of protection for a representative sample of the country's biodiversity, nor conserving adequate process areas. The Protected Areas Expansion Strategy allows for increased conservation of these aspects of the country in order to meet national biodiversity targets. The strategy outlines two methods of expanding the current National Protected Areas:

- For public land, the declaration of available, under-utilised and strategic parcels of public land in concordance with the relevant legal requirements for disposal of such land;
- For private land, contractual agreements with the affected landowners.

An area is considered important for expansion if it contributes to meeting biodiversity thresholds, maintaining ecological processes or climate change resilience. Forty-two focus areas for land-based protected area expansion have been identified and are composed of large, intact and fragmented areas suitable for the creation or expansion of large protected areas.

As indicated above, the majority landowner of the project area land portions has indicated his willingness to engage with the relevant panning authorities Eastern Cape Parks and Tourism Agency (ECPTA) and SANParks as to the viability of utilising these land portions as a connectivity corridor between two Groendal Nature Reserve portions. Focus Group Meetings with the relevant stakeholders will be conducted in the Scoping phase around this consideration to solicit preliminary opinion from these stakeholders.

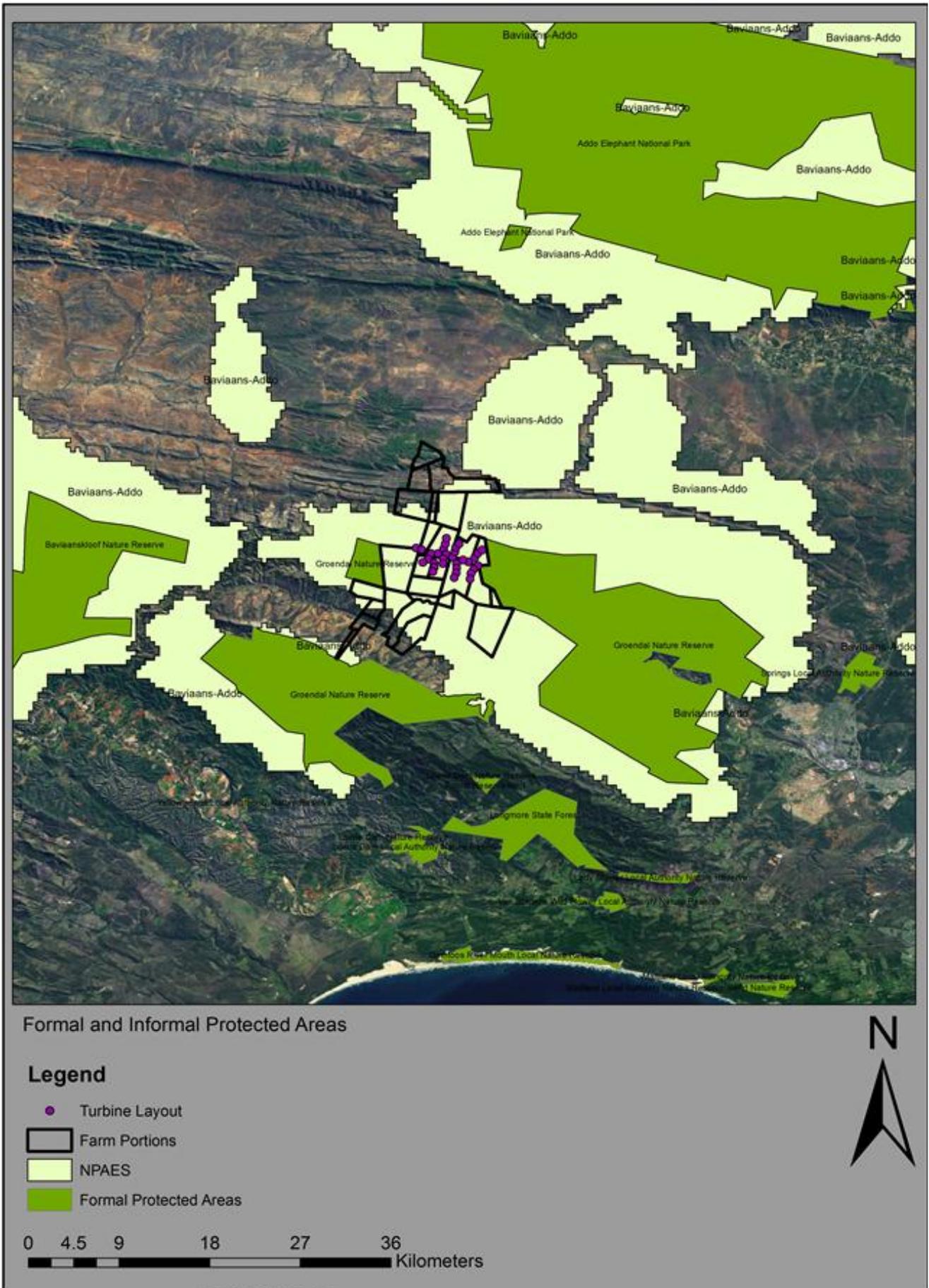


Figure 4-5: Protected Areas and Expansion Strategy Areas that occur within and near the project study area

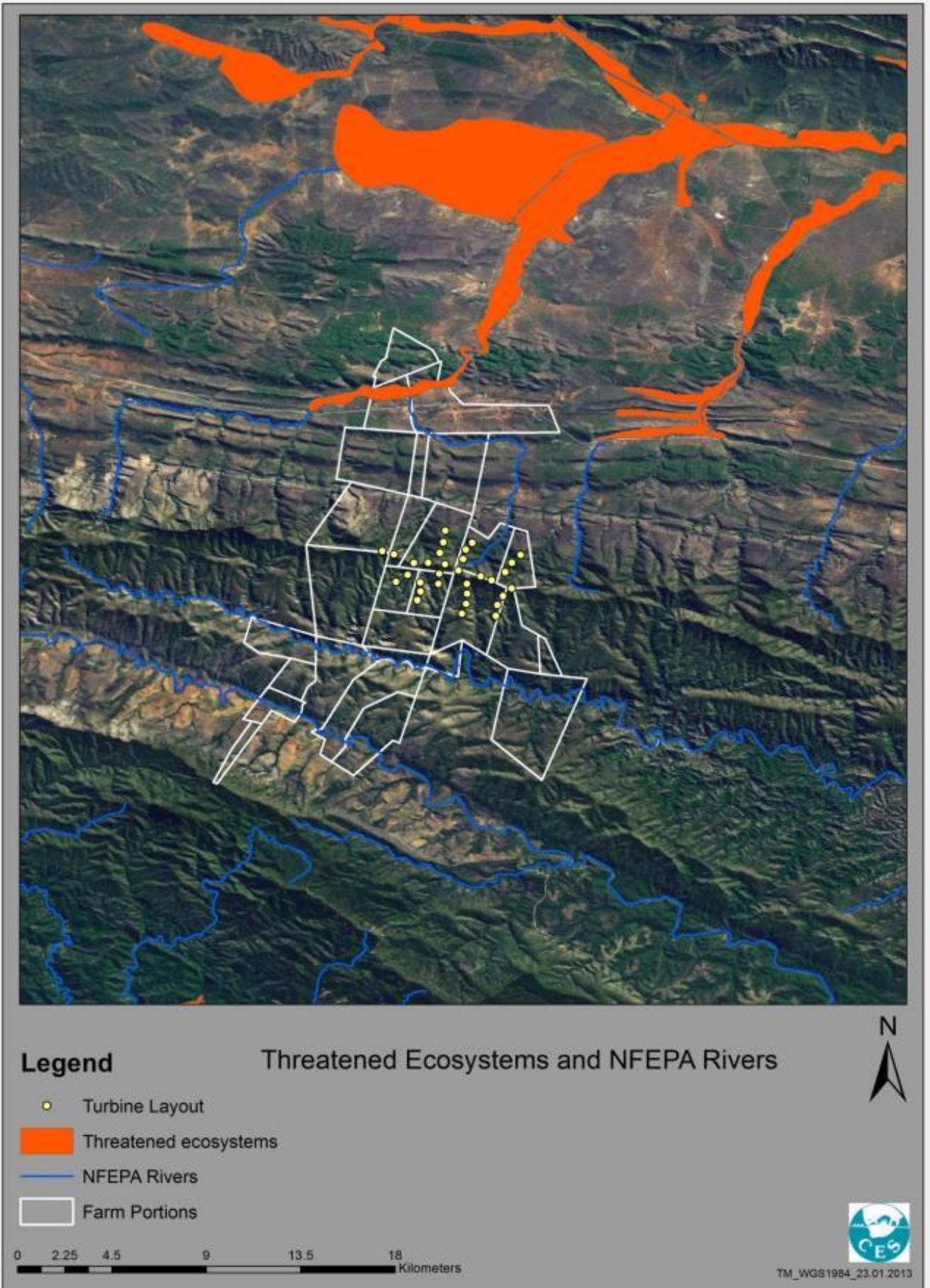


Figure 4-6: Threatened Ecosystems and the National Freshwater Ecosystems Priority Rivers relative to the study area

4.7.3. *Subtropical Thicket Ecosystem Planning (STEP) Project*

STEP was developed originally in 2003 in order to provide conservation and planning tools for the STEP region (Pierce and Mader 2006). The STEP region is the region containing the Subtropical Thicket Biome and its constituents, as well as those biomes closely related to it. The STEP region includes 6 Biomes and forms a Bioregional Programme.

A Bioregional Programme is defined by Pierce and Mader (2006 pg 27) as: “Bioregional programmes are initiatives that aim to secure the conservation of priority biodiversity within a specific biome or bioregion, involving a variety of stakeholders”. The aims include (pg 28):

- Promote the conservation of biodiversity both within and outside protected areas
- Promote the sustainable use of natural resources and the development of sustainable livelihoods based on principles of sustainable land-use management- a “biodiversity economy”
- Strengthen partnerships, institutions and governance and continue to involve communities throughout the lifespan of the programme
- Support implementation of projects and guide them to ensure that funds achieve maximum conservation benefit

Several of these bioregional plans have been developed that occur within the borders of the Eastern Cape, and these may overlap in areas (Pierce and Mader, 2006). The STEP mapping and related information is specifically designed to be incorporated into planning and spatial development frameworks. It indicates areas for priority conservation, and what kind of development is appropriate for each landscape class. It is important to note that it cannot be used for fine scale planning.

Each vegetation type is assigned an ecosystem status, which indicates if it is sufficiently conserved, how much of its original extent is still covered, and how healthy and functioning they may be (Pierce and Mader, 2006).

The project aims to guide the necessary but destructive development away from areas of endangered biodiversity and promote sustainable land use. In terms of STEP, a feature that has much more extant habitat than is needed to meet its target, is considered Currently Not Vulnerable OR Least Threatened (Table 4-6).

STEP provides management recommendations for each of the classes given to vegetation types. As the study area contains vegetation types listed as Least Threatened (Currently Not Vulnerable), and Vulnerable by STEP, recommendations for these classes are provided below and summarised in Table 4-2.

Currently Not Vulnerable (Class IV)

A vegetation type that has much more extant habitat than is needed to meet its conservation target, is considered Currently Not Vulnerable, or Least Threatened

For Currently Not Vulnerable vegetation, STEP recommends three Land use management procedures, these include:

1. Proposed disturbance or developments should preferably take place on portions which have already undergone disturbance or impacts rather than on portions that are undisturbed or unspoilt by impacts.
2. In response to an application for a non-listed activity which will have severe or large-scale disturbance on a relatively undisturbed site (unspoilt by impacts), the Municipality should first seek the opinion of the local conservation authority.
3. For a proposed “listed activity”, EIA authorisation is required by law.

Table 4-6: Summary of the STEP Project conservation priorities, classifications and general rules (Pierce, 2003)

Conservation priority	Classification	Brief Description	General Rule
IV	Currently not vulnerable area	Ecosystems which cover most of their original extent and which are mostly intact, healthy and functioning	Depending on other factors, this land can withstand loss of natural area through disturbance or development
III	Vulnerable area	Ecosystems which cover much of their original extent but where further disturbance or destruction could harm their health and functioning	This land can withstand limited loss of area through disturbance or development
II	Endangered area	Ecosystems whose original extent has been severely reduced, and whose health, functioning and existence is endangered	This land can withstand minimal loss of natural area through disturbance or development
I - Highest Priority	Critically endangered area	Ecosystems whose original extent has been so reduced that they are under threat of collapse or disappearance. Included here are special ecosystems such as wetlands and natural forests	This Class I land can NOT withstand loss of natural area through disturbance or development. Any further impacts on these areas must be avoided. Only biodiversity-friendly activities must be permitted.
High Priority	Network Area	A system of natural pathways e.g. for plants and animals, which if safeguarded, will ensure not only their existence, but also their future survival.	Land in Network can only withstand minimal loss of natural area through disturbance and developments
Highest Priority	Process Area	Area where selected natural processes function e.g. river courses, including their streams and riverbanks, interfaces between solid thicket and other vegetation types and sand corridors	Process area can NOT withstand loss of natural area through disturbance and developments
	Municipal reserve, nature reserve, national parks	Protected areas managed for nature conservation by local authorities, province or SA National Parks	No loss of natural areas and no further impacts allowed
Dependant on degree on existing impacts	Impacted Area	Areas severely disturbed or destroyed by human activities, including cultivation, urban development and rural settlements, mines and quarries, forestry plantations and severe overgrazing in solid thicket.	Ability for this land to endure further disturbance or loss of natural area will depend on the land's classification before impacts, and the position, type and severity of the impacts

From a Spatial planning (forward planning – Spatial Development Framework (SDF)) point of view, for Currently Not Vulnerable vegetation, STEP presents two restrictions and gives examples of opportunities. The two spatial planning restrictions are as follows:

1. Proposed disturbance or developments should preferably take place on portions which have already undergone disturbance or impacts rather than on portions that are undisturbed.
2. In general, Class IV land can withstand loss due to disturbance of natural areas through human activities and developments.

Opportunities depend on constraints (such as avoidance of spoiling scenery or wilderness, or infrastructure limitations) Class IV land can withstand loss of, or disturbance to, natural areas. Within the constraints, this class may be suitable for a wide range of activities (e.g. extensive urban development, cultivation, tourist accommodation, ecotourism and game farming).

Vulnerable (III)

Vulnerable ecosystems are those where further disturbance or destruction could harm their health and functioning.

For Vulnerable vegetation, STEP recommends four Land use management procedures, these include:

1. As a rule, developments with limited area or impacts should be allowed on Class III land.
2. In response to an application for a non-listed activity which will have severe or large-scale disturbance on a relatively undisturbed site (unspoilt by impacts), the Municipality should first seek the opinion of the local conservation authority.
3. Proposed disturbance or developments should preferably take place on sites which have undergone disturbance or impacts rather than on sites that are undisturbed.
4. For a proposed “listed activity”, EIA authorisation is required by law.

From a Spatial planning (forward planning – Spatial Development Frameworks (SDF)) point of view, for Vulnerable vegetation, STEP presents three restrictions and gives examples of opportunities. The three spatial planning restrictions are as follows:

1. In general, Class III land can withstand only limited loss of natural area or limited disturbance through human activities and developments.
2. Proposed disturbance or developments should preferably take place on sites which have undergone disturbance or impacts rather than on sites that are undisturbed.
3. In general, Class IV land should be developed in preference to Class III land.

Depending on constraints (such as avoidance of spoiling scenery or wilderness, or infra-structure limitations), Class III land can withstand a limited loss of, or disturbance to, natural areas. Within the constraints, this class may be suitable for a moderate range of activities that are either compatible with the natural environment (e.g. sustainable stock-farming, ecotourism, game farming and wilderness) or of limited extent (e.g. small-scale housing or urban development, small-scale cultivation).

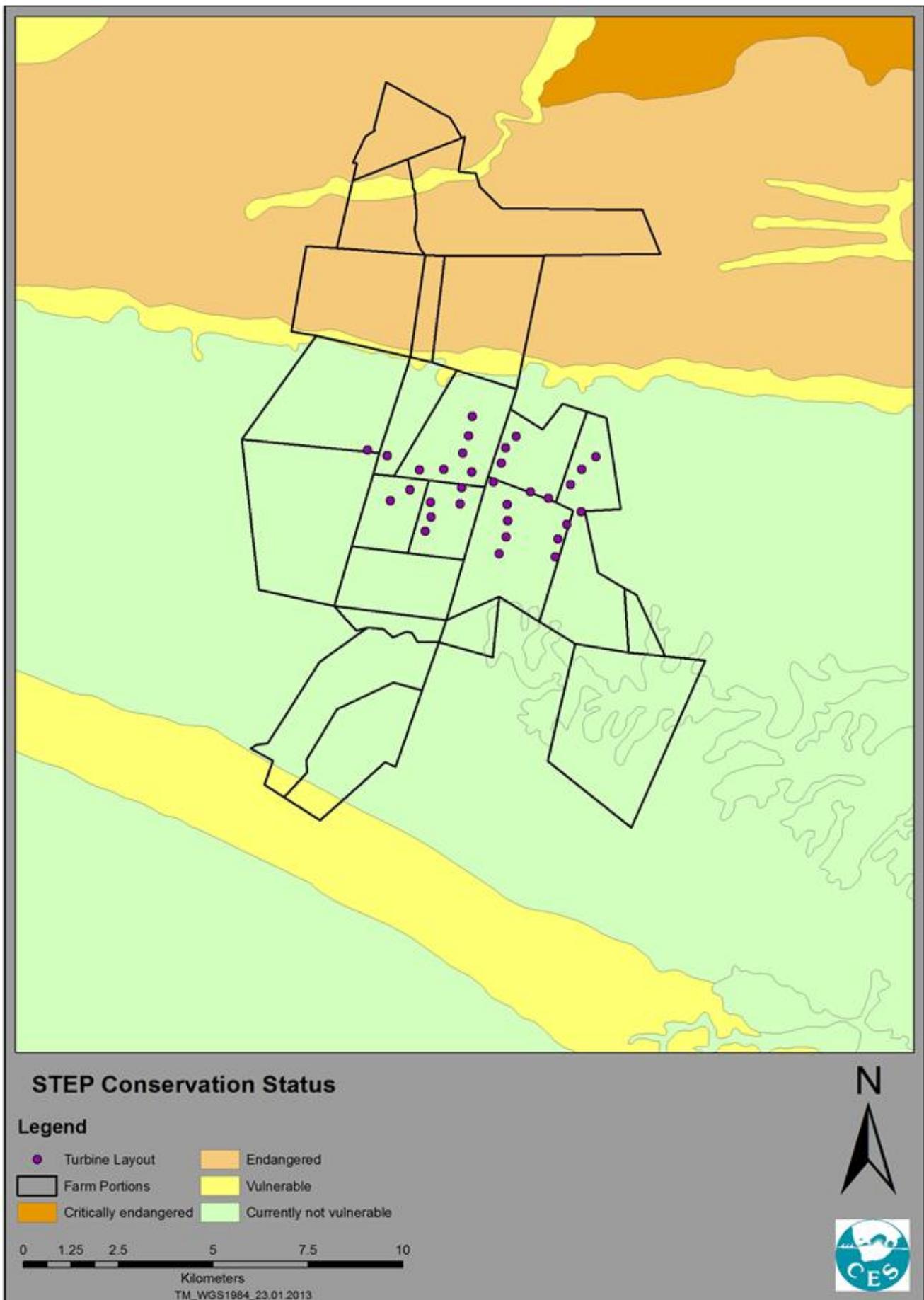


Figure 4-7: STEP Conservation Status map
 4.7.4. The Eastern Cape Biodiversity Conservation Plan

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is responsible for mapping areas that are priorities for conservation in the province, as well as assigning land use categories to the existing land depending on the state that it is in (Berliner et al. 2007).

Critical Biodiversity Areas (CBAs) are defined by Berliner et al. (2007) as: “CBAs are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning”. These areas are classified as natural to near-natural landscapes. In addition to the CBA’s the ECBCP also defines Other Natural Areas (ONA) as well as Transformed Areas.

Biodiversity Land Management Classes (BLMCs) are also used in the plan: “Each BLMC sets out the desired ecological state that an area should be kept in to ensure biodiversity persistence. For example, BLMC 1 refers to areas which are critical for biodiversity persistence and ecosystem functioning, and which should be kept in as natural a condition as possible”. Table 4-7 shows how the BLMCs relate to the CBAs.

Table 4-7: Terrestrial Critical biodiversity Areas and Biodiversity Land Management Classes as described by the Eastern Cape Biodiversity Conservation Plan.

CBA map category	Code	BLMC		Recommended land use objective
Protected areas	PA1	BLMC 1	Natural landscapes	Maintain biodiversity in as natural state as possible. Manage for no biodiversity loss.
	PA2			
Terrestrial CBA 1 (not degraded)	T1			
Terrestrial CBA 1 (degraded)	T1	BLMC 2	Near-natural landscapes	Maintain biodiversity in near natural state with minimal loss of ecosystem integrity. No transformation of natural habitat should be permitted.
Terrestrial CBA 2	T2			
	C1 C2			
Other natural areas	ONA T3	BLMC 3	Functional landscapes	Manage for sustainable development, keeping natural habitat intact in wetlands (including wetland buffers) and riparian zones. Environmental authorisations should support ecosystem integrity.
	ONA			
Transformed areas	TF	BLMC 4	Transformed landscapes	Manage for sustainable development.

Ten principles of land use planning for biodiversity persistence:

1. Avoid land use that results in vegetation loss in critical biodiversity areas.
2. Maintain large intact natural patches – try to minimise habitat fragmentation in critical biodiversity areas.
3. Maintain landscape connections (ecological corridors) that connect critical biodiversity areas.
4. Maintain ecological processes at all scales, and avoid or compensate for any effects of land uses on ecological processes.
5. Plan for long-term change and unexpected events, in particular those predicted for global climate change.
6. Plan for cumulative impacts and knock-on effects.
7. Minimise the introduction and spread of non-native species.
8. Minimize land use types that reduce ecological resilience (ability to adapt to change), particularly at the level of water catchments.

9. Implement land use and land management practices that are compatible with the natural potential of the area.
10. Balance opportunity for human and economic development with the requirements for biodiversity persistence.

The study site falls within CBA 1, CBA 2 and CBA 3 areas. As indicated in Figure 4-8, 10 turbines are located within the CBA 1 area and 16 occur in a CBA 2 area. According to STEP and Mucina and Rutherford this area was expected to be covered in thicket. However, the site survey revealed it to be a mosaic of grasses and karoo scrub. ECBCP, although mapped at a finer scale than the National Spatial Biodiversity Assessment (Driver *et al.*, 2005) is still, for the large part, inaccurate and “course”. Therefore it is imperative that the status of the environment, for any proposed development MUST first be verified before the management recommendations associated with the ECBCP are considered (Berliner and Desmet, 2007). This will be done in the EIA phase by the ecological specialist.

4.7.5. Baviaanskloof Reserve Cluster

The Eastern Cape Parks and Tourism Agency (ECPTA) is responsible for the management of the Baviaanskloof Nature Reserve (BNR) which forms the core of the Baviaanskloof Mega Reserve (BMR). In 2004 the Baviaanskloof Nature reserve was proclaimed a World heritage Site based on the high level of biodiversity and threatened species that are characteristic of the area (Boshoff, 2008). The BNR forms part of the Baviaanskloof Reserve Cluster which includes the Groendal and Formosa Nature Reserves.

The project area lies adjacent to two portions of the Groendal Nature Reserve. Groendal Nature Reserve comprises of two sections. The main Kwa-Zunga section in the Grootwinterhoek Mountains and the separate Stinkhoutberg Section situated north of Patensie.

The Groendal Wilderness Area lies at the eastern extremity of the Groot Winterhoek Mountains and protects the water catchment of the Swartkops or KwaZunghu River. It is characterised by unspoilt vegetation with numerous kloofs and streams that form a pristine wilderness area.

It is estimated that the Baviaanskloof Nature Reserve and World Heritage Site houses over 1100 plant species, 20 of which are known to be endemic and 52 that are listed as Red Data Book Species (Erlank, 2010). It is expected that this list will increase by at least 100 species if Groendal Nature Reserve and Formosa Nature Reserve are also included.

As noted above the ECPTA and SANParks are to be engaged in the Scoping phase to solicit preliminary opinion on the proposed project as well as the potential for private landowner conservancy agreements for the property portions in question.

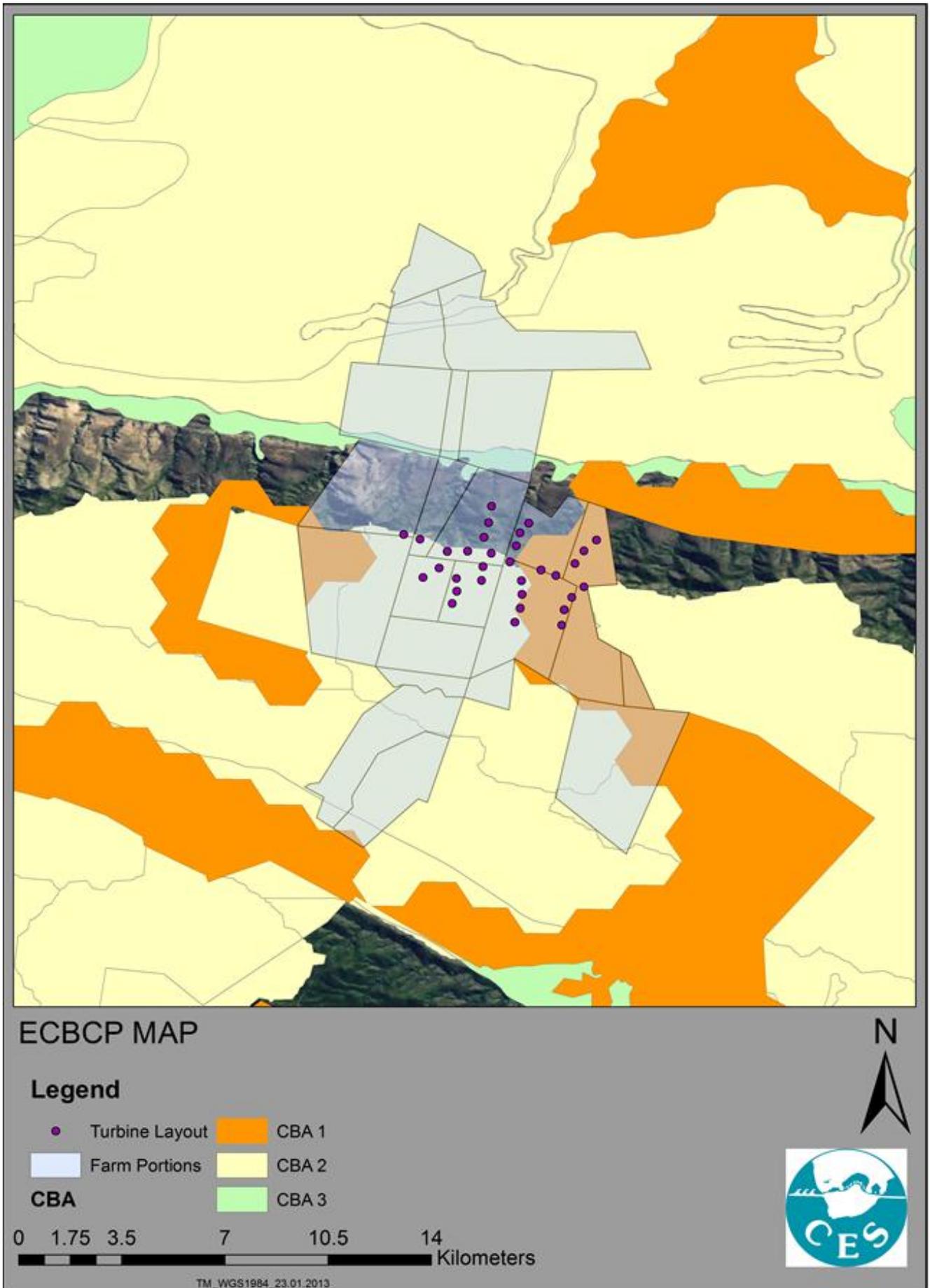


Figure 4-8: Critical Biodiversity Areas found within the project site

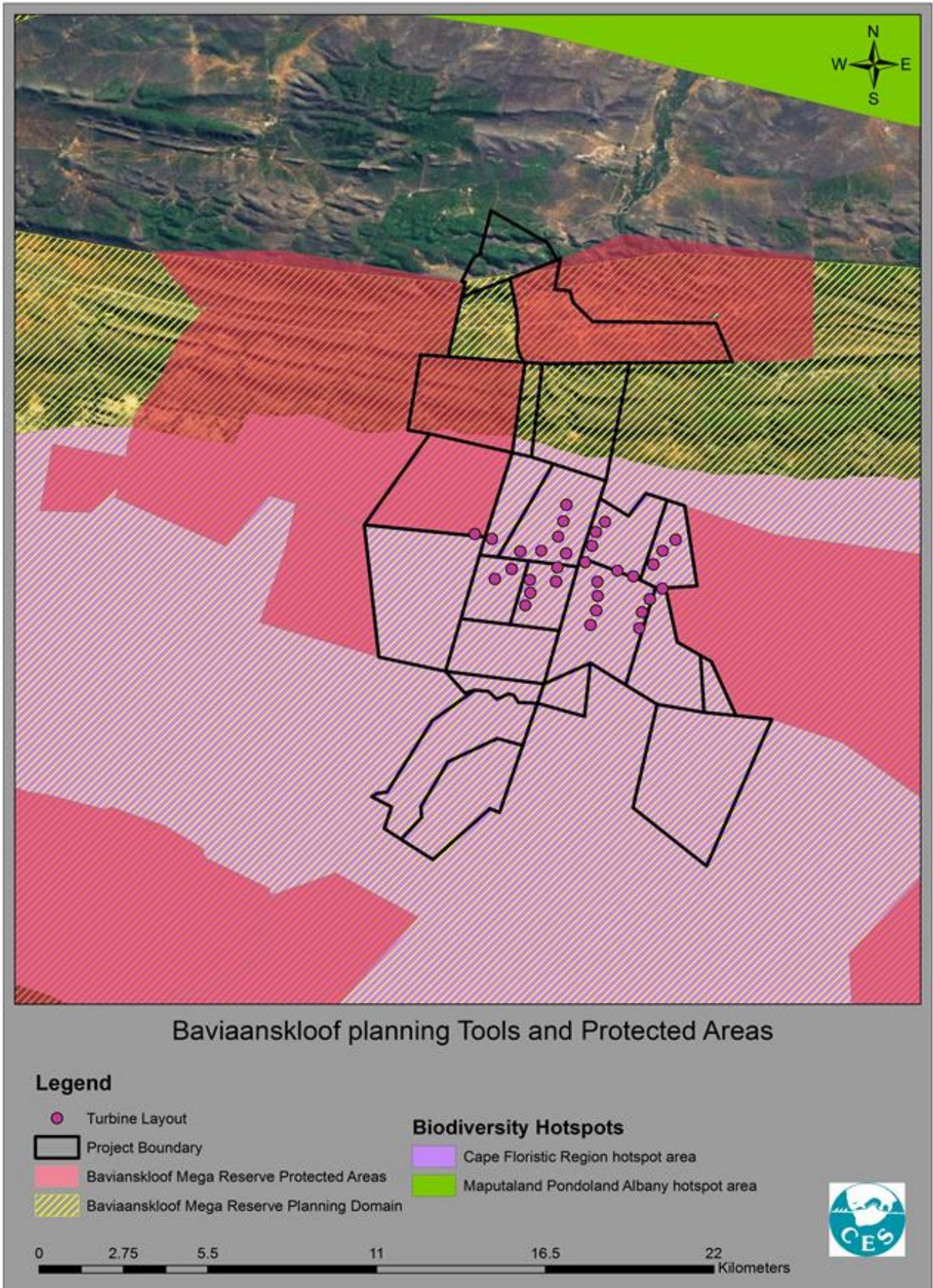


Figure 4-9: Baviaanskloof planning tools

4.8. SOCIO-ECONOMIC PROFILE

The proposed Inyanda Wind Energy Facility is to be developed in the Sundays River Valley Municipality situated within the Cacadu District Municipality, Eastern Cape Province. The Sundays River Municipality is located approximately 80 km north and east of the Nelson Mandela Bay Municipality and includes the coastal zone between Alexandria and the Sundays River Mouth as well as inland areas that extend to the Klein Winterhoek and Zuurburg Mountains. The main activities in the area include high intensity irrigation farming, eco-tourism and game farming.

The Sundays River Municipality is the fourth most populous municipality within the Cacadu district with a population of 54 504 people (StatsSA, 2011). The population is diversified across race groups and culture and is characterised by varying socio-economic levels of development. These are outlined in Tables 4-8 to 4-10. These statistics show a predominantly black population with the majority of the population being employed or not economically active. Children constitute 26.1 % of Sunday's River Valley population, the economically active population is at 65.8 % and persons aged 65 and older at 5.6 %.

Table 4-8: Representative population groups in the Sundays River Valley Local Municipality (Census, 2001)

Population Group	Percentage
Black	76.6
Coloured	18.06
Indian/Asian	0.02
White	5.35

Table 4-9: Employment status in the Sundays Rive Valley Municipality (Census, 2011)

Employment Status	Percentage
Employed	29.5
Unemployed	5.2
Not Economically Active	65.3

Table 4-10: Income groups in the MBLM (Census, 2011)

Income group	Percentage
No income	1730
R1 - R400	547
R401 – R800	970
R801 - R1 600	3727
R1 601 - R3 200	3944
R3 201 - R6 400	2264
R6 401 - R12 800	793
R12 801 - R25 600	432
R25 601 - R51 200	240
R51 201 - R102 400	47
R102401-R204800	16
R204 801 or more	40

The largest industry in the area is agriculture followed by Community and Social Services (Table 4-11). The largest group of the population is the employed group (between the ages of 15-64) constituting approximately 65.8% of the population. This data reflects that the majority of the population does not receive income and the majority of those who do earn an income earn within the R1601 – R3200 bracket. This reflects the level of poverty within the municipality.

Table 4-11: Industry amongst the employed in Sundays River Valley Municipality (Census, 2007)

Industry amongst the employed aged 15 to 65 years	Percentage
Agriculture; forestry and fishing	48.6
Undetermined	13.2
Community/Social Services	10.2
Private households	9.2
Wholesale Retail	7.5
Manufacturing	4.8
Financial, insurance, real estate	2.3
Construction	2.1
Transport, storage, communication	1.5
Electricity, gas, water	0.6
Mining / quarrying	0.1

The **Cacadu District Municipality Integrated Development Plan (IDP)** recognizes that although the electricity network within the District is generally regarded as reasonable, there are slight disparities that exist between the different local municipalities due to their location. While the majority of the communities of most Local Municipalities have direct access to electricity there are backlogs with respect to electricity provision that need to be addressed. It is envisaged that significant capital outlays will be required to upgrade both the urban and rural networks if they are to meet their target of ensuring universal access to electricity by 2014.

The **Sunday's River Integrated Development Plan (IDP)** identifies the need to continue to build, revamp and maintain electricity infrastructure, including its generation, distribution and reticulation to ensure that there is a sufficient and sustainable supply. It also recognises the need to develop alternative energy sources to meet these requirements.

5. PUBLIC PARTICIPATION PROCESS

According to regulation 28 (1) of the EIA regulations (2010), *A scoping report must include –*

- (h) details of the public participation process conducted in terms of regulation 27(a) including –*
 - (i) the steps that were taken to notify potentially interested and affected parties of the application;*
 - (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the application have been displayed, placed or given;*
 - (iii) a list of all persons or organisations that were identified and registered in terms of regulation 55 as interested and affected parties in relation to the application; and*
 - (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues.*

In line with the above-mentioned legislative requirement, this Chapter of the report provides the details of the Public Participation Process followed during the Scoping Phase of the EIA for the proposed Inyanda-Roodeplaas wind energy project.

The Scoping phase of the EIA provides for the involvement of Interested and Affected Parties (I&APs), in forums that allow them to voice their opinions and concerns, at an early stage of the proposed project. Such engagement is critical in the EIA, as it contributes to a better understanding of the proposed project among I&APs, and raises important issues that need to be assessed in the EIA process.

There are four key steps within the overall public participation process. These include -

- Notifying I&APs of the EIA;
- Holding public meetings;
- Making provision for I&APs to review and comment on all reports before they are finalised and submitted to the competent authority; and
- Making a record of responses to comments and concerns available to I&APs.

Prior to the preparation of this Scoping Report the above steps have comprised the activities described in sections 5.1 – 5.3 below.

5.1. NOTIFYING INTERESTED AND AFFECTED PARTIES OF THE EIA

5.1.1. *Background information document*

A four-page Background Information Document (BID) that provided basic information on the proposed project, the EIA process, a list of property portions and contact details for registration as an I&AP was prepared in both English and Afrikaans. The BID was sent to the landowner, all neighbouring farm owners, all persons responding to the inception advertising and organisations identified as potential I&APs. The BID is reproduced in Appendix C-1.

5.1.2. *Written notices*

Written notices were sent to the owners and/or occupants of land immediately surrounding and within 100m of the proposed project area. Copies of these letters, together with the details of the landowner in question to whom the letters were sent, are included in Appendix C-2. Letters were also sent to:

- Department of Agriculture, Fisheries and Forestry
- Department of Energy
- The South African National Roads Agency (SANRAL)
- Department of Economic Development and Environmental Affairs
- The Department of Water Affairs
- DEDEAT – Cacadu District

- Department of Environmental Health – Cacadu District
- Uitenhage Transitional Council
- Wildlife and Environment Society of Southern Africa (WESSA)
- ESKOM
- Various Ward Councillors
- South African Civil Aviation Authority (SACAA)
- South African Heritage Resources Agency (SAHRA)
- Birdlife SA
- Groendal Nature Reserve
- Eastern Cape Parks and Tourism Authority
- SANParks: Strategic Park Planning and Development
- Kirkwood Local Farmers Association
- Local Tourism Office

Copies of these letters are included in Appendix C-3 and proof of them being sent in Appendix C-4.

5.1.3. Advertisements

An advertisement was placed in two Provincial Newspapers (Die Burger on 23 March 2013 and The Herald on 22 March 2013) and one local newspaper (UD News) on 28 March 2013 in order to:

- Advise readers of the intention to undertake an EIA for the proposed project, and;
- Invite them to register as I&APs.

A copy of the advertisement is included in Appendix C-5.

5.1.4. Site notices

The NEMA regulations require the erection of “*a notice board at a place conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates is or is to be undertaken; and any alternative site mentioned in the application*”.

Therefore in accordance with this requirement, three 800 X 600mm single sided corex notice boards were placed on the boundary of the proposed project sites near the proposed locations. The location, text of the site notice and photographs of the fixed notices are provided in Appendix C-6.

5.2. PUBLIC REVIEW PERIOD OF DRAFT SCOPING REPORT AND MEETINGS

During the 40 day public review period for this Draft Environmental Scoping Report (DESR) a public meeting will be held. The availability of the report for review will be advertised in The Herald, Die Burger and the UD News, and all registered I&APs will be notified in writing of the review period and of the public meeting to be held.

5.3. REGISTRATION OF INTERESTED AND AFFECTED PARTIES AND COMMENTS DATABASE

A register of I&APs to date has been compiled, containing all available contact details of those who responded to the advertisement(s) and/or registered as I&APs (Appendix C-7).

A record of all comments received, together with a note of the responses given, will be also maintained.

The issues and concerns raised during the Scoping Phase up until the preparation of this Draft Scoping Report are discussed in Chapter 6 that follows.

6. ISSUES IDENTIFIED DURING SCOPING

According to regulation 28 (1) of the EIA regulations (2010), *A scoping report must include –*

1(g) a description of the environmental issues and potential impacts, including cumulative impacts that have been identified

6.1. POSSIBLE ENVIRONMENTAL ISSUES & IMPACTS

Listed below in Tables 6-1 to 6-3 are the environmental issues and resulting impacts particular to wind farm developments as informed by international, and to a lesser degree, local experience of these facilities. These are grouped according to the following phases of project development: planning and design, construction, operation, and decommissioning.

The identification of these impacts has resulted in the recommendation of various specialist assessments that should be undertaken. These impacts have been identified for all the various options proposed, and hence once clarification on these options is gained, some of these impacts may become redundant. Relevant aspects will be assessed during the EIA phase.

Table 6-1: Issues and impacts potentially relevant to the planning and design phase of the proposed project

PLANNING AND DESIGN PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Environmental Legal and Policy compliance	Direct	Potentially positive/negative	<ul style="list-style-type: none"> The planning and design of the wind energy facility should take into account, and comply with all relevant environmental legislation and policy, e.g. Local and District Spatial Development Frameworks
Landscape & visual	Direct/Indirect/Cumulative	Potentially Negative	<ul style="list-style-type: none"> Design of the wind turbine layout could result in an alteration of the landscape character and sense of place.
Existing infrastructure	Direct/Indirect	Potentially negative/positive	<ul style="list-style-type: none"> The wind energy facility should be designed to make maximum use of existing infrastructure such as roads, electrical connections and substations, etc. in order to minimize environmental disturbances created by construction. Upgrading of the existing infrastructure such as roads and electrical connections will benefit the local communities.
Electromagnetic Interference (EMI)	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> Wind energy facilities can cause television, radio and microwave interference by blocking and / or causing part of the signal to be delayed. Accurate siting of wind turbines in the planning and design phase should reduce these effects.
Shadow flicker	Direct/Cumulative	Potentially Negative	<ul style="list-style-type: none"> The layout of wind turbines should be designed in order to minimize the effects of shadow flicker and reflectivity on surrounding landowners.

Table 6-2: Issues and impacts potentially relevant to the construction phase of the proposed project

CONSTRUCTION PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Landscape & visual	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> Visual disturbance of the landscape during construction will be caused by the construction activity, and the presence and use of very large machinery.
Ecology	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> Irreversible habitat destruction associated with the construction is likely to be the largest source of risk to faunal and floral communities in the broader region. The construction of the wind energy facility could cause disturbances to local wildlife, especially breeding birds. During construction, aquatic fauna could be adversely affected if significant amounts of silt or any hydrocarbons or chemicals are allowed to enter water bodies. These impacts could also occur outside of the site boundary, downstream.
Cultural heritage & archaeology	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> The construction of a wind farm could have a direct physical impact on any undiscovered archaeological remains or other features of cultural heritage on the site. There could also be certain physical impacts along the wider route used to transport turbines to the site, for example heavy or wide loads could damage historic bridges and culverts, and road improvements such as corner widening could damage any features adjacent to the road.
Noise	Direct	Potentially Negative	<ul style="list-style-type: none"> Adverse noise effects could potentially occur during the construction of the wind farm such as from the movement of heavy goods vehicles.
Socio-economic	Direct/Indirect	Potentially positive/negative	<ul style="list-style-type: none"> During construction, the wind farm could have a beneficial local economic effect, supporting companies manufacturing turbine parts and providing work for construction and haulage contractors. Jobs may also be created for local communities. It could therefore have a beneficial social and economic impact in the area.
Traffic & transport	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> It is possible that there could be a very high number of heavy vehicle movements spread over the construction period. The average number of heavy vehicle movements per day might not be significant, but there could be peaks that might have a detrimental effect on sensitive receptors, especially if any of these are near the local access route.

CONSTRUCTION PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
			<ul style="list-style-type: none"> Transporting turbine parts and specialist construction equipment to the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required. There could also be an adverse effect on the integrity of existing road infrastructure such as bridges. Concrete and water transportation to a licensed waste site and Waste water treatment works(WWTW).
Wetlands, Surface and Groundwater	Direct/ Indirect	Potentially negative	<ul style="list-style-type: none"> The construction of the wind farm has the potential to affect water quality adversely within the streams on and near to the site and further downstream. Sediment is especially likely to be created during the excavation of turbine foundations, the laying of access tracks, digging of cable runs and soil stripping and stockpiling to create temporary areas of hard-standing, such as the construction compound. Pollution could arise from the spillage or leaking of diesel, lubricant and cement.
Geology and topography	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> The construction of the wind turbines will require excavations in order to lay adequate foundations. Approximately 500 m³ of substrate will have to be excavated for each turbine. Furthermore, minor excavations will be required for the construction of access roads as well as the laying of electrical cabling.
Health and safety	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> Health and safety aspects will mostly pertain to activities defined under the Occupational Health and Safety Act (Act No. 85 of 1993).
Removal of top soil and soil erosion	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> The construction of the individual wind turbines will require the clearing of vegetation which will result in exposed soil surfaces. This will increase the chances of soil erosion.
Impacts on air quality	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> Impacts on air quality during the construction phase will primarily be as a result of increased dust levels associated with the required excavation, vegetation clearing, grading and other construction activities.
Pollution and Solid Waste	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> It is anticipated that the proposed development will produce solid waste in the form of building rubble such as excavated soil and vegetation and excess concrete, bricks, etc. and general waste such as litter during the

CONSTRUCTION PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
			construction phase.
Impacts on soils	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> Impacts on soil may primarily be due to compaction, erosion and contamination.

Table 6-3: Issues and impacts potentially relevant to the operational phase of the proposed project

OPERATIONAL PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Landscape & visual		Potentially negative	<ul style="list-style-type: none"> Alteration of the landscape character and sense of place because of the wind turbine array.
Ecology	Direct/Indirect/ Cumulative	Potentially negative	<ul style="list-style-type: none"> The wind energy facility could result in a permanent physical loss of important habitat and species on the land required for the turbines and ancillary elements. There could additionally be habitat severance and fragmentation, particularly from linear elements such as the access tracks. The maintenance of the wind farm could cause disturbance to local wildlife, especially breeding birds and bat populations.
Avifauna and Bats	Direct/Indirect/ Cumulative	Potentially negative	<ul style="list-style-type: none"> When the wind farm is operational, certain types of bird species, for example raptors, could avoid the area due to the rotating blades, and could consequently be affected by a loss of feeding habitat. Particular types of bird species, for example, raptors, divers and geese, could be susceptible to collision with the turbines and any overhead wires, particularly if the scheme straddles regular flight lines between roosting and feeding grounds or where the site is used by birds for hunting. The potential impacts on bats may be significant if the study area does in fact support significant communities of these mammals.
Cultural heritage & archaeology	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> The presence of a wind farm could indirectly affect the visual appeal of a cultural heritage feature within 35km of the site (maximum visually discernible distance).
Noise	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> The wind turbines could potentially give rise to adverse noise effects, particularly at lower wind speeds or in sheltered locations where the noise of the blades is not masked by the noise of the wind.
Electromagnetic Interference (EMI)	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> Wind farms can cause television, radio and microwave interference by blocking and / or causing part of the signal to be delayed.

OPERATIONAL PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Shadow flicker & reflectivity	Direct/Indirect/ Cumulative	Potentially negative	<ul style="list-style-type: none"> Rotating blades may catch and reflect sunlight at short intervals, resulting in flickering that is potentially irritating.
Socio-economics	Direct/Indirect/ Cumulative	Potentially negative or positive	<ul style="list-style-type: none"> The wind farm could potentially discourage or encourage people from visiting the area and therefore have an unknown effect on tourism. The wind farm could also have a more localized effect on particular tourism facilities nearby and within sight of the wind farm. Jobs may be created for local communities. It could therefore have a beneficial social and economic impact in the area.
Traffic & transport	Direct/Indirect/	Potentially negative or positive	<ul style="list-style-type: none"> Any highway modifications which are provided to facilitate the scheme could, have long lasting traffic benefits.
Air quality & climate change	Direct/Indirect/ Cumulative	Potentially positive	<ul style="list-style-type: none"> The electricity generated by the wind farm will displace some of that produced by fossil fuel based forms of electricity generation. The scheme, over its lifetime, will therefore avoid the production of a sizeable amount of CO₂, SO₂ and NO₂ that would otherwise be emitted to the atmosphere.
Wetlands, Surface and Groundwater	Direct/ Indirect	Potentially Negative	<ul style="list-style-type: none"> The placement of turbines on the banks of drainage lines may result in erosion of the banks and disturbance to the riparian vegetation. The use of blinding cement on roadways could affect the pH of surface water, fines could wash out of bare slopes before natural regeneration has established, and there could be leaks or spillages of lubricants from any permanent maintenance compound. Any deterioration of water quality as a result of the wind farm could potentially affect private water supply abstractions in the vicinity of the site. Areas of ecological value such as wetlands within and beyond the site could be sensitive to any alteration of localized drainage patterns which might arise from the introduction of turbine bases, access tracks and underground cable runs. The introduction of roads and impermeable areas of hard standing could increase rates of run-off and therefore the risk of localized flooding.
Loss of agricultural land	Direct	Potentially negative	<ul style="list-style-type: none"> The proposed development site is currently zoned as agriculture. The proposed development will therefore result in a loss of agricultural potential.

OPERATIONAL PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Impacts on aviation	Direct/Indirect	Potentially negative	<ul style="list-style-type: none"> Wind turbine blade tips, at their highest point, may reach more than 150 m in height. If located near airports or known flight paths, a wind farm may impact aircraft safety directly through potential collision or alteration of flight paths. Furthermore, wind turbines could potentially cause electromagnetic interference with aviation radar.

Table 6-4: Issues and impacts potentially relevant to the decommissioning phase of the proposed project

DECOMMISSIONING PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
Landscape & visual	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> Visual disturbance of the landscape during decommissioning will be caused by the presence and use of very large machinery.
Ecology	Direct/Indirect	Potentially Negative/positive	<ul style="list-style-type: none"> The decommissioning of the wind farm could cause disturbance to local wildlife, especially breeding birds. The removal of the wind turbines could prompt the return of certain species of wildlife that had avoided the area while the turbines were present.
Noise	Direct	Potentially Negative	<ul style="list-style-type: none"> Adverse noise effects could potentially occur during the decommissioning of the wind farm, for example from the movement of large vehicles.
Socio-economics	Direct/Indirect	Potentially Positive	<ul style="list-style-type: none"> During decommissioning, the wind farm could have a beneficial local economic effect by providing jobs for local communities. Further employment opportunities may result from any new developments that could occur on the site once the wind turbines have been decommissioned.
Traffic & transport	Direct/Indirect	Potentially Negative	<ul style="list-style-type: none"> A high number of heavy vehicle movements will occur during the decommissioning phase. The average number of heavy vehicle movements per day might not be significant, but there could be peaks that might have a detrimental effect on sensitive receptors, especially if any of these are near the local access route. Transporting turbine parts and

DECOMMISSIONING PHASE			
Issue	Impact	Nature	Description of Issue/ Impact
			specialist construction equipment away from the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required. <ul style="list-style-type: none"> • There could also be an adverse effect on the integrity of existing road infrastructure such as bridges.
Land Use	Direct/Indirect/ Cumulative	Potentially positive	<ul style="list-style-type: none"> • Land previously unavailable for certain types of land use will now be available for those uses, e.g. agriculture
Soils	Direct/Indirect	Potentially positive	<ul style="list-style-type: none"> • After the removal of all wind farm-related structures, the disturbed soils should be re vegetated to avoid unnecessary soil erosion.

6.1.1. Re-powering phase

Current wind turbines are designed to last for over 25 years and this is the figure that has been used to plan the life span of a modern wind farm. Should the repowering of the wind farm be financially, environmental and socially viable, the life span can be extended by another 25 years. The potential impacts of repowering would be similar to those of the construction and operation phase, potentially less severe given that all infrastructure would already be in place.

6.2. ISSUES AND CONCERNS ARISING FROM THE PPP TO DATE

NAME	ISSUE	DATE	RESPONSE
GENERAL			
Tinus Vermaak Elands River Valley FPA and Tourism Chairman	Need information with regards to planned information meetings and program indicating EIA process and progress	10/06/13 Email	All interested and affected parties were supplied with a background information document (BID) that contains a brief description of the EIA process. All registered IAPs will be informed of any events such as public meetings and release of report for comment. The Environmental Impact Assessment (EIA) process is fully explained within the draft Scoping Report that will be released and available for public review and comment. This report will be made available in the Uitenhage and Kirkwood library as well as an online copy on our website. IAP's will be informed of this.
Alastair Gordon Rudman Merora Farming cc.	Where are the transmission lines and where will it connect into substations	11/06/13 Email	The initial placement of the power lines for the project site can be found in the alternatives section of the scoping report. Two alternative line corridors have been proposed; they run from the north of the site and connect to the Eskom grid at the Skilpad substation. These will be assessed in the specialist impact studies that will form part of the Environmental Impact Assessment Report.
Asanda Sontele Eastern Cape Parks and Tourism Agency	The Department of Environmental Affairs (DEA) is currently conducting a Strategic Environmental Assessment for South Africa for Wind Energy which will create strategic nodes to site wind energy farms. Due to the high level of sensitivity of the proposed development site and its surrounding, ECPTA recommends that this process aligns itself with the outcomes of that SEA.	18/11/13 Email	According to the CSIR website, " <i>Finalisation of Renewable Energy Development Zones (REDZs) identification is planned for the third quarter of 2014, after which it will be submitted for Cabinet approval and subsequent gazetting</i> ". Even though this will be gazetted and the SEA will recommend ideal placement of renewable energy development, this will not preclude developers from applying for renewable energy developments outside of the areas recommended by the SEA. This information is also available on the CSIR website, which states: " <i>No existing projects already applied for at DEA will be affected by the SEAs given that the SEAs will only come into effect after 2014 after which the current EIA process, including motivating for development in any area, will still be available for any development outside the REDZs.</i> "

NAME	ISSUE	DATE	RESPONSE
Asanda Sontele Eastern Cape Parks and Tourism Agency	Is situated in a priority area identified in the ECPAES and between three nature reserves (Groendal, Stinkhoutberg & Mierhoopplaat) and the Baviaanskloof WHS. The nature reserves will all become part of the Cape Floristic Region Protected Areas World Heritage Sites (CFRPA WHS) once the extension process has been completed.	18/113 Email	This is a concern of ours. The developer has discussed plans to maintain the property as a conservation area after the construction of the wind turbines are completed (should an EA be granted). This will be discussed in the focus group meeting.
	A portion of the site falls within a CBA 1 as identified by the Eastern Cape Biodiversity Conservation Plan (ECBCP). Most of the remainder is in a CBA 2. Portions of the site also identified in the Baviaanskloof Conservation Plan as CBA 1 and 2.		Noted. During the EIA phase of the project, an Ecological Impact Assessment will be completed to determine the affect the turbines will have on the surrounding environment. This will be discussed in detail. Ecological mapping has also been prepared to assess the proposed areas and presented above.
Rolf Clotz	Farmer in the Elands River Valley expressed interest in the project and requested that his property be considered for inclusion.	Email 21/07/13	CES contacted both the developer and the land owner. CES identified the potential land portions and is awaiting confirmation from Mr Clotz
VISUAL, NOISE AND ECOLOGICAL IMPACT			
Neil Robert Evans Private land owner Neighbour	Visual and Noise Impact	Fax	Noted. A Visual Impact Assessment and Noise Impact Assessment will be undertaken during the EIA phase of the project. The specialists will be notified of all these concerns and asked to address them where possible. The study will model the suggested turbine type, and use topographical and climatic data to indicate the visual noise impacts on the surrounding areas.

NAME	ISSUE	DATE	RESPONSE
Alastair Gordon Rudman Merora Farming cc.	What are the : Visual and Aesthetic Impacts	11/06/13 Email	As mentioned above.
	Ecological Impact		Noted. A terrestrial ecological specialist study will be undertaken during the EIR phase of the project. This study will note all relevant species within the study area well as noting any species of special concern.
	Noise impact on domestic		As mentioned above.
	How will this effect indigenous trees, fauna and flora		As mentioned in point 2 above.
Asanda Sontele Eastern Cape Parks and Tourism Agency	Impacts on views and sense of place (especially considering that Groendal is a declared wilderness area). From the top of the plateaus at Groendal (which form part of the network of hiking trails) there is a completely uninterrupted view all the way to the Baviaanskloof. The presence of 120 m wind turbines right on the boundary (the closest one is less than 100 m from the boundary) of Groendal could have a severe impact on views and sense of place.	18/11/13 Email	Noted, and is part of the Visual Impact Assessment (VIA) study that will be conducted..
Mr Bool Smuts Landmark Foundation	As independent environmental consultants CES should desist from marketing the company that is proposing the development as in your words: "company, was founded to supply Africa with clean, renewable and sustainable power sources". Such comments will in due course be interpreted as a conflict of interest for your company.	Email 19/05/13	CES can assure that we have no interest in marketing any applicant, neither do we have any commercial interest or otherwise in any applicants' ventures. The wording about the company is theirs, as are they entitled to in these notifications and process related submissions.

NAME	ISSUE	DATE	RESPONSE
<p>Mr Bool Smuts and Ms Jeannine Landmark Foundation</p>	<p>This new development for yet another wind farm is again transecting a very important leopard connectivity corridor. The PhD that is about to be concluded indicates that we are sitting with a locally and critically endangered population of less than 40 individual territorial cats in the about 350 000 ha region surrounding the Baviaanskloof, Stinhoutberg, Groendal complex, inclusive of the Winterhoek mountains you have identified in this correspondence sequence. I have no doubt that this proposed industrial size development in a key part of their habitat will be the death-knell for the species that already has to contend with intense farmer persecutions.</p> <p>You would be familiar with our position, which would likely be similar to the objections raised on the Brakkefontein Wind Farm development. The details we can provide as part of the IAP.</p>	<p>Email 19/05/13</p>	<p>CES is aware of the landmark Foundations work in the Eastern Cape and has requested they shed some light on their teams' work, if any, in the project area itself. Jeannine kindly supplied us with some information from her PhD work of leopards in the area.</p>
<p>IMPACT ON GROENDAL DAM</p>			
<p>Thomas Pietschmann Neighbour</p>	<p>It is a watersided area servicing the Groendal Dam which supplies drinking water to Uitenhage area. A wilderness area which is sacred for life.</p>	<p>Email</p>	<p>An Ecological Impact Assessment will determine the effect that the proposed project will have within the study area.</p> <p>Should it be found that the project does have any potential impacts, mitigation strategies will be prepared to combat this. Water Use Licenses will also be completed should they be required.</p>

NAME	ISSUE	DATE	RESPONSE
Asanda Sontele Eastern Cape Parks and Tourism Agency	Eastern Cape Parks and Tourism is the designated Management Authority for the Baviaanskloof World Heritage Site as well as the Groendal Nature Reserve. The proposed area for the Wind Energy facility falls within the buffer zone around Baviaanskloof WHS.	18/06/13 Email	Noted. The ECPTA has been invited to focus group meeting at the CES offices to discuss these matters. The area has been completely mapped with all the relevant ecological information available.
Neil Robert Evans Private land owner Neighbour	Site is a watershed for Groendal Dam, it will result in siltification.	Fax	Same as above.
Asanda Sontele Eastern Cape Parks and Tourism Agency	This proposed site is situated within a mountain catchment, which is the source of the Kwazungu River which feeds into Groendal Dam – the main water reservoir for Uitenhage domestic water supply. Disturbance of the area has the potential to negatively affect catchment as well as increase siltation of the dam.	18/06/13 Email	As previously stated above.
GROENDAL NATURE RESERVE			
Thomas Pietschmann Neighbour	Totally unacceptable. The area falls directly between the future planned Groendal and Baviaans Mega Reserve.	Email	The land is privately owned. It has been proposed to be maintained as a conservation area with dual use.
AVIFAUNAL AND BAT			
Alastair Gordon Rudman Merora Farming cc.	What are the noise impacts on domestic wild life and birds – Endangered species?	11/06/13 Email	The avifaunal and bat studies will demarcate bird and bat sensitive areas that need to be excluded from development. This will be looked at during the EIR phase. In addition to this, a twelve month long monitoring program is under way that will make more recommendations that will reduce the impact on these species. An avifaunal study will demarcate bird sensitive areas that need to be excluded from development. This will be looked at during the EIR phase.

7. ALTERNATIVES

According to regulation 28 (1) and (3) of the EIA regulations (2010), A *scoping report must include –*

(j) a description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity

(3) The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in subregulation (1)(c), exist.

One of the objectives of an EIA is to investigate alternatives to the proposed project. There are two types of alternatives - Fundamental Alternatives and Incremental Alternatives.

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

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

- (a) the type of activity to be undertaken;
- (b) the property on which or location where it is proposed to undertake the activity;
- (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.

7.1. FUNDAMENTAL ALTERNATIVES

Fundamental alternatives are developments that are totally different from the proposed project and usually involve a different type of development on the proposed site, or a different location for the proposed development.

7.1.1. A different type of development

The current zoning for the property portions is agriculture. The current development proposed is the production of renewable energy. Non-renewable production of energy is unfavourable in terms of the Kyoto Protocol and therefore not an option. Alternative types of developments are explored in the table below (Table 7-1)

Table 7-1: Alternative types of development

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and feasible	Further assessment	Comment
<p><u>Type of technology</u> This refers to the fundamental technology options, such as energy generation from wind vs. coal fired power plant, and the environmental risks and impacts associated with such options.</p>	Alternative energy technology 1 – Wind turbines (Preferred alternative)	<ul style="list-style-type: none"> • Clean and renewable energy • Mitigate climate change • Does not requires large areas of land 	<ul style="list-style-type: none"> • Visually intrusive 	YES	YES	
	Alternative energy technology 2 – Solar PV	<ul style="list-style-type: none"> • Clean and renewable energy • Mitigate climate change 	<ul style="list-style-type: none"> • Visually intrusive • Requires large area of land 	YES	NO	
	Alternative energy technology 3 – Concentrated Solar Power (CSP)	<ul style="list-style-type: none"> • Clean and renewable energy • Mitigate climate change 	<ul style="list-style-type: none"> • Visually intrusive • Requires large area of land • Water probably a limiting factor • Reflectivity of mirrors probably a significant issue 	NO	NO	
	Alternative energy technology 4 – Coal fired power plant	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • Air pollution from coal dust and smoke stack emissions (SO₂) • Contribution to climate change • Ground contamination from coal dust 	NO	NO	
	Alternative energy technology 5 – biomass	<ul style="list-style-type: none"> • Clean and renewable energy • Mitigate climate change 	<ul style="list-style-type: none"> • Expensive source of energy 	NO	NO	
	Alternative energy technology – nuclear power	<ul style="list-style-type: none"> • Greater electricity generation with little raw material required 	<ul style="list-style-type: none"> • Raw material highly radioactive 	NO	NO	

7.1.2. A different location

High wind levels occur in specific areas across South Africa. A limited number of those areas are available for development. The main determinants in selecting the proposed location were:-

- Wind speed;
- Proximity to a grid connection point, and;
- Available land.

Preliminary investigations have identified that the proposed project site meets these criteria and so different locations for the current project will not be considered (Table 7-2). The wind resource and connectivity to the grid are the critical factors to the overall feasibility of the project.

7.1.3. Land use alternatives

The development of a wind farm is not a mutually exclusive land use. A number of activities can be carried out in close proximity to the turbines without adverse effect. There are, however, activities that must be excluded from the immediate vicinity and possibly even the surrounding areas. Table 7-3 is a simple matrix (as determined by CES) indicating some of the land use activities that may, or cannot, be complementary to wind farm development.

Table 7-3: Matrix indicating land uses contemplated to occur in conjunction with development of a wind farm

Land use	Same land		Surrounding land	
	Yes	No	Yes	No
Farming				
Livestock	*		*	
Crops	*		*	
Game	*		*	
Eco-tourism (perception-dependent)	*	*	*	
Settlement		*	*	
Light Industry (Industry-dependent)	*	*	*	
Aerodromes		*		*
Conservation	*		*	

7.1.4. No-Go development

The no development option assumes the site remains in its current state, i.e. agricultural land. The no-go alternative will be used as a baseline throughout the assessment process against which potential impacts will be compared in an objective manner and will be fully assessed in the EIR.

7.2. INCREMENTAL ALTERNATIVES

Incremental alternatives are modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered, including:

- The design or layout of the activity;
- The technology to be used in the activity, and;
- The operational aspects of the activity.

7.2.1. Layout Alternatives

In the EIA phase, layouts (siting of wind turbines) will be assessed and refined based on specialist

environmental feedback to determine which one will have the least impacts. Current layout of the proposed wind farm is illustrated in Figure 7.1 and Figure 7.2 below.

An ecological specialist, avifauna specialist, bat specialist and socio-economic specialist (to name but a few) have been appointed to assess the status of the fauna and flora and to determine the conservation status of the proposed development. The following criteria will be considered in determining the final layout: (1) recommendations from the various specialists (2) guidelines from relevant bioregional plans (3) comments from I&APs and other stakeholders (4) site visits and (5) scientific publications (6) the developer following wind data recorded on site.

7.2.2. Technology Alternatives

Various technology alternatives (i.e. size, height and type of wind turbine) will be considered by the developer therefore the type that has the maximum dimensions and therefore the 'worst-case scenario' environmental impact shall be assessed in the EIR.

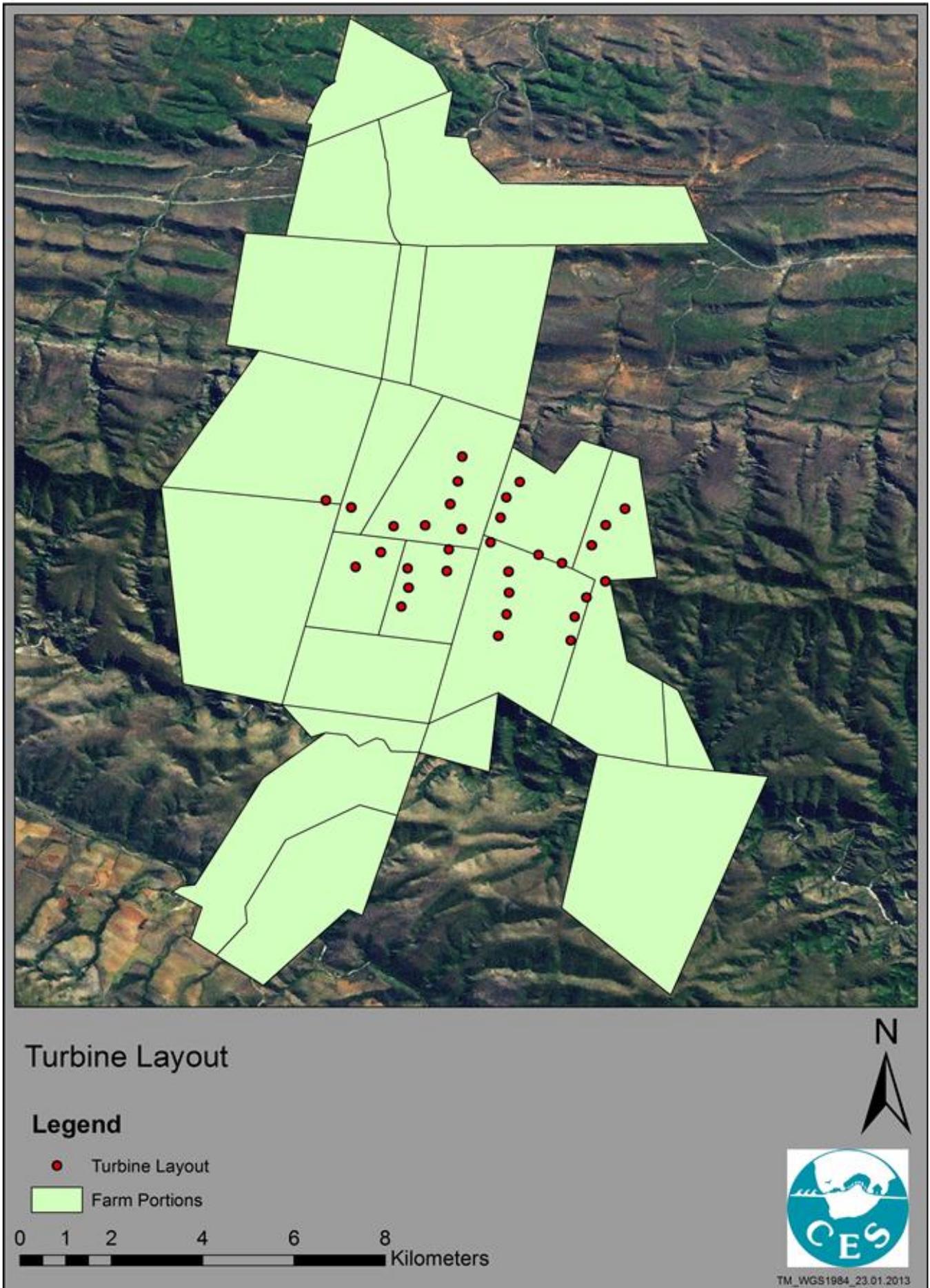


Figure 7-1: Turbine Layout Alternative 1

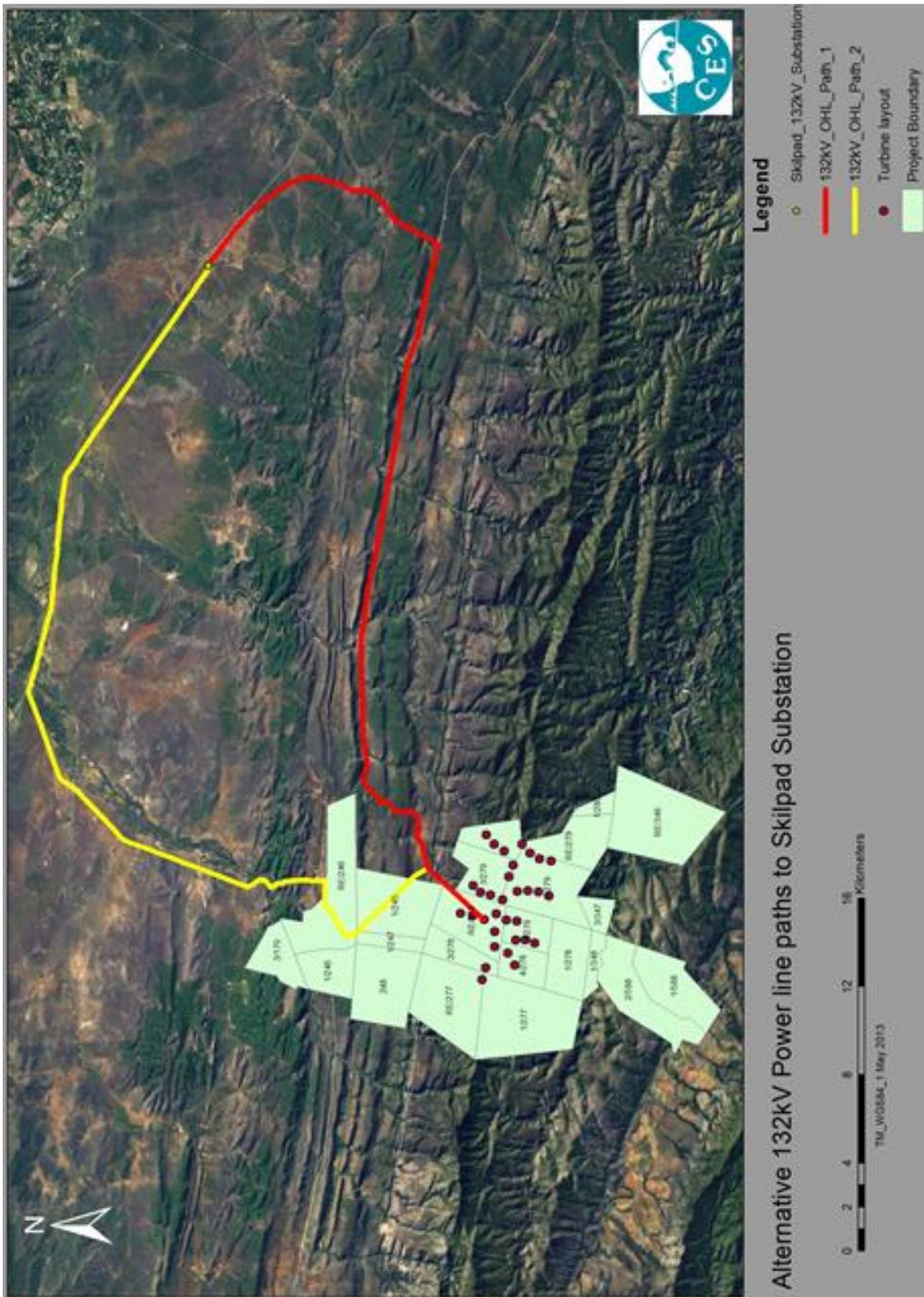


Figure 7-2: Alternative 132kV power line indicative corridor paths to connect the proposed Inyanda wind energy facility to the Skilpad 132kV Substation.

8. PLAN OF STUDY FOR EIA

According to regulation 28 (1) of the EIA regulations (2010), *A scoping report must include –*

(n) a plan of study for environmental impact assessment which sets out the proposed approach to the environmental impact assessment of the application, which must include –

(i) a description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken;

(ii) an indication of the stages at which the competent authority will be consulted;

(iii) a description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity; and

(iv) particulars of the public participation process that will be conducted during the environmental impact assessment process;

(o) any specific information required by the competent authority; and

(p) any other matters required in terms of sections 24(4)(a) and (b) of the Act.

In line with the above-mentioned legislative requirement, this Chapter therefore sets out the Plan of Study (PoS) for the EIA phase of the assessment. Consultation with DEA will be ongoing throughout this EIA. However, it is anticipated that DEA will provide relevant comment with respect to the adequacy of this Plan of Study for the EIA, as it informs the content of the EIR and sufficiency thereof.

8.1. EIA PHASE

The EIA phase has four key elements, namely:-

- **Specialist Studies:** Specialist studies identified as being necessary during the Scoping Phase, plus any additional studies that may be required by the authorities, will be undertaken during the initial phase of the EIA. Appropriately qualified and experienced specialists will be appointed to undertake the various assessments. Specialists will gather baseline information relevant to the study being undertaken and will assess impacts associated with the development. Specialists will also make recommendations to mitigate negative impacts and enhance benefits. The resulting information will be synthesised into the Environmental Impact Report (EIR), whilst the full specialist reports will be attached to the EIR as a Specialist Volume.
- **Environmental Impact Report (EIR):** The main purpose of this report is to gather and synthesise environmental information and evaluate the overall environmental impacts associated with the development, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIR also identifies mitigation measures and management recommendations to minimise negative impacts and enhance benefits. The EIR and associated specialist reports are made available for public and authority review and comment. The availability of the report will be advertised in one Provincial and one local newspaper and the report will also be made available for public scrutiny in easily accessible locations. **(Kirkwood and Uitenhage Public libraries, CES website)**
- **Comments Report:** The comments report provides a detailed record of comments, issues and concerns raised by I&APs and the authorities during the review period, and also provides relevant responses to these comments.
- **Environmental Management Programme (EMPr):** The EMPr provides guidelines to the project proponent and the technical team on how best to implement the mitigation measures and management recommendations outlined in the EIR during the construction and operational phase.

In addition to the above, the **Public Participation Process** commenced during the Scoping Phase is continued, during which I&APs are afforded further opportunities to raise their issues, concerns and comments regarding the proposed project. It is possible that some of the project details may have changed in response to the preliminary findings of the ESR, and as a result of design changes made by the project proponent. I&APs and key stakeholders are given the opportunity to

review the Draft EIR before it is submitted to the authorities for consideration. Comments on the Draft EIR received from I&APs will be included and addressed in the final EIR.

8.2. SPECIALIST STUDIES

The following Specialist Studies are proposed for the EIA Phase of the assessment:

- Visual Impact Assessment
- Ecological Impact Assessment (incorporating flora and fauna)
- Noise Impact Assessment
- Heritage, Archaeological and Paleontological Impact Assessment
- Avi-Faunal Assessment
- Bat Impact Assessment
- Agricultural Assessment
- Socio-economic Assessment
- Hydrological/wetland Assessment?

The Terms of Reference for the above-mentioned studies, which outline the information required from the specialists, are provided below and the methodology for assessing the significance of impacts and alternatives is described in the section that follows. Specialists will also be required to address issues raised by I&APs in their reports.

8.2.1. *Visual and Landscape Impact Assessment*

The size of the structures is dictated by the design, and there is little that can be done to reduce their dimensions. Therefore, the Visual and Landscape Impact Assessment (the details of which are provided below) will focus on mitigation measures. The specific Terms of Reference for the Visual and Landscape Impact Assessment will therefore include:-

1. Conduct a site reconnaissance visit and photographic survey of the proposed project site.
2. Conduct a desk top mapping exercise to establish visual sensitivity:-
 - Describe and rate the scenic character and sense of place of the area and site;
 - Establish extent of visibility by mapping the view-sheds and zones of visual influence;
 - Establish visual exposure to viewpoints; and
 - Establish the inherent visual sensitivity of the site by mapping slope grades, landforms, vegetation, special features and land use and overlaying all relevant above map layers to assimilate a visual sensitivity map.
3. Review relevant legislation, policies, guidelines and standards.
4. Preparation of a draft Visual Baseline/Sensitivity report:
 - Assessing visual sensitivity criteria such as extent of visibility, the sites inherent sensitivity, visual sensitivity of the receptor's, visual absorption capacity of the area and visual intrusion on the character of the area;
 - Prepare photomontages of the proposed development;
 - Conduct shadow flickering modelling;
 - Assess the proposed project against the visual impact criteria (visibility, visual exposure, sensitivity of site and receptor, visual absorption capacity and visual intrusion) for the site;
 - Assess impacts based on a synthesis of criteria for each site (criteria = nature of impact, extent, duration, intensity, probability and significance); and
 - Establish mitigation measures/recommendations with regards to minimizing visual risk areas.

8.2.2. *Ecological Impact Assessment*

The assessment will follow on from the initial study, which included a site visit (see Chapter 4 above) conducted during the scoping phase, and will address any key issues raised by interested and affected parties. The study will comprise a desktop study of all available and relevant literature.

However, a detailed survey of the site will be undertaken to determine the possibility of there being listed threatened or protected ecosystems and species on the proposed project site. If any of these are found, the Environmental Management Plan will include recommended measures to remove or otherwise protect plant species found on the site that are afforded protection under the National Environmental Management: Biodiversity Act during construction.

This specialist study will therefore include but will not be limited to –

1. A detailed description of the ecological (fauna and flora) environment within and immediately surrounding the footprint of the proposed development and will consider terrestrial fauna and flora. Fauna include mammals, reptiles, amphibians, and insects but not avifauna as these will be the subject of a separate specialist. This aspect of the report will specifically include the identification of -
 - Areas of high biodiversity;
 - The presence of species of special concern, including sensitive, endemic and protected species;
 - Habitat associations and conservation status of the identified fauna and flora;
 - The presence of areas sensitive to invasion by alien species; and
 - The presence of conservation areas and sensitive habitats where disturbance should be avoided or minimised.
2. Review relevant legislation, policies, guidelines and standards.
3. An assessment of the potential direct and indirect impacts resulting from the proposed development (including the wind turbines, associated infrastructure e.g. access road), both on the footprint and the immediate surrounding area during construction and operation;
4. A detailed description of appropriate mitigation measures that can be adopted to reduce negative impacts for each phase of the project, where required; and
5. Checklists of faunal groups identified in the region to date, highlighting sensitive species and their possible areas of distribution.

8.2.3. Noise Impact Assessment

The objective of the noise impact assessment will be to:

1. Identify all potential noise sensitive sites that could be impacted upon by activities relating to the construction and operation of the proposed wind energy facility.
2. Identify all noise sources relating to the activities of the facility during the construction and operation phases that could potentially result in a noise impact at the identified noise sensitive sites.
3. Determine the sound emission, operating cycle and nature of the sound emission from each of the identified noise sources.
4. Calculate the combined sound power level due to the sound emissions of the individual noise sources.
5. Calculate the expected rating level of sound at the identified noise sensitive sites from the combined sound power level emanating from identified noise sources.
6. Display the rating level of sound emitted by the noise sources in the form of noise contours superimposed on the map of the study area.
7. Determine the existing ambient levels of noise at identified noise sensitive sites by conducting representative sound measurements.
8. Determine the acceptable rating level for noise at the identified noise sensitive sites.
9. Calculate the noise impact at identified noise sensitive sites.
10. Assess the noise impact at identified noise sensitive sites in terms of:-

- SANS 101 SANS 10103 for “The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication”.
 - Noise Control Regulations.
 - World Health Organisation - Guidelines for Community Noise.
 - World Bank - Environmental Guidelines.
11. Investigate alternative noise mitigation procedures, if required, in collaboration with the design engineers of the facility and estimate the impact of noise upon implementation of such procedures.
 12. Prepare and submit a full environmental noise impact report containing detailed procedures and findings of the investigation including recommended noise mitigation procedures, if relevant.

8.2.4. Heritage, Archaeological and Paleontological Impact Assessment

As part of the Environmental Impact Assessment (EIA) for the proposed facility, it is necessary to undertake a phase one archaeological and historical survey to fulfil SAHRA requirements in accordance with the requirements of the National Heritage Resources Act (Act No 25 of 1999) which requires that “...any development or other activity which will change the character of a site exceeding 5 000m², or the rezoning or change of land use of a site exceeding 10 000 m², requires an archaeological impact assessment”.

A heritage and archaeological impact assessment will therefore be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of archaeological significance. This will be a phase 1 assessment and will be largely desk-top although a site visit will be required to enable the specialist the opportunity to look for significant artefacts on the surface of the site. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed.

The terms of reference for the Phase 1 heritage and archaeological study will be to:

1. Determine the likelihood of heritage or archaeological remains of significance on the proposed site within the study area;
2. Identify and map (where applicable) the location of any significant heritage or archaeological remains;
3. Assess the sensitivity and significance of heritage and archaeological remains in the site; and
4. Identify mitigatory measures to protect and maintain any valuable heritage and archaeological sites and remains that may exist within the proposed site.

A paleontological impact assessment will therefore be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of paleontological significance.

This will be a phase 1 assessment and will be largely desk-top although a site visit will be required to enable the specialist the opportunity to look for significant artefacts/fossils on the surface of the site. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed. The terms of reference for the Phase 1 paleontological study will be to:

- Provide a summary of the relevant legislation;
- Conduct a site inspection as required by national legislation;
- Determine the likelihood of paleontological remains of significance in the proposed site;
- Identify and map (where applicable) the location of any significant paleontological remains;
- Assess the sensitivity and significance of paleontological remains in the site;

- Assess the significance of direct and cumulative impacts of the proposed development and viable alternatives on paleontological resources; and
- Identify mitigatory measures to protect and maintain any valuable paleontological sites and remains that may exist within the proposed site.
- Prepare and submit any permit applications to the relevant authorities

8.2.5. Avifauna Assessment

An avifauna specialist study will be conducted. The assessment will include:

1. A desk-top review of existing literature to seek:
 - Previous means of predicting bird mortality (and other impacts) of wind turbines affecting birds in groups similar to those in the study area;
 - Accounts of mortality at wind turbines; and
 - Information on the status of bird groups most likely to be affected.
2. A site visit to identify species of special concern and assess the likely impacts of the construction and operational phases on the avifauna of the site.
 - Surveys will be conducted on the study area in line with recommended guidelines in this regard. These will be refined for the study area.
3. Conduct a review of international literature and experience relating to operational wind farms; including state of the art plants around the world;
4. Contextualize the literature and experience and relate it to the regional scenario and local avifauna;
5. Map sensitive areas in and around the proposed project site(s);
6. Describe the affected environment and determine the status quo in terms of avifauna;
7. Indicate how an avifaunal resource or community will be affected by the proposed project;
8. Discuss gaps in the baseline data with respect to avifauna and relevant habitats;
9. List and describe the expected impacts;
10. Assess and evaluate the anticipated impacts; and;
11. Make recommendations for relevant mitigation measures which will allow the reduction of negative impacts and the maximization of the benefits associated with any identified positive impacts.

Although the avifauna specialist will assess avian collision risk and provide detailed explanations and ratings of the likelihood of collisions of various species, detailed avian collision modelling i.e. quantitatively assessing the collision risk potential (i.e. birds directly colliding with rotor blades and turbine towers) of the proposed wind farm cannot be undertaken. This is because the extent to which this can formally be modelled and quantified to arrive at predicted numbers of collisions, would depend largely on the primary data collection related to flight frequencies and species, but it is unlikely that even the best possible data collection would provide much confidence in such a model, as it would require more representative data collection across a range of conditions/seasons and years etc. In addition, very often the worst bird collision ‘events’ at wind farms around the world have been found to have occurred in extreme weather conditions, when flight behaviour is abnormal.

A site specific, 12 month baseline monitoring regime is intended to be initiated in early 2013 (along with the bat monitoring).

8.2.6. Bat Impact Assessment

A bat impact assessment specialist study will be conducted. This study will investigate the following issues:

1. The likelihood and significance of impacts with regards to bat (Chiroptera) fauna, in relation to the proposed wind energy facility;
2. Identification and mapping (where applicable) of any significant bat habitats

3. Assessment of the sensitivity and significance of the site with regards to bat (Chiroptera) fauna;
4. Assessment of the significance of direct and cumulative impacts (including foraging impacts, roost impacts and migration impacts to a certain extent) of the proposed development and viable alternatives;
5. Identification of mitigatory measures to protect and maintain any bat habitats.

As for the avifauna assessment, a specialist determined baseline monitoring programme needs to be conducted during the EIA process and beyond. The applicability of locally developed monitoring regimes to the study will be assessed and refined for implementation.

8.2.7. Agriculture Impact Assessment

The agricultural Impact Assessment must adhere to the requirements described under point 4 of section C of the National Development of Agriculture, Forestry and Fisheries document: Guidelines for the evaluation and review of applications pertaining to wind farming on agricultural land, September 2010.

These terms of reference are also mindful of additional assessment criteria required by the Western Cape Provincial Department of Agriculture.

An agricultural specialist study will be conducted; the key issues that will be investigated are the following:

- The extent and quality of arable land (less than 12% slope);
- The extent and quality of existing crops;
- The extent and quality of commercially unused land;
- The availability of irrigation water;
- The condition of the veld and other natural vegetation;
- The percentage of usable land that will be utilised during construction; and
- The percentage of usable land that will be utilised after construction.

Specifically, the following will be investigated:

1. Status Quo of Soils
 - Erosion Hazards - The study will identify any visible erosion hazards and record the apparent reasons therefore. It will also identify and describe any environmental hazards other than erosion.
 - Slope - Identify any areas with a slope greater than 12%.
 - Current and previous land usage - Evaluate the ratio between virgin arable land, currently cultivated crops, fallow and abandoned fields.
 - Infrastructure and Access - Note and record where improved infrastructure and access could impact negatively on the natural environment.
 - Extension Services - Note and report on incidence of industry, provincial and municipal extension and support services.
2. Water Resources
 - Surface Water - Note and record any visible water resources.
 - Groundwater - Identify and note any evidence of the presence of groundwater – springs, eyes, seepage, green patches etc.
3. Vegetation
 - Grasses, Decorative and Medicinal Veld Plants - The presence of any important or interesting medicinal or other indigenous plants will be noted. A general assessment of veld condition and condition of livestock will be made.

8.2.8. Socio-economic Impact Assessment

The project will result in national, regional and local economic benefits. It could also provide support for infrastructural development and, at a local level, will provide job opportunities and benefits arising from the multiplier effects associated with these. However, projects such as this are also likely to produce a range of negative impacts, which should be identified and avoided or mitigated as far as possible.

The primary objectives of this study will be:

- To provide a detailed description of the socio-economic environment in and around the project area.
- To provide empirical socio-economic data to be used as a baseline for future monitoring.
- To analyse the potential impacts of the proposed project.
- To provide guidelines for limiting or mitigating negative impacts and optimising benefits of the proposed project.

8.3. METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF IMPACTS

Although specialists will be given relatively free rein on how they conduct their research and obtain information, they will be required to provide their reports to the EAP in a specific layout and structure, so that a uniform specialist report volume can be produced. To ensure a direct comparison between various specialist studies, a standard rating scale has been defined and will be used to assess and quantify the identified impacts. This is necessary since impacts have a number of parameters that need to be assessed. Four factors need to be considered when assessing the significance of impacts, namely:

1. Relationship of the impact to **temporal** scales - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
2. Relationship of the impact to **spatial** scales - the spatial scale defines the physical extent of the impact.
3. The severity of the impact - the **severity/beneficial** scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system (for ecological impacts) or a particular affected party. The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is when nothing is done about it. The word 'mitigation' means not just 'compensation', but also the ideas of containment and remedy. For beneficial impacts, optimization means anything that can enhance the benefits. However, mitigation or optimization must be practical, technically feasible and economically viable.
4. The **likelihood** of the impact occurring - the likelihood of impacts taking place as a result of project actions differs between potential impacts. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.

Each criterion is ranked with scores assigned as presented in Table 8-1 to determine the overall **significance** of an activity. The criterion is then considered in two categories, viz. effect of the activity and the likelihood of the impact. The total scores recorded for the effect and likelihood are then read off the matrix presented in Table 8-2, to determine the overall significance of the impact (Table 8-3). The overall significance is either negative or positive.

The **environmental significance** scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.

Negative impacts that are ranked as being of “**VERY HIGH**” and “**HIGH**” significance will be investigated further to determine how the impact can be minimised or what alternative activities or mitigation measures can be implemented. These impacts may also assist decision makers i.e. lots of **HIGH** negative impacts may bring about a negative decision.

For impacts identified as having a negative impact of “**MODERATE**” significance, it is standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigations measures will then be proposed.

For impacts ranked as “**LOW**” significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

Table 8-1: Criterion used to rate the significance of an impact

EFFECT	Temporal scale			Score
	Short term	Less than 5 years		1
	Medium term	Between 5 and 20 years		2
	Long term	Between 20 and 40 years (a generation) and from a human perspective almost permanent.		3
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there		4
	Spatial Scale			
	Localised	At localised scale and a few hectares in extent		1
	Study area	The proposed site and its immediate environs		2
	Regional	District and Provincial level		3
	National	Country		3
International	Internationally		4	
Severity		Benefit		
Slight / Slightly Beneficial	Slight impacts on the affected system(s) or party (ies)	Slightly beneficial to the affected system(s) or party (ies)	1	
Moderate / Moderately Beneficial	Moderate impacts on the affected system(s) or party(ies)	An impact of real benefit to the affected system(s) or party (ies)	2	
Severe / Beneficial	Severe impacts on the affected system(s) or party (ies)	A substantial benefit to the affected system(s) or party (ies)	4	
Very Severe / Very Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) or party (ies)	8	
LIKELIHOOD	Likelihood			
	Unlikely	The likelihood of these impacts occurring is slight		1
	May Occur	The likelihood of these impacts occurring is possible		2
	Probable	The likelihood of these impacts occurring is probable		3
	Definite	The likelihood is that this impact will definitely occur		4

Table 8-2: The matrix that will be used for the impacts and their likelihood of occurrence

Likelihood		Effect													
		3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		4	5	6	7	8	9	10	11	12	13	14	15	16	17
2		5	6	7	8	9	10	11	12	13	14	15	16	17	18
3		6	7	8	9	10	11	12	13	14	15	16	17	18	19
4		7	8	9	10	11	12	13	14	15	16	17	18	19	20

Table 8-3: The significance rating scale

Significance Rate	Description	Score
Low	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment.	4-8
Moderate	An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.	9-12
High	A serious impact, if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects.	13-16
Very High	A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigatable and usually result in very severe effects, or very beneficial effects.	17-20

ENVIRONMENTAL IMPACT REPORT

The results of the Specialist Studies given above will inform the preparation of the EIR.

In addition, the EIR will gather any comments received from I&APs and determine whether it is necessary to increase the scope of work or amend the ToR.

The EIR will also examine the option of not proceeding with the proposed development – the so-called “No Go” option.

8.3.1. Proposed structure of EIR

To avoid the EIR being excessively long and cumbersome, whilst meeting the content requirements specified in the NEMA EIA regulations, the final report will be divided into a number of volumes indicated in Table 8-4.

Table 8-4: Volumes that will be generated in the EIA phase for the proposed project

Volume Number	Report	Contents
1	Scoping Report	As per the Final ESR (this report)
2	Environmental Impact Report (EIR)	<p>This volume will include -</p> <ol style="list-style-type: none"> 1. Introduction <ul style="list-style-type: none"> • Detail of the environmental assessment practitioner who compiled the report • Expertise of the EAP to carry out an environmental impact assessment 2. Description of the Project <ul style="list-style-type: none"> • A description of the property on which the activity is to be undertaken • The location of the activity on the property • A description of the types of activities that are proposed for the development. 3. Description of the Affected Environment <ul style="list-style-type: none"> • The natural environment • The socio-economic environment • The legal, policy and planning setting 4. The Public Participation Process <ul style="list-style-type: none"> • Steps undertaken in order to notify and involve I&APs • Advertisements and media • Meetings held in the PPP • Issues and Comment Trail management 5. Summary of Comments and Response Trail <ul style="list-style-type: none"> • Summary of comments and issues raised by I&APs and responses to the issues 6. Summary of Specialist Reports <ul style="list-style-type: none"> • Summary of the findings and recommendations of all specialist studies 7. Alternatives Considered <ul style="list-style-type: none"> • Description of all alternatives considered in the EIA • Initial screening of alternatives • Description and comparative assessment of all alternatives identified during the EIA 8. The Significance of Potential Environmental

		<p>Impacts</p> <ul style="list-style-type: none"> • The methodology used to determine the significance of environmental impacts • Impacts on the natural environment • Impacts on the socio-economic environment • Impacts on the legal, policy and planning setting <p>9. Environmental Impact Statement</p> <ul style="list-style-type: none"> • A summary of the key findings of the EIA • Comparative assessment of the positive and negative implications of the proposed activity and identified alternatives <p>10. Conclusions</p> <ul style="list-style-type: none"> • Opinion as to whether the activity should or should not be authorised. • Any conditions that should be made in respect to any form of authorisation. <p><i>It should be noted that the above is not the exact Table of Contents for the EIA, but is intended to indicate the major topics that will be covered in the report.</i></p>
3	Specialist Studies	<p>This volume will be a compilation of all the specialist studies undertaken in the EIA, and will include assessments of -</p> <ul style="list-style-type: none"> • Visual Impact Assessment • Ecological Impact Assessment (incorporating flora and fauna) • Noise Impact Assessment • Heritage, Archaeological and Paleontological Impact Assessment • Avi-Faunal Assessment • Bat Impact Assessment • Agricultural Assessment • Socio-economic Assessment • Hydrological/wetland assessment?
4	Comments and Response Trail	<p>This volume will include -</p> <ol style="list-style-type: none"> 1. Lists of persons, organisations and organs of state that were registered as I&APs 2. Comments and Response trail for the Scoping and EIA phases 3. Copies of any representations, objections and comments received from I&APs
5	Environmental Management Programme (EMPr)	<p>Environmental management programmes for key activities of the proposed project, which will contain the following -</p> <ol style="list-style-type: none"> 1. Introduction <ul style="list-style-type: none"> • The details of the EAP who prepared the EMPr • The expertise of the EAP to prepare an EMPr 2. Detailed description of the aspects of the activity covered by the EMPr's 3. Mitigation Measures and Actions <ul style="list-style-type: none"> • Planning and Design • Pre-construction and construction activities • Operation and undertaking of the activity • Rehabilitation of the environment 4. Responsibilities <ul style="list-style-type: none"> • Persons responsible • Time periods for implementation

		5. Monitoring Programme
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8.4. PPP FOR THE EIA PHASE

The primary aims for the public participation process include the following:

- meaningful and timeous participation of I&APs;
- promoting transparency and an understanding of the proposed project and its potential environmental (social and biophysical) impacts;
- accountability for information used for decision-making;
- serving as a structure for liaison and communication with I&APs;
- assisting in identifying potential environmental (socio-economic and biophysical) impacts associated with the proposed development; and
- inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process).

8.4.1. Advertising

In terms of the EIA Regulations, the availability of the Draft EIR will be advertised within newspapers in the predominant languages (English and Afrikaans) of the area. The primary aim of these advertisements will be to ensure that the widest group of I&APs possible are informed of the project. Other advertisements to be placed during the course of the EIA phase of the project will relate to the availability of reports for public review, the dates of public meetings, as well as the advertising of the environmental authorisation/decision.

8.4.2. Identification of and Consultation with Key Stakeholders

I&APs and Key Stakeholders have been identified during the Scoping phase of the project. The identification and engagement if necessary, of I&APs and Key Stakeholders will continue through into the EIA phase of the project as the public participation process is a continuous process that runs throughout the duration of an environmental investigation.

8.4.3. I&AP Database

All I&AP information (including contact details), together with dates and details of consultations and a record of all issues raised is recorded within a comprehensive database of I&APs. This database will be updated on an on-going basis throughout the project, and will act as a record of the communication/ involvement process.

8.4.4. Public Review of the Draft Environmental Impact Assessment Report

Consultation with I&APs is considered to be critical to the success of any EIA process. Therefore, one-on-one consultation, focus group meetings and public meetings with I&APs will be undertaken. The aim of this process will be to provide I&APs with details regarding the process and to obtain further comments regarding the proposed project. All of the above will be notified of the Draft EIR availability and dates and venues for the required public meetings. Minutes of all meetings held will be compiled and forwarded to all attendees. These minutes will also be included in the EIA Report. This consultation process will be on-going throughout the process. Consultation with I&APs will take place at two levels: public meetings for general I&APs who require an overview of the project; and focus group meetings for those who require more in-depth information and intensive interaction.

Public Meetings

The purpose of Public Meetings is to provide an appropriate format to enable I&APs to raise concerns related to the proposed project. The intention is that I&APs are afforded the opportunity of interacting on a one-on-one basis with technical and planning representatives of Inyanda Energy

Projects (Pty) Ltd as well as the environmental team. I&APs will be encouraged to complete an attendance register and a comment and registration form to assist I&APs in raising concerns and general views on the project.

Focus Group Meetings

The purpose of the Focus Group Meetings is to allow key stakeholders with specific issues to air their views and to facilitate the interaction of the key stakeholders and the project team. The meetings will allow for smaller groups of I&APs and/or representatives of larger interest groups or organisations who wish to play an active role in the process an opportunity for consultation.

Key Stakeholder Workshop

Key stakeholders will be invited by letter to attend a Key Stakeholder Workshop. The purpose is to workshop the proposed project with identified key role-players who operate at a strategic level. It is acknowledged that there are several key stakeholders and interest groups who are expected to take a keen interest in the proposed project, and it is considered to be an appropriate approach to engage these stakeholders in order to avoid potential challenges against the process at a later stage. The primary aims of the Key Stakeholder Workshop will be to:

- disseminate/transfer information on the proposed project to stakeholders (including the findings of the environmental studies);
- answer questions regarding the project and the EIA process;
- address issues and concerns raised by the key stakeholders;
- achieve a common understanding and consensus on the issues relating to the proposed project; and
- receive input regarding the public participation process and the proposed project.

Formal minutes of the key stakeholder workshop will be compiled and distributed to the attendees. These proceedings will also be included in the Final EIR.

An advert indicating the availability of this report for public scrutiny will be placed in the predominant languages of the area within local and national newspapers. I&APs registered on the project database will be notified of the availability of this report by letter.

8.4.5. Issues & Response Trail

All issues, comments and concerns raised during the public participation process of the EIA process will be compiled into an Issues Trail and incorporated and submitted as part of the Final EIR.

8.5. CONSIDERATION BY THE COMPETENT AUTHORITY FOR ENVIRONMENTAL AUTHORISATION AND APPEALS PROCESS

Once the EIR has been finalised it will be submitted to the competent authority for review and consideration for authorisation. The authority will grant authorisation, refuse authorisation or request further detail or information to clarify areas of concern. Should authorisation be granted, the decision will carry Conditions of Approval, to which the proponent is obliged to adhere.

The competent authority's decision will be advertised in the newspapers mentioned above and registered I&APs will be informed within seven days of receipt of the Decision. Once the public have been notified of the Environmental Authorisation - formerly termed Record of Decision (RoD) - anyone wishing to appeal the decision must lodge a notice of intention to appeal with the MEC within 20 days of the notification, and the appeal must be submitted, in a form prescribed by the competent authority, within 30 days of lodging the notice of appeal.

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APPENDIX A: THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The Environmental Impact Assessment process comprises two key phases – the Scoping Phase and the Environmental Impact Assessment Phase. These phases are described in detail below.

A1. THE SCOPING PHASE

Scoping is the first step in the EIA process. It allows for all role players – stakeholders and Interested and Affected Parties (I&APs) - to gain a greater understanding of the project by means of a public participation process. Scoping is also critical in as much as it facilitates the early identification of important natural and social issues that will need to be considered later in the process.

The principal objectives of the Scoping Phase are:-

- Describe the nature of the proposed project;
- Preliminary identification and assessment of potential environmental issues or impacts to be addressed in the subsequent EIA phase;
- Define the legal, policy and planning context for the proposed project;
- Describe important biophysical and socio-economic characteristics of the affected environment;
- Undertake a public participation process that provides opportunities for all I&APs to be involved;
- Identify feasible alternatives that must be assessed in the EIA phase; and
- Define the Plan of Study (PoS) for the EIA phase.

Each of the steps involved in the scoping phase is discussed in detail below.

A1.1. Project description

A description of the components of the proposed project is provided.

A1.2. Preliminary assessment of the project

Baseline data and information on the proposed development is collected, primarily from the project proponent, but also from preliminary site surveys and published literature, and from legislation, guidelines and other regulatory instruments, in order to determine the activities for which approval must be sought from the competent environmental authority.

Information sourced from the project proponent includes the proposed location and layout of the development, and the technology to be adopted. A preliminary assessment of this data and information, in the context of legal requirements and an understanding of the receiving environment, is by way of a preliminary risk assessment or fatal flaw analysis. It enables major risks to the project or to the receiving environment to be identified at an early stage in the EIA process, and informs subsequent decisions about aspects of the development identified as being potentially problematic.

A1.3. Legal context

The legislation relevant to the proposed Project is identified and reviewed.

A1.4. Identification of key bio-physical and socio-economic issues

The key biophysical and socio-economic issues related to the project are identified during the Scoping Phase. Relevant information is drawn from as wide a range of sources as possible, including local authorities, local communities, and specialists.

A1.5. Public Participation Process

A public participation process is an explicit requirement of the NEMA EIA regulations, and must take place throughout the EIA process. The approach to public consultation depends largely on the location of the proposed development, the nature of the project, the sensitivity of the receiving environment, the previous level of exposure of the public to the EIA process, and the level of education of those who will be affected by the proposed development. Among other things, involvement of the public in the EIA process is an opportunity to gather local knowledge from individuals, communities and organisations.

Key stakeholders are identified and notified of the proposed development and the ways in which they can be involved. These stakeholders include:-

- Local and regional authorities;
- Ratepayers associations;
- Ward councillors and representatives;
- Non-governmental Organisations (NGOs) and Community Based Organisations (CBOs); and
- Landowners adjacent and close to the site of the proposed development.

Stakeholders and I&APs are informed of the proposed development by means of:-

- Advertisements in newspapers
- A background information document (BID);
- Letters to key stakeholders and neighbouring landowners/occupiers; and
- Notice boards placed at the site.

All of the above must include name(s) and contact details - telephone and fax numbers, and e-mail address/es to which stakeholders and I&APs can direct written or verbal comments.

Advertisements are placed in a minimum of one local and one regional newspaper, depending on the nature and extent of the proposed development. Stakeholders and I&APs are encouraged to register by sending their names and contact details to the EAP, whereupon they are sent a copy of the BID, and are thereafter kept informed of and involved in all subsequent stages of the EIA process. The BID is a brief document that provides information on the nature and location of the proposed development, and details of how the EIA process will be undertaken. However, it is unlikely that the final design specifications of some proposed developments are known at this stage, and there may be changes to the information presented in the BID as the project progresses.

In addition, public meetings, open house meetings and/or focus group meetings may be held. In the early stages of the Scoping Phase these meetings provide an opportunity for the Environmental Assessment Practitioner (EAP) to present and discuss the information in the BID, to elicit information from local sources, and to register I&APs. Comment forms provide a further way by which comments may be submitted. In the latter stages meetings provide opportunities to discuss the draft version of the Scoping Report before it is submitted to the competent environmental authority.

A1.6. Identification of alternatives

Possible alternatives to the proposed development must be identified during the Scoping Phase. These may include fundamental alternatives, such as maintaining the current land use, or proposing a development of a different nature to the one proposed by the project proponent. Design alternatives are intended to modify certain design aspects of the proposed project, such as alternative technologies, timing of activities, or the location of infrastructure, so as to minimise negative impacts on the environment. The identification of alternatives must be reasonable and practical.

1.7. Plan of Study for the EIA Phase

The information and comments received and recorded during the Scoping Phase inform the larger and more comprehensive EIA Phase. This is usually achieved by the development of the Plan of Study (PoS) for the EIA. The PoS defines the actions, steps, and studies that must be undertaken in the EIA Phase.

A1.8. Scoping Reports

The data collected during the baseline data collection and public participation processes must be synthesised in a Scoping Report. In line with NEMA regulations, registered I&APs are entitled to comment, in writing, on all written submissions made to the competent authority by the applicant or the EAP managing an application. Accordingly a Draft Scoping Report is made available for public comment for a minimum period of 40 days. All comments on the draft report must be considered, and necessary changes made to the Draft before it is submitted for review to the competent authority as the final Scoping Report. This report includes the PoS discussed in A1.7 above.

A2. ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The Environmental Impact Assessment (EIA) is a comprehensive evaluation and study phase that addresses all the issues raised in the Scoping Phase. It is a substantial phase that has seven key objectives:-

- Describe the biophysical and socio-economic environment that is likely to be affected by the proposed development.
- Undertake specialist studies to address the key biophysical and socio-economic issues.
- Assess the significance of impacts that may occur from the proposed development.
- Assess the alternatives proposed during the Scoping Phase.
- Provide details of mitigation measures and management recommendations to reduce the significance of impacts.
- Provide a framework for the development of Environmental Management Plans.
- Continue with the public participation process.

A2.1. Specialist Studies

Specialist studies are undertaken to provide a detailed and thorough examination of key issues and environmental impacts. Specialists gather relevant data to identify and assess environmental impacts that might occur on the specific component of the environment that they are studying (for instance waste management, air quality, noise, vegetation, water quality, pollution, waste management). Once completed, these studies are synthesised in, and presented in full as appendices to the Environmental Impact Report (EIR).

A2.2. Public Participation Process

The public participation process (PPP) initiated at the beginning of the Scoping Phase continues into the EIA Phase. Once again the PPP provides a platform from which all I&APs are able to voice their concerns and raise issues regarding the project.

A2.3. Assessment of the Significance of Impacts

It is necessary to determine the significance, or seriousness, of any impacts on the natural or social environment. It is common practice in the EIA Phase to use a significance rating scale that determines the spatial and temporal extent, and the severity and certainty of any impact occurring, including impacts relating to any project alternatives. This allows the overall significance of an impact or benefit to be determined.

The overall intent of undertaking a significance assessment is to provide the competent authority

with information on the potential environmental impacts and benefits, thus allowing them to make an informed, balanced and fair decision.

A2.4. Mitigation Measures and Recommendations

Critical to any EIA is the recommendation of practical and reasonable mitigation measures and recommendations. These recommendations relate to the actions that are needed in order to avoid, minimise or offset any negative impacts from the development.

A3.5. Planning Input

An effective EIA process should actively engage and contribute to the project planning process so as to mitigate environmental impacts through improved design and layout.

A3.6. Environmental Impact Report

The above-mentioned tasks are synthesised in an Environmental Impact Report (EIR). This will allow the assessment of the relationship of environmental impacts to project actions, as well as to assess the overall significance of these impacts. The EIR will also provide sufficient information to allow the competent authority to make an informed decision.

A summary report covering key findings is prepared in a manner that is easy to read and understand. Text will be kept short and technical detail to a minimum, while information will be presented in the form of photographs and figures wherever possible.

A4. ENVIRONMENTAL MANAGEMENT PROGRAMMES

Environmental management and action plans based on the findings and recommendations set out in the EIR are prepared. An Environmental Management Programme (EMPr) consists of a set of practical and actionable mitigation, monitoring and institutional measures to be taken into account during construction and operation of the proposed development. The aim is to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. These plans include: -

- The standards and guidelines that must be achieved in terms of environmental legislation.
- Mitigation measures and environmental specifications that must be implemented at 'ground level', that is, during construction and operation.
- Provide guidance through method statements to achieve the environmental specifications.
- Define corrective action that must be taken in the event of non-compliance with the specifications of the EMPs and SMPs.
- Prevent long-term or permanent environmental degradation.

A5. ENVIRONMENTAL AUTHORISATION AND APPEALS PROCESS

On thorough examination of the EIR, the competent authority will issue an Environmental Authorisation or reject the application. Should authorisation be granted, it will carry Conditions of Approval. The proponent is obliged to adhere to these conditions.

I&APs are notified of the decision and have 20 days in which to lodge a notice of intention to appeal the decision, and a further 30 days in which to submit the appeal.

APPENDIX B: DEA ACKNOWLEDGEMENT OF RECEIPT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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2013 -02- 0 6

NEAS Reference: DEA/EIA/0001673/2013

DEA Reference: 14/12/16/3/3/2/464

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Ms Amber Jackson
Coastal & Environmental Services
P O Box 934
GRAHAMSTOWN
6139

Fax: 046 622 6564

Tel: 046 622 2364

PER FACSIMILE / MAIL

Dear Ms Jackson

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (SCOPING/EIA PROCESS) FOR THE PROPOSED INGEROP INYANDA-ROODEPLAAT WIND FARM PROJECT NEAR UITENHAGE, CACADU DISTRICT MUNICIPALITY IN THE EASTERN CAPE PROVINCE

The Department confirms having received the application form; details of EAP and Declaration of interest, locality map and a project schedule submitted by you on 22 January 2013 for environmental authorisation for the abovementioned project. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The Application is accepted.

Please include both reference numbers (NEAS Reference and DEA Reference), as listed above, on all documents and correspondence submitted to the Department.

In addition, please consider the following during compilation of reports for this application for environmental authorisation:

- All applicable Departmental Guidelines must be considered throughout the application process. These can be downloaded from the Department's website: www.environment.gov.za, Environmental Impact Management button, listed under "EIA Administration": Integrated Environmental Management Information Series link. These include, but are not limited to, the following topics: Scoping, Environmental Impact Reporting, Stakeholder Engagement, Specialist Studies, Impact Significance, Cumulative Effects Assessments, Alternatives in EIA and Environmental Management Plans.
- Please be advised that in terms of the EIA Regulations and NEMA the investigation of alternatives is mandatory. Alternatives must therefore be identified, investigated to determine if they are feasible and reasonable. It is also mandatory to investigate and assess the option of not proceeding with the proposed activity (the "no-go" option).

- Refer to the attached annexure for specific requirements for the submission of applications for environmental authorisation for solar power generation facilities.
- Should water, solid waste removal, effluent discharge, stormwater management and electricity services be provided by the municipality, you are requested to provide this office with written proof that the municipality has sufficient capacity to provide the necessary services to the proposed development. Confirmation of the availability of services from the service providers must be provided together with the reports to be submitted.
- In the reports to be submitted it must clearly be demonstrated in which way the proposed development will meet the requirements of sustainable development. You must also consider energy efficient technologies and water saving devices and technologies for the proposed development. This could include measures such as the recycling of waste, the use of low voltage or compact fluorescent lights instead of incandescent globes, maximising the use of solar heating, the use of dual flush toilets and low-flow shower heads and taps, the management of storm water, the capture and use of rainwater from gutters and roofs, the use of locally indigenous vegetation during landscaping and the training of staff to implement good housekeeping techniques.
- A detailed and complete EMPr must be submitted with the EIR. This EMPr must not provide recommendations but must indicate actual remediation activities which will be binding on the applicant. Without this EMPr the documents will be regarded as not meeting the requirements and will be returned to the applicant for correction.
- The applicant/EAP is required to inform this Department in writing upon submission of any draft report, of the contact details of the relevant State Departments (that administer laws relating to a matter affecting the environment) to whom copies of the draft report were submitted for comment. Upon receipt of this confirmation, this Department will in accordance with Section 240(2) & (3) of the National Environmental Management Act, 1998 (Act 107 of 1998) inform the relevant State Departments of the commencement date of the 40 day commenting period, or 60 days in the case of the Department of Water Affairs for waste management activities which also require a licence in terms of the National Water Act, 1998 (Act 36 of 1998).
- Should it be necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999), please submit the necessary application to SAHRA or the relevant provincial heritage agency and submit proof thereof with the Environmental Impact Assessment Report. The relevant heritage agency should also be involved during the public participation process and have the opportunity to comment on all the reports to be submitted to this Department.

You are required to submit the final site layout plan together with the Final EIR to the Department. All available biodiversity information must be used in the finalisation of the layout plan. The site layout plan must indicate the following:

- Positions of solar/wind facilities;
- Foundation footprint;
- Permanent laydown area footprint;
- Construction period laydown footprint;
- Internal roads indicating width (construction period width and operation period width) and with numbered sections between the other site elements which they serve (to make commenting on sections possible);
- Wetlands, drainage lines, rivers, stream and water crossing of roads and cables indicating the type of bridging structures that will be used;
- The location of Heritage sites;
- Sub-station(s) and/or transformer(s) sites including their entire footprint;

- Cable routes and trench dimensions (where they are not along internal roads);
- Connection routes (including pylon positions) to the distribution/transmission network;
- Cut and fill areas at solar panels/ wind turbines sites along roads and at sub-station/transformer sites indicating the expected volume of each cut and fill;
- Borrow pits;
- Spoil heaps (temporary for topsoil and subsoil and permanently for excess material);
- All existing infrastructure on the site, especially roads;
- Buildings including accommodation;
- All "no-go" areas; and
- A map combining the final layout plan must be superimposed (overlain) on the environmental sensitivity map.

The Environmental Management Programme (EMPr) submitted as part of the application for environmental authorisation must include the following:

- All recommendations and mitigation measures to be recorded in the Final EIR.
- A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. This plan must be compiled by a vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.
- An open space management plan to be implemented during the construction and operation of the facility.
- A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility including timeframes for restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- An alien invasive management plan to be implemented during construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.
- A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water runoff.
- An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems.
- An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion.
- A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.

- An environmental sensitivity map indicating environmental sensitive areas and features identified during the EIA process.
- Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants.

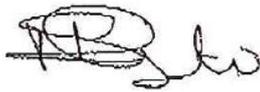
You are requested to submit two (2) electronic copies (the main report must be separated from the Appendices (each appendix saved separately) (CD/DVD) and two (2) hard copies of both the Draft and Final Report to the Department. The hard copies must be double-sided printed; double-punched and must be bound using a lever arch file (two or four holes).

The EAP must, in order to give effect to regulation 56 (2), before submitting the Environmental Impact Assessment Report to the Department give registered interested and affected parties access to, and an opportunity to comment on the report in writing.

In terms of regulation 67 of the EIA Regulations, 2010 this application will lapse if the applicant (or the EAP on behalf of the applicant) fails to comply with a requirement in terms of the Regulations for a period of six months after having submitted the application, unless the reasons for failure have been communicated to and accepted by this Department.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours sincerely



Mr Mark Gordon
Chief Director: Integrated Environmental authorisations
Department of Environmental Affairs
 Letter signed by: Ms Pumeza Skepe-Mngciza
 Designation: Assistant Director: Integrated Environmental Authorisations
 Date: 05/02/2013

CC:	Ian Fitz	Inyanda Energy Projects (Pty) Ltd	Fax: 011 808 3001
	Mr Andries Struwig	DEDEAT	Fax: 041 508 5840
	Howard Sikweza	Cacadu District Municipality	Fax: 041 508 7000

A. EIA INFORMATION REQUIRED FOR WIND FARM APPLICATIONS

1. General site information

The following general site information is required:

- Descriptions of all affected farm portions
- 21 digit Surveyor General codes of all affected farm portions
- Copies of deeds of all affected farm portions
- Photos of areas that give a visual perspective of all parts of the site
- Photographs from sensitive visual receptors (tourism routes, tourism facilities, etc.)
- Turbine design specifications including:
 - Nacelle height
 - Blade length
 - Turbine shaft dimensions
 - Foundation dimensions
 - Laydown area dimensions (construction period and thereafter)
 - Blade rotation direction
 - Generation capacity
- Onsite measured wind parameters (speed, variability, etc.)
- Generation capacity of the facility as a whole at delivery points

This information must be indicated on the first page of any Scoping or EIA document. It is also advised that it be double checked as there are too many mistakes in the applications that have been received that take too much time from authorities to correct.

2. Site maps and GIS information

Site maps and GIS information should include at least the following:

- All maps/information layers must also be provided in ESRI Shapefile format
- All affected farm portions must be indicated
- The exact site of the application must be indicated (the areas that will be occupied by the application)
- A status quo map/layer must be provided that includes the following:
 - Current use of land on the site including:
 - Buildings and other structures
 - Agricultural fields
 - Grazing areas
 - Natural vegetation areas (natural veld not cultivated for the preceding 10 years) with an indication of the vegetation quality as well as fine scale mapping in respect of Critical Biodiversity Areas and Ecological Support Areas
 - Critically endangered and endangered vegetation areas that occur on the site
 - Bare areas which may be susceptible to soil erosion
 - Cultural historical sites and elements
 - Rivers, streams and water courses
 - Ridgelines and 20m continuous contours with height references in the GIS database
 - Fountains, boreholes, dams (in-stream as well as off-stream) and reservoirs
 - High potential agricultural areas as defined by the Department of Agriculture, Forestry and Fisheries
 - Buffer zones (also where it is dictated by elements outside the site):
 - 500m from any irrigated agricultural land

- 1km from residential areas
 - Indicate Isolated residential, tourism facilities on or within 1km of the site
- A slope analysis map/layer that include the following slope ranges:
 - Less than 8% slope (preferred areas for turbines and infrastructure)
 - between 8% and 12% slope (potentially sensitive to turbines and infrastructure)
 - between 12% and 14% slope (highly sensitive to turbines and infrastructure)
 - steeper than 18 % slope (unsuitable for turbines and infrastructure)
- A map/layer that indicate locations of birds and bats including roosting and foraging areas (specialist input required)
- A site development proposal map(s)/layer(s) that indicate:
 - Turbine positions
 - Foundation footprint
 - Permanent laydown area footprint
 - Construction period laydown footprint
 - Internal roads indicating width (construction period width and operation period width) and with numbered sections between the other site elements which they serve (to make commenting on sections possible)
 - River, stream and water crossing of roads and cables indicating the type of bridging structures that will be used
 - Substation(s) and/or transformer(s) sites including their entire footprint.
 - Cable routes and trench dimensions (where they are not along internal roads)
 - Connection routes to the distribution/transmission network (the connection must form part of the EIA even if the construction and maintenance thereof will be done by another entity such as Eskom)
 - Cut and fill areas at turbine sites along roads and at substation/transformer sites indicating the expected volume of each cut and fill
 - Borrow pits
 - Spoil heaps (temporary for topsoil and subsoil and permanently for excess material)
 - Buildings including accommodation

With the above information authorities will be able to assess the strategic and site impacts of the application.

3. Regional map and GIS information

The regional map and GIS information should include at least the following:

- All maps/information layers must also be provided in ESRI Shapefile format
- The map/layer must cover an area of 20km around the site
- Indicate the following:
 - roads including their types (tared or gravel) and category (national, provincial, local or private)
 - Railway lines and stations
 - Industrial areas
 - Harbours and airports
 - Electricity transmission and distribution lines and substations
 - Pipelines
 - A visibility assessment of the areas from where the facility will be visible
 - Critical Biodiversity Areas and Ecological Support Areas
 - Critically Endangered and Endangered vegetation areas
 - Agricultural fields

- Irrigated areas
- An indication of new road or changes and upgrades that must be done to existing roads in order to get equipment onto the site including cut and fill areas and crossings of rivers and streams.

4. Important stakeholders

Amongst other important stakeholders, comments from the National Department of Agriculture, Forestry and Fisheries must be obtained and submitted to the Department. Request for comment must be submitted to:

Mrs. Anneliza Collett
Directorate: Land Use & Soil Management
Department of Agriculture, Forestry & Fisheries
Tel: 012 - 319 7508
Fax: 012 - 329 5938
e-mail: AnnelizaC@nda.agric.za
www.agis.agric.za

In addition, comments must be requested from Eskom (Mr Kevin Leask or Mr Ronald Marais (011) 8008111) regarding grid connectivity and capacity.

B. AGRICULTURE STUDY REQUIREMENTS

- Detailed soil assessment of the site in question, incorporating a radius of 50 m surrounding the site, on a scale of 1:10 000 or finer. The soil assessment should include the following:
 - Identification of the soil forms present on site
 - The size of the area where a particular soil form is found
 - GPS readings of soil survey points
 - The depth of the soil at each survey point
 - Soil colour
 - Limiting factors
 - Clay content
 - Slope of the site
 - A detailed map indicating the locality of the soil forms within the specified area,
 - Size of the site
- Exact locality of the site
- Current activities on the site, developments, buildings
- Surrounding developments / land uses and activities in a radius of 500 m of the site
- Access routes and the condition thereof
- Current status of the land (including erosion, vegetation and a degradation assessment)
- Possible land use options for the site
- Water availability, source and quality (if available)
- Detailed descriptions of why agriculture should or should not be the land use of choice
- Impact of the change of land use on the surrounding area
- A shape file containing the soil forms and relevant attribute data as depicted on the map

APPENDIX C: PUBLIC PARTICIPATION

APPENDIX C-1: EXAMPLE OF THE BACKGROUND INFORMATION DOCUMENT (BID) SENT TO LAND OWNERS AND OCCUPIERS OF LAND IMMEDIATELY SURROUNDING AND WITHIN 100m OF THE PROPOSED PROJECT DEVELOPMENT SITE. BOTH AN ENGLISH AND AFRIKAANS VERSION WERE SENT.

BACKGROUND INFORMATION DOCUMENT & INVITATION TO COMMENT	
INYANDA - ROODEPLAAT WIND FARM	
<p>Background to the project: Inyanda Energy Projects (Pty) Ltd, a renewable energy company, plans to develop a wind powered electricity generation facility (known as a 'wind farm') in the district of Uitenhage, Cacadu District Municipality, Eastern Cape Province of South Africa (refer to Figure 2).</p> <p>Coastal & Environmental Services (CES) has been appointed by Inyanda Energy Projects (Pty) Ltd to undertake the necessary environmental investigations for the wind energy project, and to apply for approval from the Department of Environmental Affairs (DEA), for its construction and operation, as required by South Africa's environmental legislation. Details of the environmental impact assessment process are provided on the next page.</p> <p>Project description: The wind farm (refer to Figure 2 for relevant farm position) will entail the construction and operation of approximately 35 wind turbines, each generating a maximum of 2-3MW (Mega Watts). Three alternative layouts have been proposed for the project. The total land cover of the wind farm would be 12,000 hectares, and will feed into the national grid.</p> <p>Dimensions: The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of rotor turbines with rotor diameters up to a maximum of 120 meters. The towers will have a nacelle or transformer hub between 100 and 140 meters above ground with a blade tip height of between 160 and 200 meters above ground.</p>	<p style="text-align: center;">REGISTRATION</p> <div style="text-align: center;">  </div> <p>CES requests that all potential stakeholders and interested and affected parties register as participants in the EIA process</p> <p>Return address for comments: Ms Amber Jackson P.O. Box 934 Grahamstown, 6140 Tel: (046) 622 2364 Fax: (046) 622 6564 Email: a.jackson@cesnet.co.za</p> <p style="text-align: center;">Or</p> <p style="text-align: center;">Mr Justin Green Email: j.green@cesnet.co.za</p>



Figure 1: The Coega wind turbine. The Inyanda-Roodeplaat WEF will have turbines of a similar model.

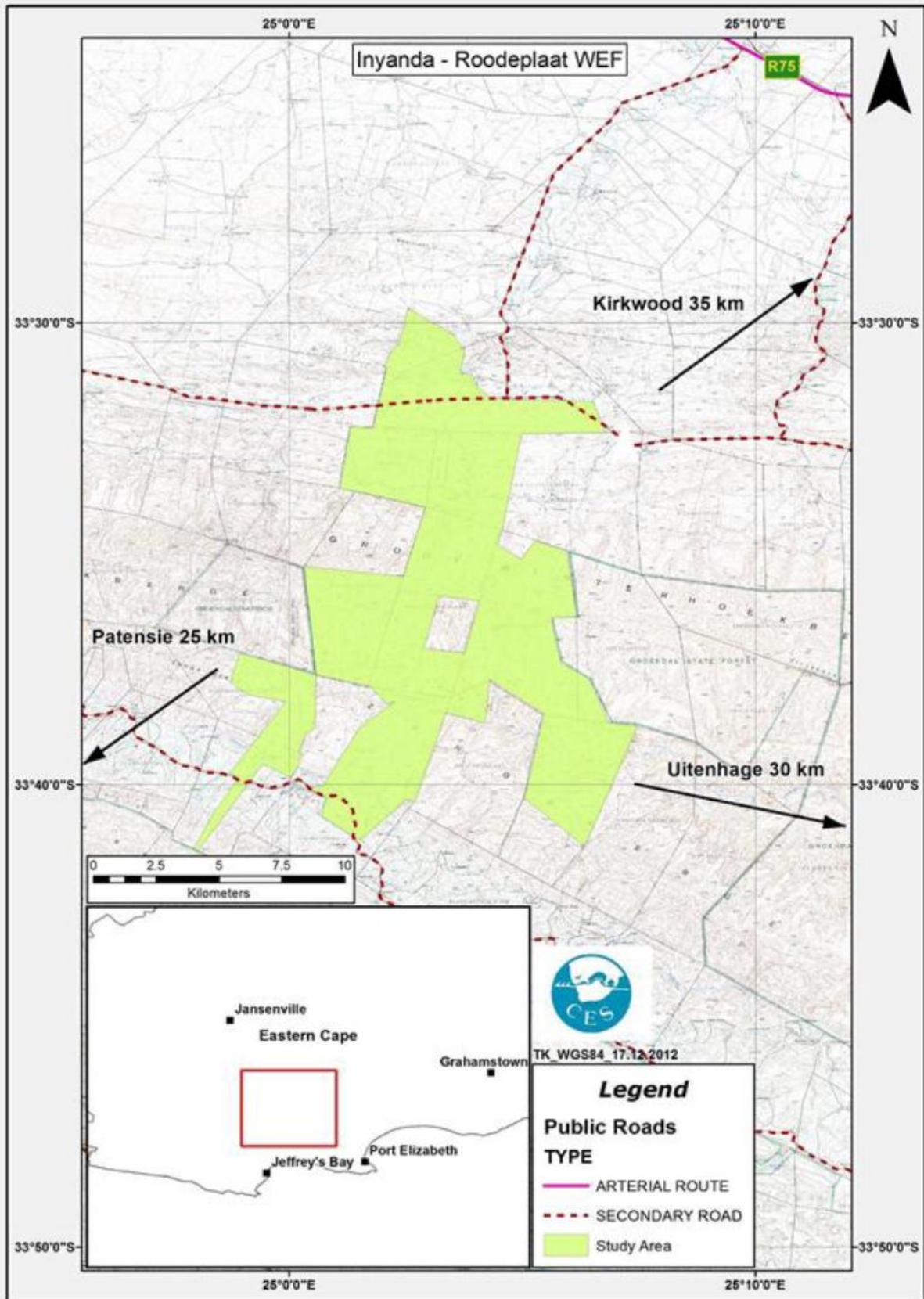
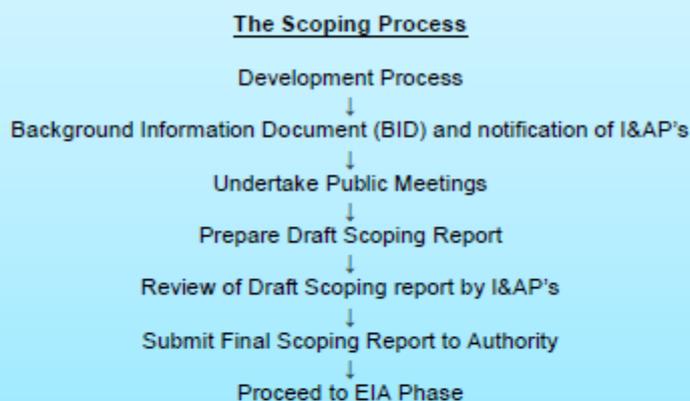


Figure 2: Location of the proposed Inyanda-Roodeplaat Wind Farm.

APPROACH TO THE SCOPING PHASE

The Scoping Phase is important for informing the public and relevant authorities about the nature and size of the proposed project. A critical component of the Scoping Phase is the Public Participation Process, in which Interested and Affected Parties (I&APs) are given an opportunity to raise any issues or concerns they may have about the project. The process is outlined in the figure below. The Draft Scoping Report will be made available for review by the public and all registered I&APs will be notified to the availability thereof. This report will set the scope and specialist terms of reference for the EIA Phase.



The Environmental Impact Assessment phase

This phase is more complex and more detailed than the Scoping phase, because it focuses on undertaking a number of specialist studies that have been identified as being necessary during the Scoping phase. These studies provide expert input into the EIA process based on scientific information. I&APs will be consulted again during this phase, and will be given an opportunity to comment on the Draft Environmental Impact Report (EIR) that will contain the specialist reports. During this phase an Environmental Management Plan must also be prepared for the project.

Environmental Authorisation phase

The final EIR is submitted to the national Department of Environment Affairs (DEA) who, after considering the report, will make a decision either authorising the project to continue under certain conditions, or requiring additional work to be undertaken.

Potential issues for investigation

The following specialist studies will be conducted within the proposed wind farm site, to ascertain any potential impacts, positive and negative, that may occur as a result of pre-construction, construction and operational phases.

- **Visual and aesthetic impacts**

A wind farm will normally have a high visibility due to the height of the turbines.

- **Noise impacts**

The Noise Impact Investigation will be conducted in accordance with the South African National Standard (SANS) 10328 "Methods for environmental noise impact assessments"

- **Ecological impacts**

The location of any species of special concern will be identified, and the location noted in order to inform the mitigation and management measures.

- **Avifaunal and Bat impacts**

Potential impacts to birds and bats

- **Heritage, archaeological and/or palaeontological impacts**

Potential impacts on heritage, cultural resources and/or fossils etc.

**I hereby wish to register as an Interested and Affected Party (IAP) for the
Inyanda - Roodeplaat Wind Farm EIA process**

Name:

Organization:

Postal address:

Email:

Phone #: _____ Fax #: _____

My initial comments, issues or concerns are:

Other individuals, stakeholders, organisations or entities that should be registered are:

Name:

Organization:

Postal address:

Email:

Phone #: _____ Fax #: _____

Please return details to: Ms Amber Jackson: P.O. Box 934, Grahamstown, 6140

Telephone: (046) 622 2364 Fax: (046) 622 6564 Email: a.jackson@cesnet.co.za

APPENDIX C-2: THE LETTER OF NOTIFICATION SENT TO THE LANDOWNER

COASTAL & ENVIRONMENTAL SERVICES
Environmental Management and Impact Assessment



67 African Street P.O. Box 934
Grahamstown 6140 SOUTH AFRICA
Tel: 046-622 2364 Fax: 046-622 6564
International: +27-46-622 2364
Email: info@cesnet.co.za
Website: www.cesnet.co.za

2 Marine Terrace P.O. Box 8145
East London 5210 SOUTH AFRICA
Tel: 043-722 5812 Fax: 043-742 3306
International: +27-43-722 5812
Email: cesel@cesnet.co.za
Website: www.cesnet.co.za

14 May 2013

Dear Mr. Watson

Attention: Owner or person in control of the land where the activity is to be undertaken

NOTIFICATION: ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF INYANDA – ROODEPLAAT WIND ENERGY PROJECT IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

In accordance with the requirements of section 54 (2) (b) (i) of the Environmental Impact Assessment Regulations (2010) made in terms of section 24(5) of the National Environmental Management Act (Act No 107 of 1998) as amended, we are required to give written notice to the owner or person in control of the land where the activity is to take place. In accordance with this requirement, please find here-with a letter of notification for an environmental impact assessment being carried out by Coastal and Environmental Services in respect of the above-mentioned project.

Inyanda Energy Projects (PTY) LTD a renewable energy company, was founded to supply Africa with clean, renewable and sustainable power sources. Inyanda Energy Projects (PTY) LTD plan to develop a wind energy facility (known as a 'wind farm') between Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa. The proposed project will entail the construction and operation of approximately 35 turbines each generating 2 - 3 Mega Watts (MW) of power and will cover an area of approximately 12 000 ha.

- Coastal & Environmental Services (CES) of Grahamstown have been appointed by Inyanda Energy Projects (PTY) Ltd, to conduct an environmental impact assessment for the proposed development. The activities that we believe will be triggered by the proposed development are listed in the application and the Background Information Document (BID) that is attached to this letter.
- A public meeting will be held to present the project and to give the public an opportunity to comment on the proposed development. You will be notified of the date, time and venue for the public meeting accordingly.
- CES would highly appreciate it if you could confirm your receipt of this notification via email, fax, phone or post. For more information, please feel free to contact me at the CES Grahamstown office numbers shown above.

Yours sincerely,

Justin Green
Environmental Consultant

From: Justin Green <j.green@cesnet.co.za> Sent: Wed 2013/05/15 08:58 AM
To: 'email@e-ronnie.net'
Cc:
Subject: Inyanda - Rooedeplaat



Message Letter of Notification - Land Owner.pdf (324 KB) BID Inyanda-Rooedeplaat WEF - English.pdf (731 KB)

Good morning Mr. Watson

Please find attached a copy of the BID as well as the Letter of Notification regarding the inception of the Inyanda – Rooedeplaat project.

Kind Regards

Justin Green
Environmental Consultant



Coastal & Environmental Services
67 African Street, Grahamstown, 6139
P.O. Box 934, Grahamstown, 6140
Tel: 046 622 2364
Fax: 046 622 6564

Website: www.cesnet.co.za

APPENDIX C-3: THE LETTER OF NOTIFICATION SENT TO THE OCCUPIERS OF LAND IMMEDIATELY SURROUNDING AND WITHIN 100m OF THE PROPOSED PROJECT DEVELOPMENT SITE AND TO KEY STAKEHOLDERS

COASTAL & ENVIRONMENTAL SERVICES
Environmental Management and Impact Assessment



67 African Street P.O. Box 934
Grahamstown 6140 SOUTH AFRICA
Tel: 046-622 2364 Fax: 046-622 6564
International: +27-46-622 2364
Email: info@cesnet.co.za
Website: www.cesnet.co.za

2 Marine Terrace P.O. Box 1145
East London 5210 SOUTH AFRICA
Tel: 043-722 5812 Fax: 043-742 3306
International: +27-43-722 5812
Email: cesel@cesnet.co.za
Website: www.cesnet.co.za

17 July 2013

To Whom it may concern

ATTENTION: OWNERS AND/OR OCCUPIERS OF LAND IMMEDIATELY SURROUNDING OR WITHIN 100m OF FARMS INVOLVED IN PROJECT

NOTIFICATION: ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF INYANDA – ROODEPLAAT WIND ENERGY PROJECT IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

In accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998) and relevant Environmental Impact Assessment (EIA) regulations made in terms of this Act, (Government Notice Number R.543) dated 18 June 2010, notification is hereby given in terms of Regulation 54 (b): "Written notice to – owners or occupiers of land adjacent to the site where the activity is to undertaken..". In accordance with this requirement, please find here-with a letter of notification for an environmental impact assessment being carried out by Coastal and Environmental Services in respect of the above-mentioned project.

Inyanda Energy Projects (PTY) LTD a renewable energy company, was founded to supply Africa with clean, renewable and sustainable power sources. Inyanda Energy Projects (PTY) LTD plan to develop a wind energy facility (known as a 'wind farm') between Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa. The proposed project will entail the construction and operation of approximately 35 turbines each generating 2 - 3 Mega Watts (MW) of power and will cover an area of approximately 12 000 ha.

- Coastal & Environmental Services (CES) of Grahamstown have been appointed by ..., to conduct an environmental impact assessment for the proposed development. The activities that we believe will be triggered by the proposed development are listed in the application and the Background Information Document (BID) that is attached to this letter.
- A public meeting will be held to present the project and to give the public an opportunity to comment on the proposed development. You will be notified of the date, time and venue for the public meeting accordingly.
- CES would highly appreciate it if you could confirm your receipt of this notification via email, fax, phone or post. For more information, please feel free to contact me at the CES Grahamstown office numbers shown above.

Yours sincerely,

Justin Green
Environmental Consultant

Henque 1018 t/a Coastal & Environmental Services . Reg no. CK 1997/061914/23 . Vat No. 4380172835
Members: Dr AM Avis (PhD Rhodes) . Prof RA Lubke (PhD Western Ontario)
Mrs CE Avis (MA Rhodes, CAIB) . Dr P Sherman (PhD Rhodes)
Dr AR Carter (PhD Rhodes, CPDA USA) .

APPENDIX C-4: PROOF OF NOTIFICATION

Organs of State

From: Justin Green <j.green@cesnet.co.za> Sent: Wed 2013/05/15 09:13 AM
 To: j-gon@intekom.co.za; Yolani.Wana@eskom.co.za; MoengI@eskom.co.za; 'sherwoodC@caa.co.za'; 'mlzote@ecphra.org.za'; 'smokhanya@ecphra.org.za'; 'andrew@sa.wild.org'; 'energy@birdlife.org.za'
 Cc:
 Subject: Inception of the Inyanda - Roodeplaas Wind Energy Project

Message  BID Inyanda-Roodeplaas WEF - English.pdf (731 KB)  Letter of Notification - Stakeholders.pdf (280 KB)

To Whom it May Concern

NOTIFICATION OF ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT INYANDA - ROODEPLAAT WIND ENERGY PROJECT PROPOSED BY INYANDA ENERGY PROJECTS (PTY) LTD, EASTERN CAPE (DEA EIA Reference number: 14/12/16/3/3/2/464):

In accordance with the requirements of section 54 (2) (b) (vi) of the Environmental Impact Assessment Regulations (2010) made in terms of section 24(5) of the National Environmental Management Act (Act No 107 of 1998) as amended, we are required to, "give written notice to any organ of state having jurisdiction in respect of any aspect of the activity". In accordance with this requirement, please find here-with a letter of notification for an environmental impact assessment being carried out by Coastal and Environmental Services in respect of the above-mentioned project.

Inyanda Energy Projects (PTY) LTD a renewable energy company, was founded to supply Africa with clean, renewable and sustainable power sources. Inyanda Energy Projects (PTY) LTD plan to develop a wind energy facility (known as a 'wind farm') between Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa. The proposed project will entail the construction and operation of approximately 35 turbines each generating 2 - 3 Mega Watts (MW) of power and will cover an area of approximately 12 000 ha.

- Coastal & Environmental Services (CES) of Grahamstown have been appointed by Inyanda Energy Projects (PTY) Ltd, to conduct an environmental impact assessment for the proposed development. The activities that we believe will be triggered by the proposed development are listed in the application and the Background Information Document (BID) that is attached to this letter.
- A public meeting will be held to present the project and to give the public an opportunity to comment on the proposed development. You will be notified of the date, time and venue for the public meeting accordingly.
- CES would highly appreciate it if you could **confirm** your **receipt** of this notification via email, fax, phone or post. For more information, please feel free to contact me at the CES Grahamstown office numbers shown above.

Please don't hesitate to contact me should you have any further queries or concerns.

Kind Regards

From: Justin Green <j.green@cesnet.co.za>
 To: info@ectourism.co.za; 'mto.zake@ecpta.co.za'; 'deon@dunbrodyestates.co.za'; 'bool@landmarkfoundation.org.za'
 Cc:
 Subject: Inception of the Inyanda - Roodeplaat Wind Energy Project

Sent: Wed 2013/05/15 09:14 AM



Message Letter of Notification - Stakeholders.pdf (280 KB) BID Inyanda-Roodeplaat WEF - English.pdf (731 KB)

To Whom it May Concern

NOTIFICATION OF ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT INYANDA - ROODEPLAAT WIND ENERGY PROJECT PROPOSED BY INYANDA ENERGY PROJECTS (PTY) LTD, EASTERN CAPE (DEA EIA Reference number: 14/12/16/3/3/2/464):

In accordance with the requirements of section 54 (2) (b) (vi) of the Environmental Impact Assessment Regulations (2010) made in terms of section 24(5) of the National Environmental Management Act (Act No 107 of 1998) as amended, we are required to, "give written notice to any organ of state having jurisdiction in respect of any aspect of the activity". In accordance with this requirement, please find here-with a letter of notification for an environmental impact assessment being carried out by Coastal and Environmental Services in respect of the above-mentioned project.

Inyanda Energy Projects (PTY) LTD a renewable energy company, was founded to supply Africa with clean, renewable and sustainable power sources. Inyanda Energy Projects (PTY) LTD plan to develop a wind energy facility (known as a 'wind farm') between Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa. The proposed project will entail the construction and operation of approximately 35 turbines each generating 2 - 3 Mega Watts (MW) of power and will cover an area of approximately 12 000 ha.

- Coastal & Environmental Services (CES) of Grahamstown have been appointed by Inyanda Energy Projects (PTY) Ltd, to conduct an environmental impact assessment for the proposed development. The activities that we believe will be triggered by the proposed development are listed in the application and the Background Information Document (BID) that is attached to this letter.
- A public meeting will be held to present the project and to give the public an opportunity to comment on the proposed development. You will be notified of the date, time and venue for the public meeting accordingly.
- CES would highly appreciate it if you could **confirm** your **receipt** of this notification via email, fax, phone or post. For more information, please feel free to contact me at the CES Grahamstown office numbers shown above.

Please don't hesitate to contact me should you have any further queries or concerns.

Kind Regards

Neighbours

From: Justin Green <j.green@cesnet.co.za> Sent: Wed 2013/07/17 05:22 PM
 To: 'rhodene@telkomsa.net'; 'charlie@eagleteam.co.za'; 'greg@shimoda-biotech.com'; 'workshop@wtbsa.co.za'; 'belmorefg@isat.co.za'; 'wouter@retouw.co.za'; 'crosswayfarm@gmail.com'; 'mbotha@elsy.co.za'; 'jbf@lantic.net'; 'briers@wol.co.za'; 'kwdcashcarry@telkomsa.net'; 'jjdaasen@vodamail.co.za'
 Cc: Amber Jackson
 Subject: Inception of the Inyanda - Roodeplaat Wind Energy Project



Message BID Inyanda-Roodeplaat WEF - English.pdf (731 KB) Letter of Notification - Neighbours.pdf (379 KB)
 Neighbours map.jpg (2 MB)

To Whom it May Concern

NOTIFICATION OF ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT INYANDA - ROODEPLAAT WIND ENERGY PROJECT PROPOSED BY INYANDA ENERGY PROJECTS (PTY) LTD, EASTERN CAPE (DEA EIA Reference number: 14/12/16/3/3/2/464):

In accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998) and relevant Environmental Impact Assessment (EIA) regulations made in terms of this Act, (Government Notice Number R.543) dated 18 June 2010, notification is hereby given in terms of Regulation 54 (b): "*Written notice to – owners or occupiers of land adjacent to the site where the activity is to undertaken..*". In accordance with this requirement, please find here-with a letter of notification for an environmental impact assessment being carried out by Coastal and Environmental Services in respect of the above-mentioned project.

Inyanda Energy Projects (PTY) LTD a renewable energy company, was founded to supply Africa with clean, renewable and sustainable power sources. Inyanda Energy Projects (PTY) LTD plan to develop a wind energy facility (known as a 'wind farm') between Patensie and Kirkwood, within the Sundays River Valley Municipality, Eastern Cape Province, South Africa. The proposed project will entail the construction and operation of approximately 35 turbines each generating 2 - 3 Mega Watts (MW) of power and will cover an area of approximately 12 000 ha.

- Coastal & Environmental Services (CES) of Grahamstown have been appointed by ..., to conduct an environmental impact assessment for the proposed development. The activities that we believe will be triggered by the proposed development are listed in the application and the Background Information Document (BID) that is attached to this letter.
- A public meeting will be held to present the project and to give the public an opportunity to comment on the proposed development. You will be notified of the date, time and venue for the public meeting accordingly.
- CES would highly appreciate it if you could **confirm** your **receipt** of this notification via email, fax, phone or post. For more information, please feel free to contact me at the CES Grahamstown office numbers shown above.

Kind Regards

Justin Green
 Environmental Consultant

APPENDIX C-6: THE TEXT OF THE SITE NOTICE, LOCATION AND PHOTOGRAPHS OF THE FIXED NOTICES

PROPOSED DEVELOPMENT OF THE INYANDA - ROODEPLAAT WIND ENERGY PROJECT IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT

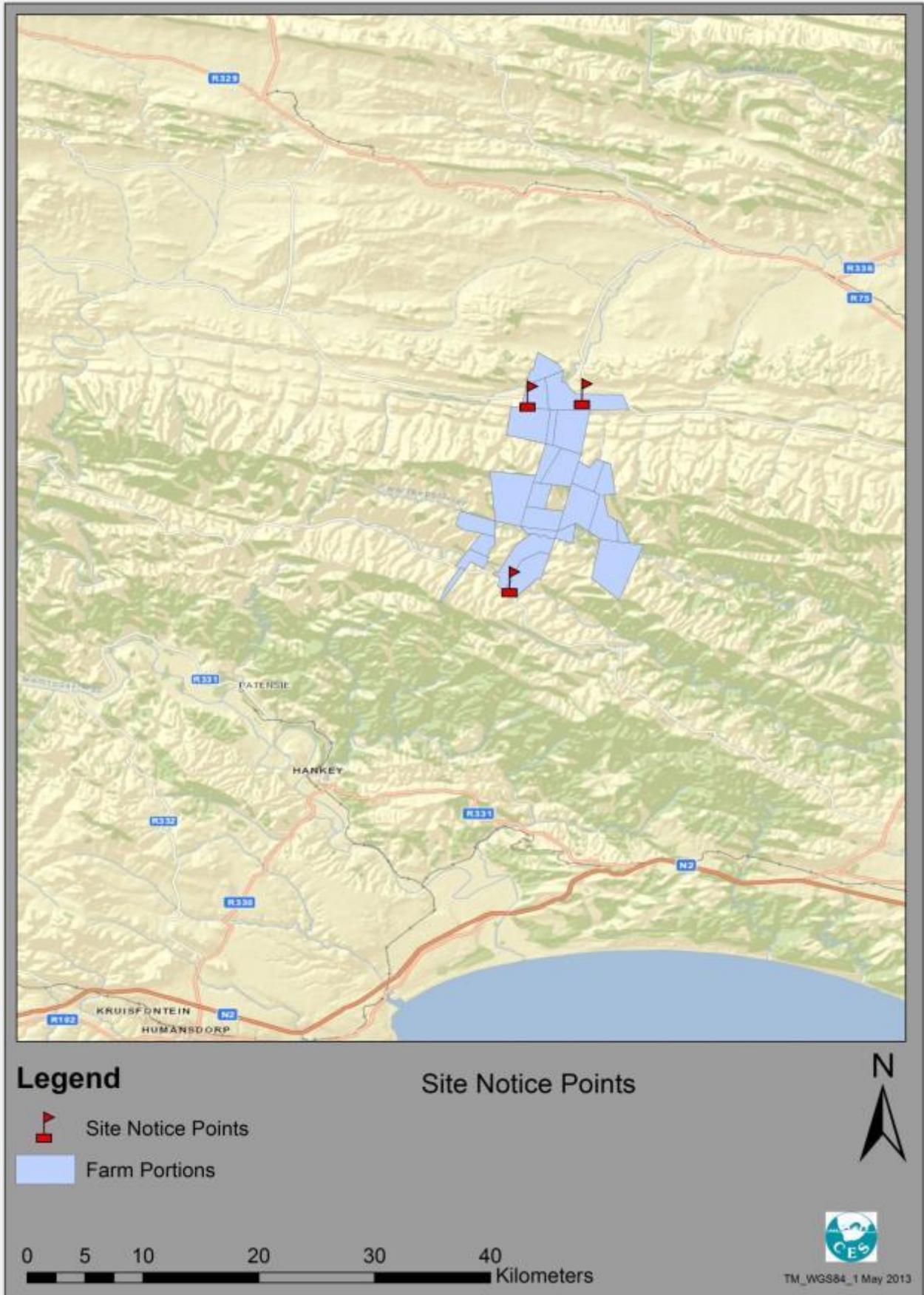
Notice is given in terms of Regulation 54 of the Environmental Impact Assessment (EIA) Regulations published in Government Notice R.543 in Government Gazette No 33306 of 02 August 2010, under Section 24(5) of the National Environmental Management Act 1998 (Act No 107 of 1998), as amended, that a wind energy project is proposed for construction at this location.

The proposed project will entail the construction and operation of approximately 35 wind turbines, each generating 2- 3 Mega Watts (MW) of power. There are 3 proposed alternatives layouts for the project. Turbines will have a hub height of between 80 and 140 meters, with blades of 60 meter length. The wind farm is proposed to cover 12,000 ha.

In terms of the EIA regulations, the proposed development will require a full scoping and Environmental Impact Assessment (EIA). Inyanda Energy Projects (Pty) Limited has appointed Coastal and Environmental Services (CES) to undertake the EIA. The application will be submitted to the Department of Environmental Affairs (DEA).

You are invited to register as an interested and affected party. If you have any comments or queries, or if you require further information, Please contact Mr. Amber Jackson at:





Map indicating the positions of the three site notices.



Site Notice 1



Site Notice 2



Site Notice 3

APPENDIX C-7: INTERESTED AND AFFECTED PARTIES (I&AP) REGISTER AND COMMENTS RECEIVED TO DATE

Name	Association	Email	Postal address
LANDOWNER			
Ronnie Watson		email@e-ronnie.net	Unit B, 49 Kinross Road, Sandton, 2196
NEIGHBOURS			
Audley Vermaak (Daughter - 041 582 2691)	Rhodene Farms Pty Ltd	rhodene@telkomsa.net	P.O.Box 13338, Humewood, Port Elizabeth
Charlie Bolton	Hoogtes Boerdery Pty	charlie@eagleteam.co.za	P.O. Box 7374, Newton Park, Port Elizabeth 6051
Daniel Ferdinand Ferreira (van Rensburg)	Aneen - 079 971 099	-	
Greg Gilbert	Kwazungu Wildlife Conservancy Pty Ltd (Maps requested)	greg@shimoda-biotech.com	
Groendal Nature Reserve		-	
Jacques (JJ) Claassen	De Fonteine Resort Pty Ltd	jjclaassen@vodamail.co.za	
JB Ferreira	JB Ferreira father	jbf@lantic.net	
Johann and William Lloyd	Lloyd seuns boerdery cc		P.O.Box 6030, Moselville 6232 (Johann)
John Saunders		-	
Kleinjan Du Preez	Kleinjan	-	
Kwazungu Bush Camp cc	Kwazungu Bush Camp cc	-	
Lourens Ferreira	Adolphs Kraal - Nuwelande Trust	-	
Manie Young	Valley River Trading cc		P.O.Box 1365, Uitenhage
Marius Botha	Klipkraal	mbotha@elsy.co.za	
Marthinus Cornelius Briers	Ocean Echo Prop 98 cc	briers@wol.co.za	P O BOX 34367 NEWTON PARK PORT ELIZABETH 6025
Monroe Slater	Manager	-	
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RSA Gov	Mierhoop Plaas	-	
Stephen and Mary Mains-sheird	Ewald Wehmeyer Tiptree farm	crosswayfarm@gmail.com	
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Walter Rudolph	Middleton	-	P.O. Box 616, Uitenhage 6130
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Ncamile Dweni	Department of Water Affairs	DweniN@dwa.gov.za	Port Elizabeth
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Key Stakeholders			
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Itumeleng Moeng	Eskom Transmission: Grid connectivity and capacity	Moengl@eskom.co.za	Megawatt Park – D1 Y39, PO Box 1091, Johannesburg, 2000
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Registered IAP's			
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N. J. Dorfling	Kleinplaas (Owned by Marita Christa Kristen)	-	
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