

**PROPOSED DASSIESRIDGE WIND ENERGY FACILITY, UITENHAGE,
EASTERN CAPE PROVINCE**

DEA Reference: **14/12/16/3/3/2/643**

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Prepared for:

Dassiesridge Wind Power (Pty) Ltd.

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Prepared by:



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December 2015

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<i>Dr Brett Williams</i>	Safetech: Noise Impact Assessment
<i>Ms Marchelle Terblanche</i>	INDEX (Pty) Ltd.: Social Impact Assessment

GENERAL SITE INFORMATION

Table 1: Affected Farm Portions

Farm Name	SG Digit Number	Portion / Farm Number	Area (ha)
BLAUW BAATJIES 189	C07600000000018900005	5/189	225
GRASSRIDGE 190	C07600000000019000003	3/190	547
PRENTICE KRAAL 233	C07600000000023300014	14/233	226
PRENTICE KRAAL 233	C07600000000023300015	15/233	530
GRINGLEY 188	C07600000000018800000	188	534
BLAUW BAATJIES 189	C07600000000018900002	RE/2/189	474
PRENTICE KRAAL 233	C07600000000023300004	4/233	159
BLAUW BAATJIES 189	C07600000000018900000	RE/189	1230
BLAUW BAATJIES 189	C07600000000018900004	4/189	763
BLAUW BAATJIES 189	C07600000000018900003	3/189	553
GRASSRIDGE 187	C07600000000018700000	187	1950
ELANDS HOORN 185	C07600000000018500011	11/185	854
FARM 715	C07600000000071500000	715	374
GRASSRIDGE 190	C07600000000019000001	1/190	370
GRASSRIDGE 190	C07600000000019000000	RE/190	967
GRASSRIDGE 227	C07600000000022700000	RE/227	2168
GRASSRIDGE 228	C07600000000022800000	228	2391

Turbine Design Specifications

Number of turbines	60
Power output per turbine	3 MW or 3,3 MW
Facility output	140 MW *
Eskom substation that the facility will connect to	<p>There are 5 connection options for the project. They are summarised here but more detail can be found in the body of the report.</p> <p>Option 1: One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site. Approximate length is 0.4km.</p> <p>Option 2: One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site. Approximate length is 1km. Approximate length is 1km.</p> <p>Option 3: One substation will be built on site and will connect at 132kV at Olifantskop substation. Approximate length is 16km</p> <p>Option 4: Two substations will be built; one on the eastern part of the project site and one on Grassridge and a loop in-loop out line used to connect to the existing Nootgedacht line. Approximate length is 19 km.</p>

	Option 5: This option will be the same as option 4 but instead of connecting with the Nooitgedacht line it will connect with the 400 kV Cookhouse line. Approximate length is 19 km.
Turbine hub height	Up to approximately 137 meters
Blade length	Up to approximately 66 meters

* Please note that the Department of Energy’s cap is 140 MW for renewable energy projects. Although the current design of the wind farm would result in a potential output of approximately 198 MW, the final layout will be fine-tuned down to 140 MW, as all environmental sensitivities are assessed and mitigated during the EIA phase.

Onsite Measured Wind Parameters

Wind data is currently being collected by two wind measurements masts installed on the project site (60m and 120m). A third 34m mast was removed and replaced with a 120m mast.

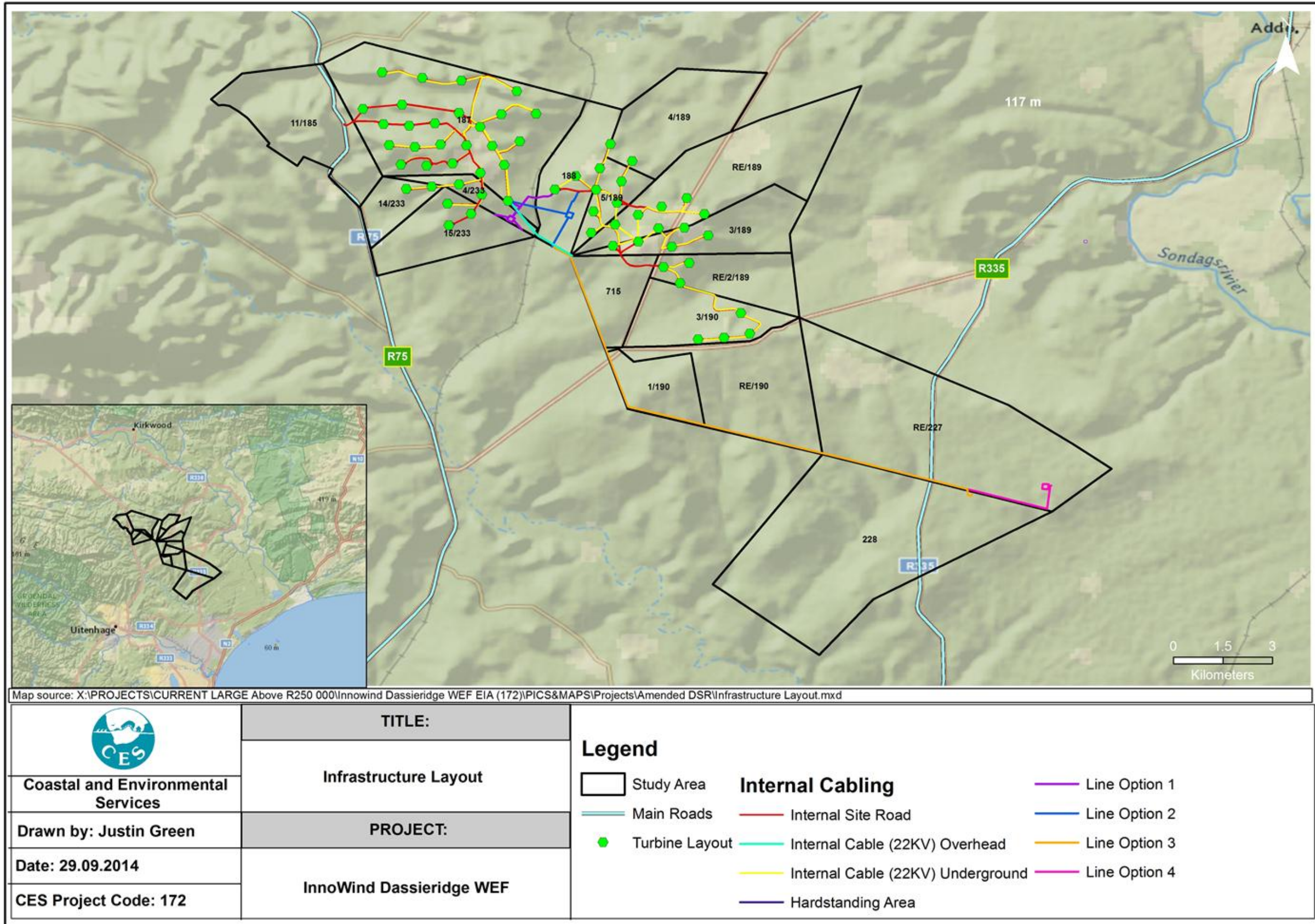
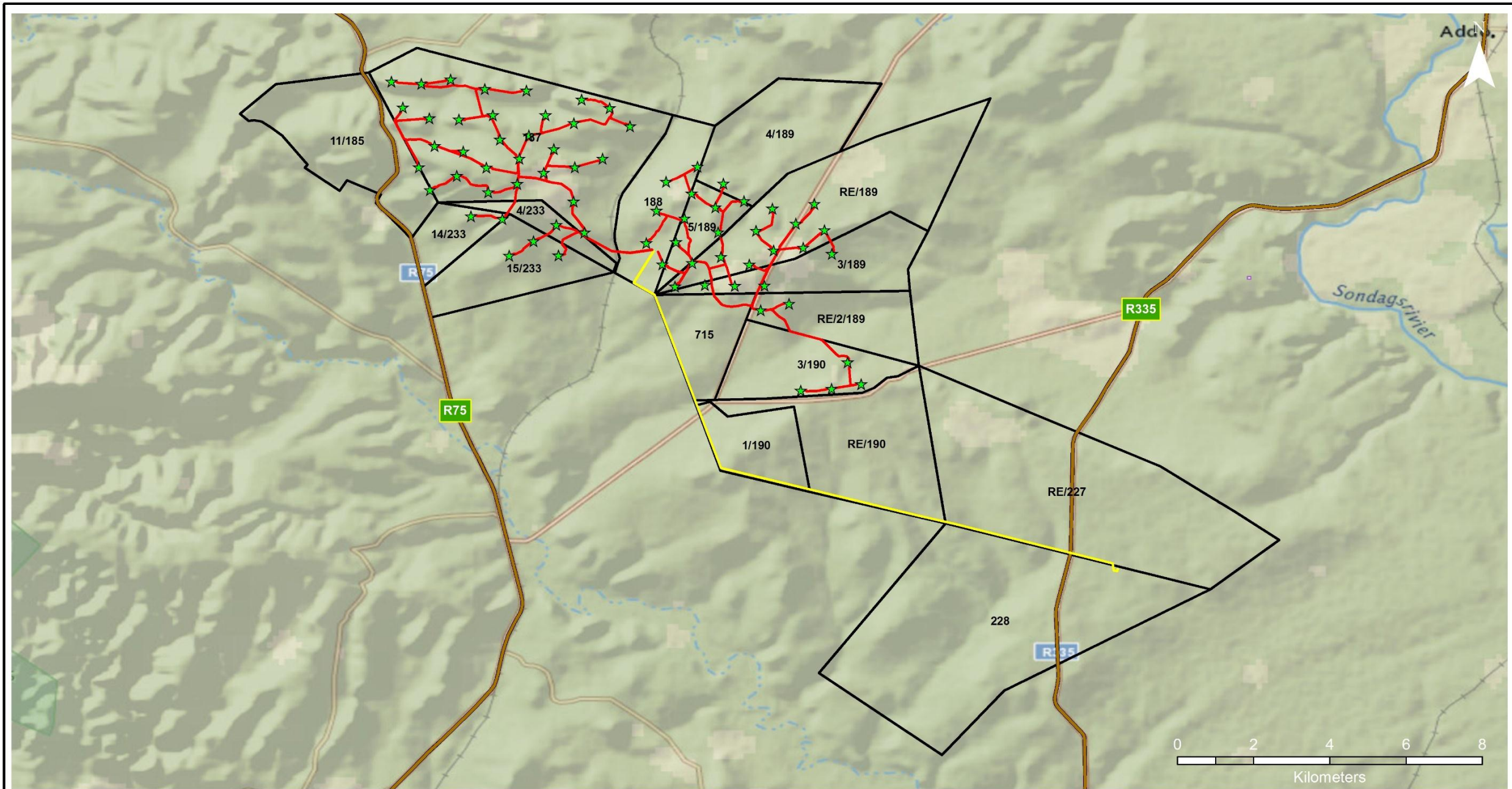


Figure 1: Locality Map indicating the position of the study area relative to surrounding towns and the layout used by the specialists for the assessment.



Map source: X:\PROJECTS\CURRENT LARGE Above R250 000\Innowind Dassieridge WEF EIA (172)\PICS&MAPS\Projects\Amended DSR\Infrastructure Layout.mxd


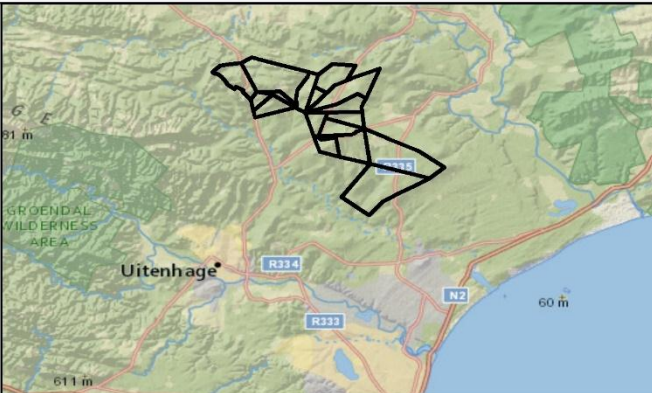
 Coastal and Environmental Services	TITLE:	Legend — Main Roads □ Study Area WTF Layout — Underground Cabling — WEF Internal OHL Option 2 ★ WTF Layout	
	Infrastructure Layout		
Drawn by: Justin Green	PROJECT:		
Date: 05.11.2015	InnoWind Dassieridge WEF		
CES Project Code: 172			

Figure 2: Final layout based on the sensitivities identified by the specialists.

Site photographs. Visually Sensitive Areas (VSAs) have been identified in the Visual Impact Assessment.

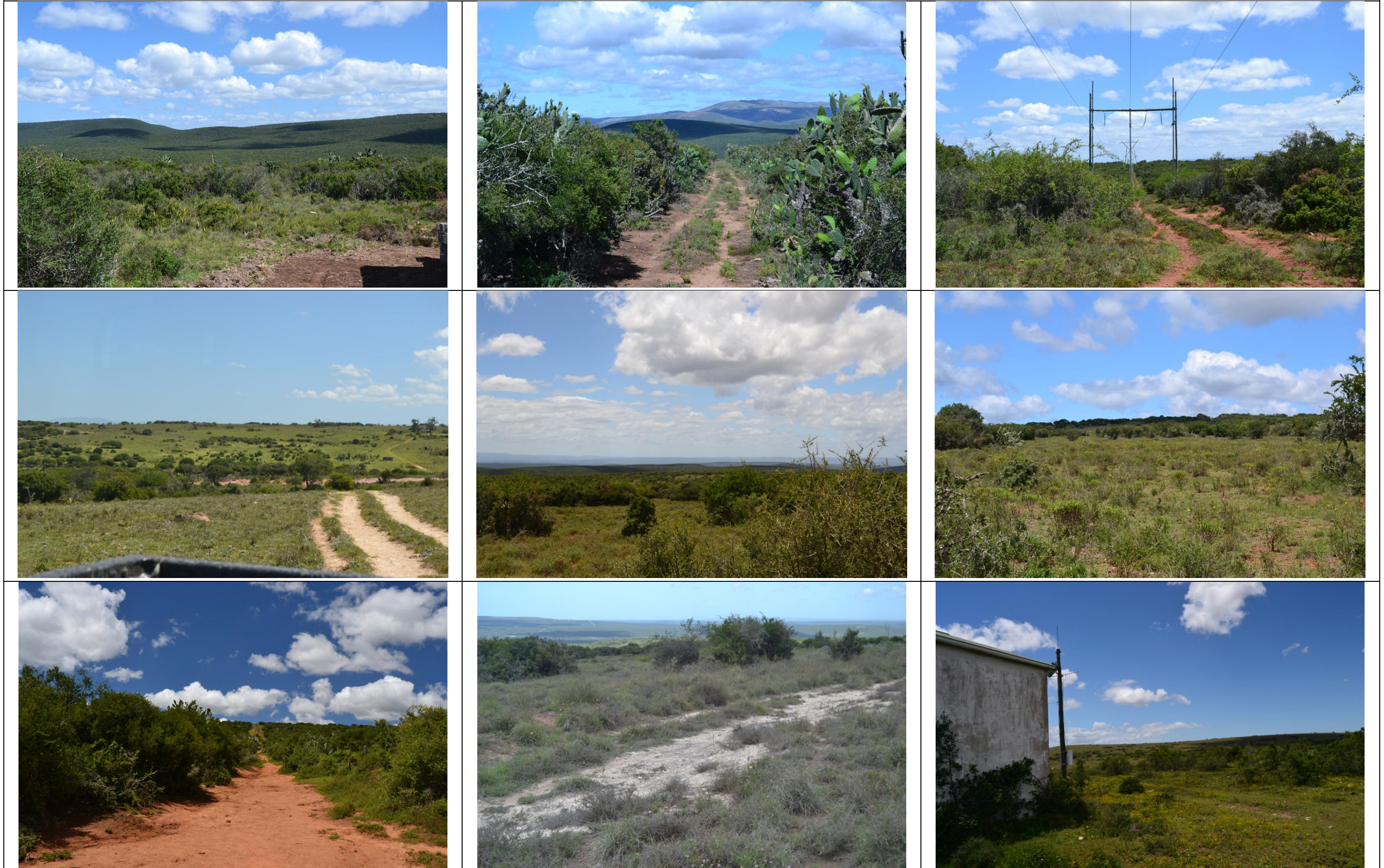


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1 INTRODUCTION

1.1 Background to the Study

Dassiesridge Wind Power (Pty) Ltd (DWP) is a special purpose vehicle (SPV) created by InnoWind (Pty) Ltd, a South Africa based renewable energy generator that develops, finances, builds, operates and maintains commercial wind powered generation facilities. InnoWind's development and operating expertise has been acquired through its French parent company EDF Energies Nouvelles, which is the renewable energy arm of the French power utility EDF. EDF EN currently owns and operates over 6500 MW of wind energy power plants worldwide.

Dassiesridge Wind Power (Pty) Ltd, plans to develop, construct and operate a Wind Energy Facility (WEF) between the towns of Uitenhage and Kirkwood in The Eastern Cape Province. The project site straddles two municipalities: The Sundays River Valley Local Municipality and the Nelson Mandela Bay Metropolitan Municipality. These both fall within the Cacadu District Municipality. The proposed project area is approximately 14,300 ha located on 17 properties (Table 1-1):

Table 1-1: Property portions and farm names associated with the project area.

Farm Name	SG Digit Number	Portion / Farm Number	Area (ha)
BLAUW BAATJIES 189	C07600000000018900005	5/189	225
GRASSRIDGE 190	C07600000000019000003	3/190	547
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PRENTICE KRAAL 233	C07600000000023300015	15/233	530
GRINGLEY 188	C07600000000018800000	188	534
BLAUW BAATJIES 189	C07600000000018900002	RE/2/189	474
PRENTICE KRAAL 233	C07600000000023300004	4/233	159
BLAUW BAATJIES 189	C07600000000018900000	RE/189	1230
BLAUW BAATJIES 189	C07600000000018900004	4/189	763
BLAUW BAATJIES 189	C07600000000018900003	3/189	553
GRASSRIDGE 187	C07600000000018700000	187	1950
ELANDS HOORN 185	C07600000000018500011	11/185	854
FARM 715	C07600000000071500000	715	374
GRASSRIDGE 190	C07600000000019000001	1/190	370
GRASSRIDGE 190	C07600000000019000000	RE/190	967
GRASSRIDGE 227	C07600000000022700000	RE/227	2168
GRASSRIDGE 228	C07600000000022800000	228	2391

The proposed Dassiesridge WEF will consist of up to 60 turbines each capable of generating approximately 3.3 Mega Watts (MW) of power depending on the model and size of turbine selected. The project is currently in its development phase and the exact wind turbine model that will be best suited for this site will be determined at a later date. Although 60 turbines will be assessed, the final layout will comprise of between 42 and 47 turbines in total. The final design of the WEF will be for 140 MW capacity. This is due to the DoE's cap on 140 MW on renewable energy projects. The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will potentially cover an area of approximately 65 ha depending on final layout design should the project proceed.

The footprint of the facility is calculated as follows:

Turbine foundations:

9.5 meter radius;
Therefore: Area per turbine = 284 m²;
With 60 turbines: Area = 17,040 m²

Turbine hardstand:

Dimensions: 117 m x 37 m;
Area per hardstand: 4,329 m²;
With 60 turbines: Area = 259,740 m²

Internal access roads:

Total length of 49,392.5 m, width of 5.5 m*;
Area = 271,658.75 m²

* Assumes all roads are new. More than likely, existing farm roads will be widened and upgraded to make them suitable for access. This figure is therefore the “worst case scenario” assumption”.

Two substations:

Area = 10,000 m² each
Area = 20,000 m²

400 kV Overhead Power line:

Length of 10,295 m, width of 10 m;
Area = 102,950 m²

TOTAL APPROXIMATE FACILITY FOOTPRINT: 654,348.75 m² or 65 ha

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 Dassiesridge (Pty) Ltd to conduct the EIA process.

1.2 Environmental Authorisation in South Africa

The regulation and protection of the environment within South Africa, occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act 108 of 1996).

The primary legislation regulating Environmental Impact Assessment (EIA) within South Africa is the National Environmental Management Act (“NEMA” Act 107 of 1998). NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (“the MEC”). In addition to this, NEMA also provided for the formulation of regulations in respect of such authorisations.

The EIA Regulations (2010) allow for a basic assessment process for activities with limited environmental impact (listed in GN R.544 & 546, 2010) and a more rigorous two tiered approach to activities with potentially greater environmental impact (listed in GN R.545, 2010). This two-tiered approach includes both a Scoping and EIA process. The proposed Dassiesridge WEF project

activities trigger the need for an EIA under the Regulations of 2010 in Listing Notices 1, 2 and 3 and published in Government Notices No. R.544, R.545 and R.546, respectively. The listed activities that have been applied for are provided in Table 1-2 below.

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

LISTING NOTICE 1		
Listing notice 1 of GNR 544 EIA regulations as corrected 10 December 2010.	<p>(10) The construction of facilities or infrastructure for the transmission and distribution of electricity –</p> <p style="padding-left: 40px;">(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;</p>	A substation will be constructed on site which will collect power generated by the turbines, step up the voltage to make it compatible with the Eskom grid, and then transfer this power via an overhead power line to Eskom infrastructure (either an existing substation or a transmission line in close proximity to the site boundary).
	<p>(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:</p> <p style="padding-left: 40px;">(i) a watercourse.</p>	The project will involve the construction of roads and underground electrical cables, which are likely to cross drainage lines and rivers. Infill material is likely to be sourced from turbine foundations, if it has suitable properties.
	<p>(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.</p>	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. The Eskom substation that the 400 kV over-head connects to, will need to be modified and upgraded to allow connection with the 400 kV line.
LISTING NOTICE 2		
Listing notice 2 of GNR 545 EIA regulations as corrected 10 December 2010.	<p>(1) The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.</p>	The exact amount of power to be produced by the facility will be specified in the EIR, but the current proposal indicates that the project could generate up to 140 MW.
	<p>(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.</p>	A 400 kV overhead line will link the project substation with the nearest Eskom substation or overhead line.
	<p>(15) Physical alteration of undeveloped, vacant or derelict land for commercial and industrial use</p>	The exact construction phase footprint and operation phase footprint will be specified in the EIR.

	where the total area to be transformed is 20 hectares or more.	
LISTING NOTICE 3		
Listing notice 3 of GNR 546 EIA regulations as corrected 10 December 2010.	<p>(4) The construction of a road wider than 4 metres with a reserve less than 13,5 metres.</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>Roads will need to be constructed that will link the turbines and other infrastructure components.</p> <p>The site is located in an area demarcated as CBA 2 in terms of the Eastern Cape Biodiversity Conservation Plan, which has been adopted by the Provincial Authority as a Systematic Biodiversity Plan.</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.</p> <p>a) In the Eastern Cape.</p> <p>i. All areas outside urban areas.</p>	<p>Vegetation will be cleared in 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>(16) The construction of:</p> <p>(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.</p> <p>a) In Eastern Cape:</p> <p>ii. Outside urban areas.</p> <p>(bb) National Protected Areas Expansion Strategy Focus Areas</p> <p>(ff) Critical Biodiversity Areas as identified in systematic biodiversity plans</p>	<p>The site is located in an area demarcated as CBA 2 in terms of the Eastern Cape Biodiversity Conservation Plan, which has been adopted by the Provincial Authority as a Systematic Biodiversity Plan.</p>
	<p>(19) The widening of a road by more than 4 metres, or the lengthening of a road by 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</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.</p>

	as identified in systematic biodiversity plans	
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The competent authority that must consider and decide on the application for authorisation in respect of the activities listed in Table 1-2 is the National Department Environmental Affairs (DEA) as the Department has reached an agreement with all Provinces that all electricity-related projects, including generation, transmission and distribution, are to be submitted to DEA, irrespective of the legal status 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 until 2015.

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 which need to be considered prior to commencing with the activity, for example:

- National Heritage Resources Act (Act No 25 of 1999)
- Aviation Act (Act No 74 of 1962): 13th Amendment of the Civil Aviation Regulations (1997)
- NEM: Biodiversity Act (Act 10 of 2004)
- National Water Act (Act 36 of 1998).

1.3 Nature and Structure of this Report

The structure of this report is based on Section 31 of GN No.543, of the Environmental Impact Assessment Regulations (2010), which clearly specifies the required content of an Environmental Impact Assessment Report.

1.4 Details and Expertise of the Environmental Assessment Practitioner

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (a) Details of–**
- (i) The EAP who compiled the report; and**
 - (ii) The expertise of the EAP to carry out an environmental impact assessment.**

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

EOH Coastal & Environmental Services (CES), established in 1990, is a specialist environmental consulting company based in Grahamstown, with a branch in East London (Eastern Cape Province). We believe that a balance between development and environmental protection can be achieved by skilful, considerate and careful planning.

CES has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, and state of environment reporting (SOER), Integrated Waste Management Plans (IWMP), Spatial Development Frameworks (SDF), public participation, as well

as the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes. CES has been active in all of the above fields, and in so doing have made a positive contribution to towards environmental management and sustainable development in the Eastern Cape, South Africa and many other African countries.

Dr Alan Carter holds a PhD in Plant Sciences and is a Certified Public Accountant, with extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He has over 20 years of experience in environmental management and has specialist skills in sanitation, coastal environments and industrial waste. Dr Carter is registered as a Professional Natural Scientist under the South African Council for Natural Scientific Professions and is a certified ISO14001 Environmental Management Systems Auditor.

Dr Cherie-Lynn Mack, holds a PhD and MSc (with distinction) degrees in Environmental Biotechnology, with a BSc degree in Microbiology and Biochemistry. She has postgraduate research experience in industrial and domestic wastewater treatment technologies, with particular emphasis on the coal and platinum mining industries. Her interests lie in the water sector, with experience in ecological reserve determination and water quality monitoring and analysis. She has experience in water quality analysis and industrial wastewater treatment research. She is currently employed in the East London office of CES as a principal environmental consultant.

Ms Tarryn Martin, Senior Consultant, holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an 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 has spent time at Rhodes University working as a research assistant and has spent many years working within the corporate tourism industry as a project manager. Her research interests include biodiversity conservation, ecotourism and climate change.

Ms Caroline Evans, Environmental Consultant. Caroline holds a BSc with majors in Environmental Science (distinction) and Zoology, as well as a BSc (Hons) in Environmental Science (distinction) both from Rhodes University. Her undergraduate degree included both commerce and natural sciences. Caroline's honours dissertation evaluated the economic impacts of degradation of the xeric subtropical thicket through farming practices, focussing on the rehabilitation potential of the affected areas in terms of carbon tax. She has a broad academic background including statistics, economics, management, climate change, wetland ecology, GIS, rehabilitation ecology, ecological modelling and zoology.

Mr Roy de Kock, Senior Environmental Consultant. Roy holds a BSc Honours in Geology and an MSc in Botany from the Nelson Mandela Metropolitan University in Port Elizabeth. His thesis was on Rehabilitation Ecology with the focus on Mine Rehabilitation. His Master's thesis titled; Bushclump Rehabilitation Within Couga Bontveld After Strip Mining focused on rehabilitation of mined Bontveld vegetation on limestones of the Nanaga Formation where he attempts to recognise the evolutionary path of the present landscape, as well as focussing on primary ecological processes such as hydrology, energy capture and nutrient cycling and the impact of mining on change in diversity and ecosystem health. Currently he is working on numerous impact assessments at the East London branch. Roy is registered as a Candidate Natural Scientist under SACNASP.

Ms Rosalie Evans, Environmental Consultant. Rosalie holds a BA Social Dynamics degree with majors in Geography and Psychology, as well as BA (Hons) in Geography and Environmental Studies - both from Stellenbosch University. Rosalie's honours dissertation analysed the role of small grains in soil carbon sequestration in the agricultural sector of the Western Cape. Her academic focuses include renewable energy, sustainable development and the interactions between humans and their environment.

2 PROJECT DESCRIPTION

In terms of the EIA Regulations (2010):

31. (2) An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include—
- b) a detailed description of the proposed activity;
 - c) 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;

In fulfilment of the above-mentioned legislative requirements, this Chapter of the draft EIR identifies the location and size of the site of the proposed Dassiesridge WEF, and provides a description of its various components and layout on the site.

2.1 Project Locality

Dassiesridge Wind Power (Pty) Ltd proposes the development of a wind energy facility (WEF) in the Eastern Cape Province. The proposed WEF is located on properties that straddle both the Sundays River Valley Local Municipality (SRVLM) and the Nelson Mandela Bay Metropolitan Municipality (Figures 2-1 and 2-2). The SRVLM lies within the Cacadu District Municipality. The project has a study area of approximately 14,300 ha located on 17 property portions which are listed in Chapter 1. These farms are currently used for hunting, game farming and livestock farming which includes goats, sheep and cattle.

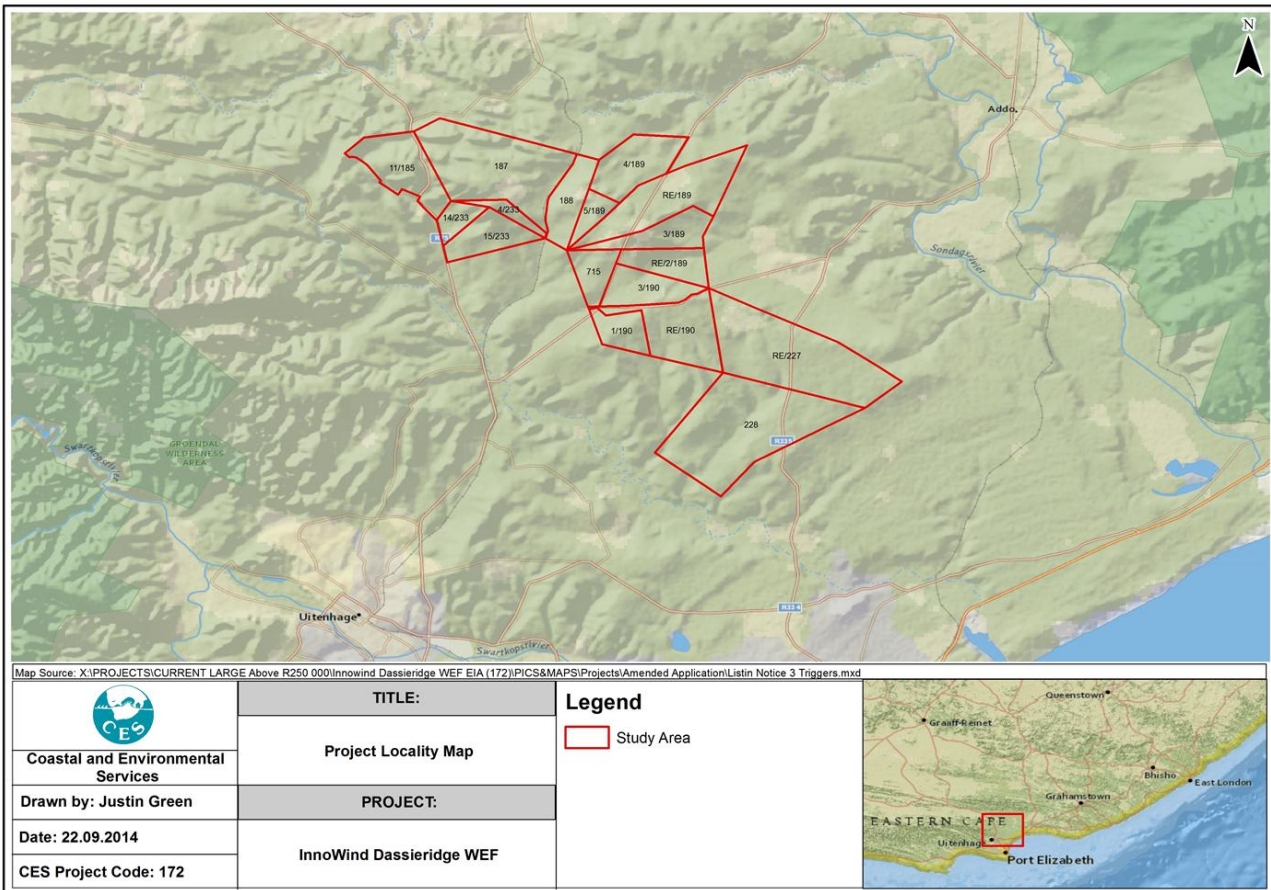
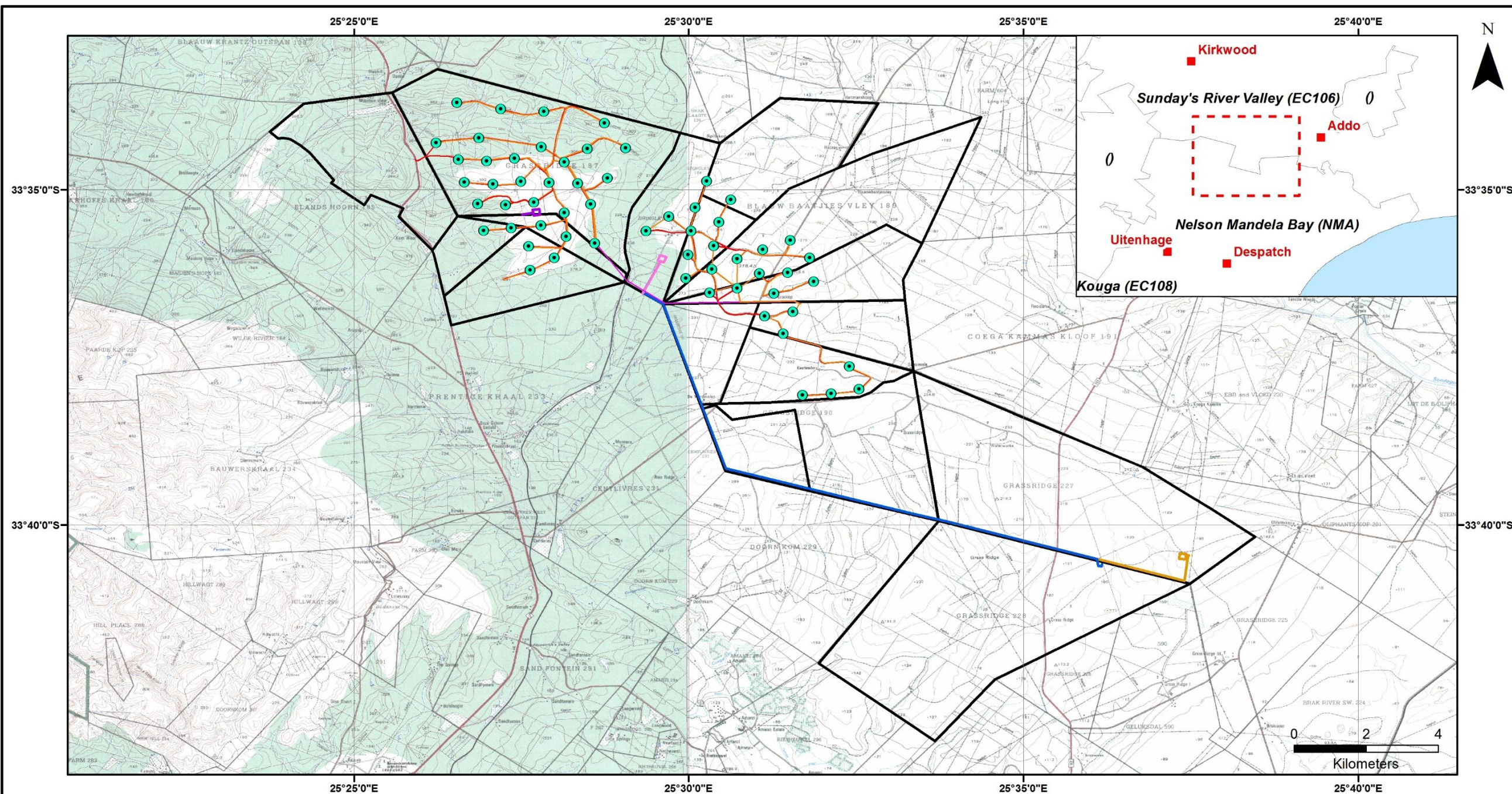


Figure 2-1: Map illustrating the locality of the project area.



Map source: X:\PROJECTS\CURRENT LARGE Above R250 000\Innowind Dassieridge WEF EIA (172)\PICS&MAPS\Projects\Amended DSR\Infrastructure Layout.mxd











 <p>Coastal and Environmental Services</p> <p>Drawn by: Thomas King</p> <p>Date: 29.09.2014</p> <p>CES Project Code: 172</p>	<p>TITLE:</p>	<p>Legend</p> <p> Study Area Outline</p> <p> Turbine Points</p> <p> Roads</p> <p> Site Internal Cable 22 kV</p> <p> Site Internal Cable 22 kV</p> <p> OHL Option 1</p> <p> OHL Option 2</p> <p> OHL Option 3</p> <p> OHL Option 4</p>
	<p>PROJECT:</p>	
	<p>Infrastructure Layout</p>	
	<p>InnoWind Dassieridge WEF</p>	

Figure 2-2: Map illustrating the locality of the project

2.2 Proposed Activity

2.2.1 Wind Energy Facility (WEF)

The wind energy facility which will be spread over 17 adjacent properties. These land portions are planned to host up to 60 turbines, each with a nominal power output of between 3.3 Mega Watts (MW). Current designs indicate that the facility would have an output of approximately 193 MW, but the DoE has a cap of 140 MW on renewable energy projects. As the EIA proceeds, environmental sensitivities and engineering limitations will result in the need to refine the project design. By the end of the EIA phase, the design for a facility producing only 140 MW will be considered. The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of 3 blades each up to approximately 66 m in length therefore creating rotor diameters of up to about 132 meters mounted atop high steel (or hybrid steel/concrete) tower of up to approximately 137 meters. 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 6/8 meters wide;
- Underground cables connecting the wind turbines wherever practical;
- Up to two substations (depending on the connection option selected);
- 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.

2.2.2 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):

- 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, 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.

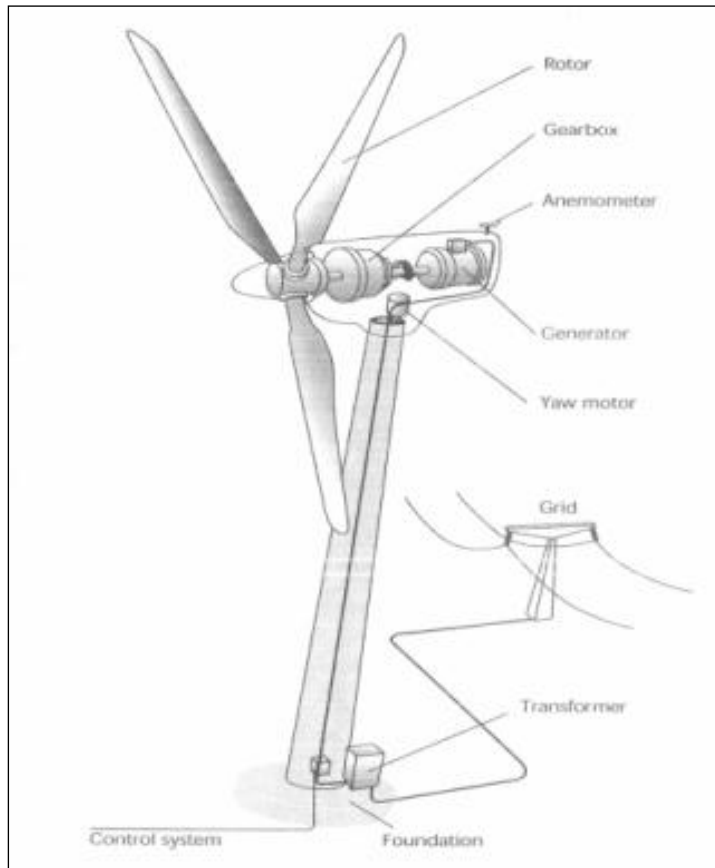


Figure 2-3: Illustration of the main components of a typical wind turbine.

2.3 Stages of Wind Farm Development

Typically, building a wind farm is divided into four phases namely:-

- Preliminary civil works
- Construction
- Operation
- Decommission

2.3.1 Preliminary Civil Works

Prior to the commencement of the main construction works, the Contractor may undertake vegetation clearance (if required) and site establishment works. The site establishment works may include the construction of one, or more, temporary construction compounds and laydown areas and the connection of services such as power and water to these compounds.

2.3.2 Construction

The construction footprint will include the platforms, or “crane pads” required to construct the wind turbines, new or upgraded access roads, lay-bys, component storage areas, turning heads and a substation to evacuate the electricity generated to the municipal or national grid.

A typical platform for the assembly of the crane and construction of the turbine is shown in Figure 2-4. These platforms will be connected by access roads (if none existing) with the following requirements:

- Minimum of 7m width (5m running width and 1m verge either side) on straight sections with widening required on corners.

- Should a “crawler” type crane be used, then road widths of up to 11m on straight sections may be required, of which 5m would be retained for the life of the wind farm.
- Typical 300mm deep road section
- Maximum 10% vertical gradient on gravel roads
- Turning heads provided within 200m of each crane pad (refer to Figure 2-4).
- Passing places of c. 50m length and 5m width located approximately every 1km

The construction footprint required will be greater than the dimensions specified above to allow for construction of the wind farm infrastructure. These areas used temporarily over the construction period – including temporary construction compound and road verges – will be rehabilitated at the end of construction works to reduce the footprint on the land.

Other works during the construction phase include:

a) Geotechnical studies and foundation works

A geotechnical study of the area is undertaken for safety purposes. This comprises of drilling, penetration and pressure assessments. For the purpose of the foundations, approximately 1500m³ of soil would need to be excavated for each turbine. These excavations are then filled with steel-reinforced concrete (typically 45 tons of steel reinforcement per turbine including a “bolt ring” to connect the turbine foundation to the turbine tower). Foundation design will vary according to the type and quality of the soil. The typical dimensions of a foundation for a 3MW/100m high wind turbine are shown in Figure 2-5 with the underground foundation and tower connection at ground level.

b) Electrical cabling

Electrical and communication cables are laid approximately 1 m deep in trenches which run alongside the access roads as much as possible. All previous farming activities can continue unhindered on the ground above the cables during the operational phase.

c) Establishment of hard standing surfaces and laydown areas

Laydown and storage areas will be required for the contractor’s construction equipment and turbine components on site.

d) Site preparation

If not carried out in the preliminary works phase, this will include clearance of vegetation over the access roads, platforms, lay-bys, substation and any other laydown or hard-standing areas. These activities will require the stripping of topsoil which will be stock-piled, back-filled and/or spread on site.

e) Establishment of substation and ancillary infrastructure

The establishment of these facilities/buildings will require the clearing of vegetation and levelling of the development site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with these buildings will also be required.

f) Turbine erection

Weather permitting; the erection of the turbines can be completed swiftly and erection rates generally average 1-2 turbines per week. This phase is the most complex and costly.

g) Undertake site remediation

Once construction is completed and all construction equipment is removed, the site must be rehabilitated. On full commissioning of the facility, any access points to the site which are not required during the operational phase must be closed and rehabilitated.

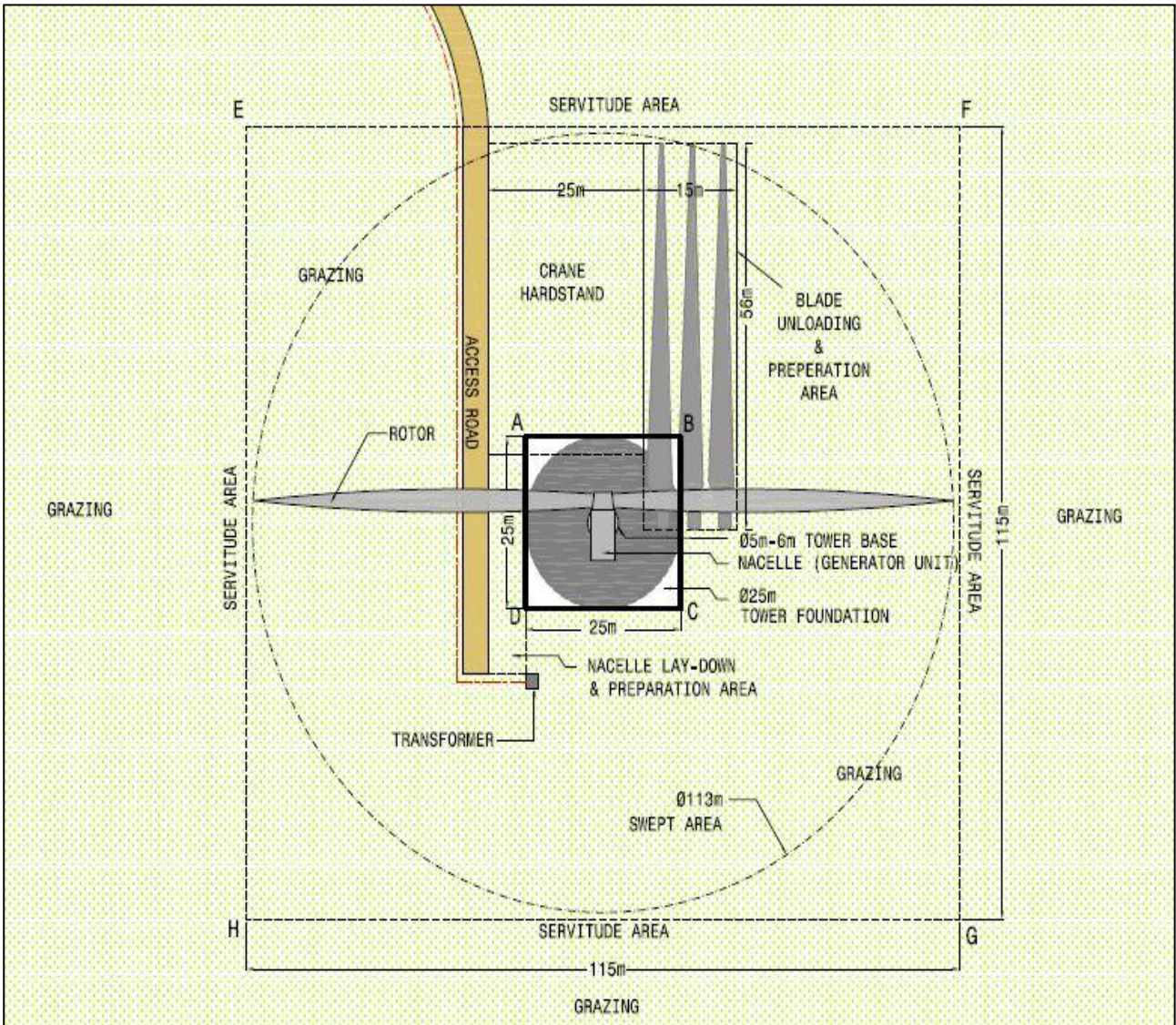


Figure 2-4: Typical construction phase platform

A platform of the dimensions indicated above needs to be laid down during the preliminary phase of a typical wind farm for access to the site during the construction phase by machines (bulldozers, trucks, cranes etc.).

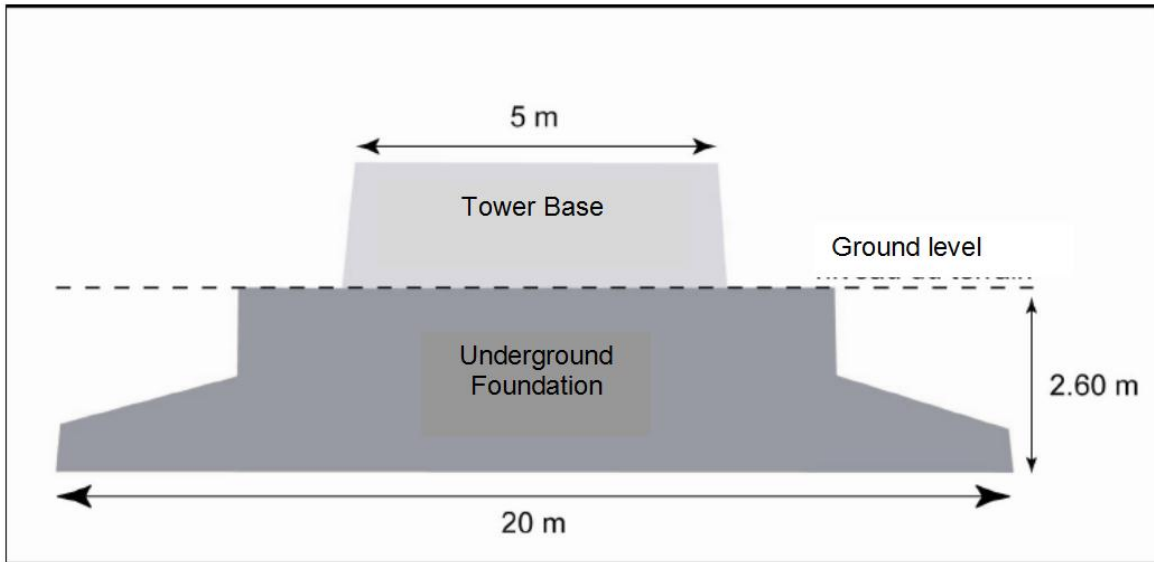


Figure 2-5: Indicative dimensions for the foundation of a 3MW/100m high wind turbine.

Electrical connections

Each turbine is fitted with its own transformer that steps up the voltage usually to 22 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 be carried out by Eskom or an Eskom-approved sub-contractor (line upgrade, connection to the sub-station, burial of the cables etc.)

Five powerline connection options were assessed during the EIR phase. Based on site sensitivities one of these options will be selected as the final route.

The interconnection of the wind farm to the Eskom Distribution electrical grid will require the construction of one high voltage electrical substation (up to 400 kV). This will be located on-site and a loop-in loop out line used to connect the substation to the existing 132kV Skilpad line. The approximate length of the power line will be 0.4km.

Alternatively, and subject to Eskom approval, a substation will be constructed on the site and a loop-in loop-out line used to connect to the existing 132kV Skilpad line on the eastern part of the site. The approximate length of this line will be 1km.

A third option would be to construct the substation in the same place as for option 2 above but for a line to connect at the existing Olifantskop substation. This power line will fall within the servitude of an existing Eskom line and will be approximately 16km in length.

A fourth option is to construct two substations, one will be built on the eastern side of the project area (same position as for option 2) and one on Grassridge Farm and a loop in-loop out line used to connect to the existing Nooitgedacht line. As with option three above, this line will follow the servitude of an existing Eskom line.

An alternative to the fourth option described above is that instead of connecting with the Nooitgedacht line, the line will connect with the 400 kV Cookhouse line.

Alternative 3 is considered the preferred alternative based on the assessment of capacity and distribution of electricity performed by the developer, in consultation with Eskom. Alternative 3 requires the construction of approximately 16km of new powerline infrastructure. Approximately 1km of alternative 3 would be located in an area void of existing powerline infrastructure (as is the case with the remaining alternative options), approximately 15km of the proposed Alternative 3 powerline would be constructed parallel to the existing Skilpad Powerline Servitude (Eskom).

2.3.3 Operational Phase

During the period when the turbines are up and running, 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.

2.3.4 Decommissioning of the Wind Farm

The infrastructure would only be decommissioned once it has reached the end of its economic or technological life. If economically feasible, the decommissioning activities would comprise the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time. This operation is referred to as 'facility re-powering'. However, if not deemed so, then the facility would be completely decommissioned which would include the following decommissioning activities.

a) Site preparation

Activities would include confirming the integrity of the access to the site to accommodate the required equipment and the mobilisation of decommissioning equipment.

b) Disassemble all individual components

The components would be disassembled and reused and recycled or disposed of in accordance with regulatory requirements.

3 PROJECT NEED & DESIRABILITY

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

(f) **A description of the need and desirability of the proposed activity**

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

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

The above main drivers for renewable energy projects are supported by the following recent International, National and Provincial policy documents.

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. The stated purpose of the UNFCCC is to, “achieve...stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system”, and to thereby prevent human-induced climate change by reducing the production of greenhouse gases defined as, “those gaseous constituents of the atmosphere both natural and anthropogenic, that absorb and re-emit infrared radiation”.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

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. This amounts to an average of 5% against 1990 levels over the five-year period 2008-2011. The major distinction between the

Protocol and the Convention is that, “while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to do so”.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

The Kyoto Protocol is relevant in that the proposed Dassiesridge WEF 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 in demonstrating its continued commitment to meeting international obligations in terms of reducing its emissions.

3.2 National

3.2.1 National Development Plan (2011)

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

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

Sector	Target
Electrical infrastructure	<ul style="list-style-type: none"> • South Africa requires an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, implying new build of about 40,000 MW. • About 20,000 MW of this capacity should come from renewable sources.
Transition to a low carbon economy	<ul style="list-style-type: none"> • Achieve the peak, plateau and decline greenhouse gas emissions trajectory by 2025. • About 20,000 MW of renewable energy capacity should be constructed by 2030.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

The proposed Dassiesridge WEF will contribute towards additional energy capacity in South Africa.

3.2.2 National Climate Change Response White Paper (2012)

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

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

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

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

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

3.2.3 White Paper on Renewable Energy Policy (2003)

The White Paper on the Renewable Energy Policy (2003) commits SA Government support for the development, demonstration and implementation of renewable energy sources for both small and large scale applications. It sets out the policy principles, goals and objectives to achieve, “An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation”. In terms of the White Paper, the Government sets a target of 10 000 GWh (0.8Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

3.2.4 Integrated Energy Plan for the Republic of South Africa (2003)

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

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

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

3.2.5 Integrated Resource Plan for Electricity 2010-2030

The Integrated Resource Plan (IRP2010) for South Africa was initiated by the Department of Energy (DoE) and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

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

The Policy-Adjusted IRP includes recent developments with respect to prices and allocates 17.8GW for renewables of the total 42.6GW new-build up to 2030 allocated as follows:

- Wind at 8.4GW.

- Concentrated solar power at 1.0GW.
- Photovoltaic at 8.4GW.

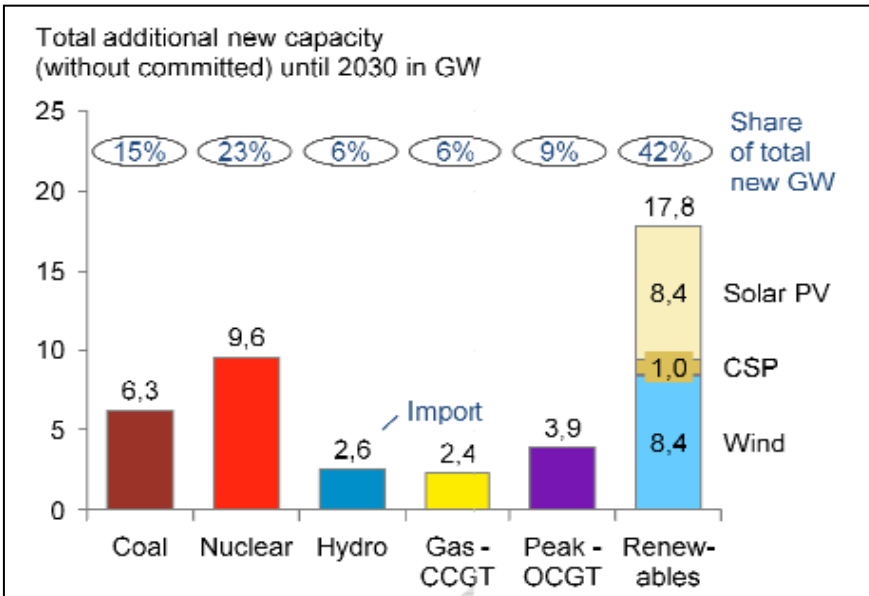


Figure 3-1. After consultation process – Policy Adjusted IRP [IRP 2010 final report rev2].

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

The Dassiesridge WEF is in line with the IRP for electricity and will contribute towards finding an appropriate balance between the various stakeholders as per the IRP2010.

3.2.6 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)

South Africa has a high level of renewable energy potential and presently has in place a target of 10 000GWh of renewable energy. The Minister has determined that 3 725MW to be generated from renewable energy sources is required to ensure the continued uninterrupted supply of electricity. This 3 725MW is broadly in accordance with the capacity allocated to Renewable Energy generation in IRP 2010-2030.

The REIPPPP Programme has been designed so as to contribute towards the target of 3 725MW and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

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

The generation capacity allocated to each technology is in accordance with the table below and the maximum tariff that a Bidder may bid for purposes of the IPP Procurement Programme is as set out in the RFP.

Technology	MW
Onshore wind	1 850 MW
Concentrated solar thermal	200 MW
Solar photovoltaic	1 450 MW
Biomass	12,5 MW
Biogas	12,5 MW
Landfill Gas	25 MW
Small hydro	75 MW
Small Projects	100 MW
Renewable energy target per the REIPPP Programme	

In December 2012, the Minister announced that a further 3 200MW of renewable energy should be procured with the following combined total installed capacity open for bidding:

Technology	2011	2012	TOTAL
	Installed Capacity	Installed Capacity	
Onshore wind	1 850MW	1 450MW	3 300MW
Concentrated solar power	200MW	400MW	600MW
Solar photovoltaics	1 450MW	1 075MW	2 525MW
Biomass	12.5MW	1.5MW	14MW
Biogas	12.5MW	1.5MW	14MW
Landfill gas	25MW		25MW
Small hydro	75MW		75MW
SMALL PROJECTS	100MW	100MW	200MW
TOTAL	3 725MW	3 200MW	6 925MW

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

In terms of REIPPPP, bids would be awarded for renewable energy supply to ESKOM through up to 5 bidding phases. The 1st, 2nd, 3rd and 4th round bidding processes have been completed where projects are currently reaching financial close in order to implement the projects. REIPPPP is entering the fifth bidding window.

3.2.7 Long Term Mitigation Scenarios (2007)

The aim of the Long Term Mitigation Scenarios (LTMS) was to set the pathway for South Africa’s long-term climate policy and will eventually inform a legislative, regulatory and fiscal package that will give effect to the policy package at a mandatory level. The overall goal is to “develop a plan of action which is economically risk-averse and internationally aligned to the world effort on climate change.”

The strategy assesses various response scenarios but concludes that the only sustainable option (“the preferred option”) for South Africa is the “Required by Science” scenario where the emissions reduction targets should target a band of between -30% to -40% emission reductions from 2003 levels by 2050 which includes increasing renewable energy in the energy mix by 50% by 2050.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

The proposed Dassiesridge WEF will contribute towards an overall reduction in emissions and aligns with the world stance on efforts towards the mitigation of climate change.

3.2.8 Industrial Policy Action Plan 2011/12 – 2013/14

The South African Industrial Policy Action Plan (IPAP 2) 2011/12 – 2013/14 represents a further step in the evolution of this work and serves as an integral component of government’s New Growth Path and notes that there are significant opportunities to develop new ‘green’ and energy-efficient industries and related services and indicates that in 2007/2008, the global market value of the ‘Low-Carbon Green Sector’ was estimated at £3 046 billion (or nearly US\$5 trillion), a figure that is expected to rise significantly in the light of climate-change imperatives, energy and water security imperatives.

Based on economic, social and ecological criteria, IPAP identifies a number of sub-sectors and an initial round of concrete measures proposed for development of the renewable energy sector with key action programmes.

Key Action Programmes include but are not limited to:

- Solar and Wind Energy - Stimulate demand to create significant investment in renewable energy supply and the manufacturing of local content for this supply.
- Green Industries special focus: The South African Renewables Initiative (SARi) - SARi is an intra-governmental initiative set to catalyse industrial and economic benefits from an ambitious program of renewables development; including financing and associated institutional arrangements that would not impose an unacceptable burden on South Africa’s economy, public finances or citizens.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

The proposed Dassiesridge WEF will contribute towards an overall reduction in emissions and aligns with the world stance on efforts towards the mitigation of climate change.

3.2.9 Strategic Infrastructure Projects (2012)

The National Infrastructure Plan that was adopted in 2012 together with the New Growth Path, which sets a goal of five million new jobs by 2020, identifies structural problems in the economy and points to opportunities in specific sectors and markets or "jobs drivers" resulted in the establishment of the Presidential Infrastructure Coordinating Committee (PICC) which in turn resulted in the development of 18 Strategic Infrastructure Projects (SIPS).

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

SIP 8: Green energy in support of the South African economy

- *Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010).*

SIP 9: Electricity generation to support socio-economic development

- *Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.*

3.3 Site Locality: Wind Data

The South African Wind Atlas (CSIR et al., 2014) indicates that the area has an average wind speed of between 6.5 and 8 m/s. This has been confirmed by Dassiesridge Wind Power with the onsite average measured wind speed confirmed to be approximately 7 m/s. Two meteorological masts with anemometers have been erected on site; one at 60 m and one at 120 m. The 60 m mast has been collecting data since the 6th of January 2014, and the 120 m mast has been collecting data since the 23rd of March 2015. A 34m mast was used to collect data from the 1st of January 2014 till March 2015 when it was decommissioned.

An operational wind energy facility, Grassridge WEF (59.8 MW), on a farm bordering the Dassiesridge site to the southeast was a successful bidder in round 2 of the Department of Energy Renewable Energy Integrated Power Producer Procurement Programme in 2012. Grassridge reached commercial operation on the 6th of June 2015. The data collected from this facility is available to Dassiesridge Wind Power as the project originators for both WEFs is InnoWind (Pty) Ltd.

It is worth noting that Dassiesridge WEF forms part of a second phase of Grassridge WEF thus resulting in significant cost saving benefits which stem from the use of the same infrastructure.

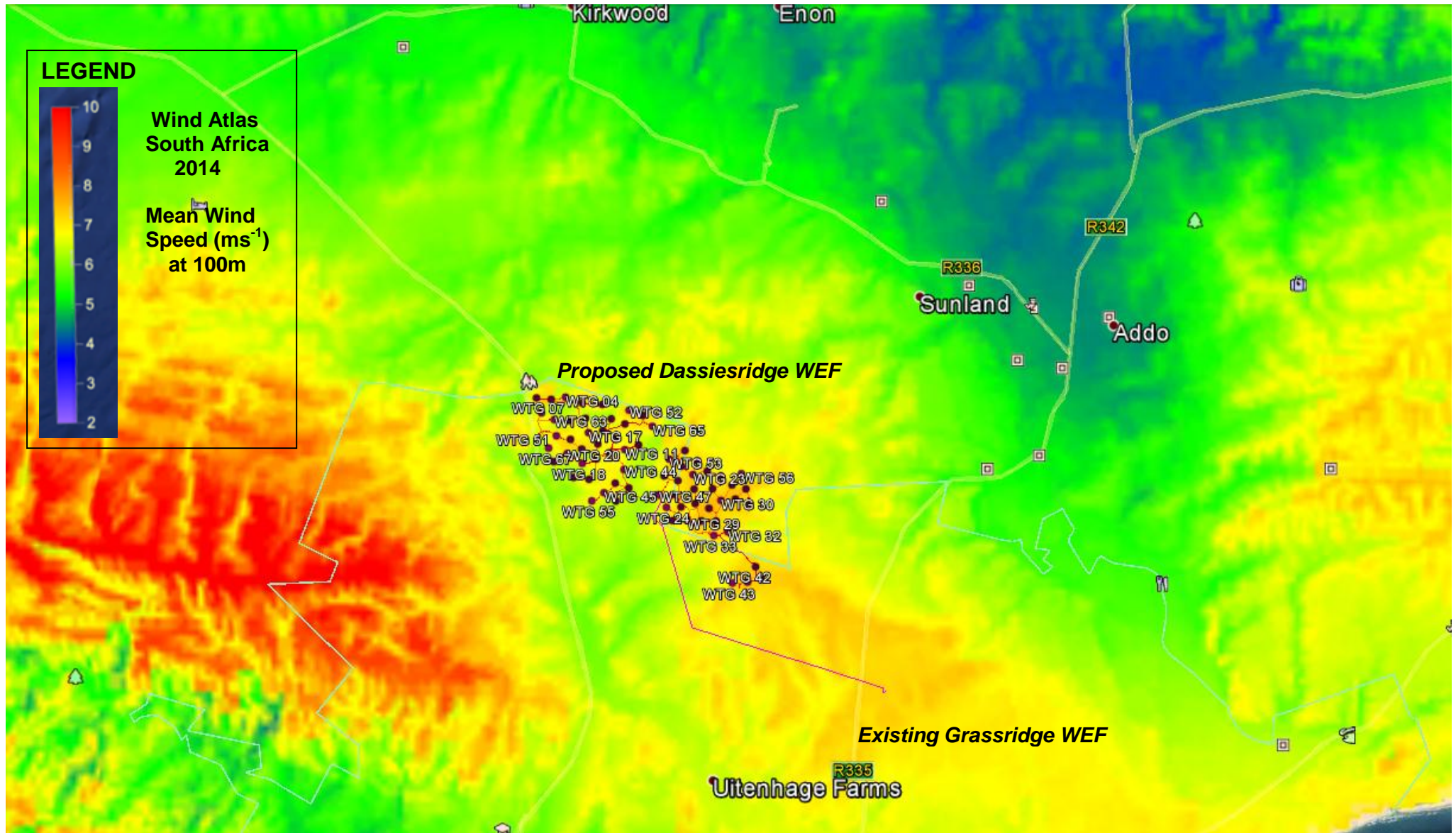


Figure 3-1: South African Wind Atlas (2014) Wind Data for the Proposed Dassiesridge WEF

4 ALTERNATIVES

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include—

- (g) **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;**

One of the requirements of an EIA is to investigate alternatives associated with a proposed project activity.

4.1 Reasonable and Feasible Alternatives

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The no-go alternative must also 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 property on which or location where it is proposed to undertake the activity.
- (b) the type of activity to be undertaken.
- (c) the design or layout of the activity.
- (d) the technology to be used in the activity.
- (e) the operational aspects of the activity.
- (f) the option of not implementing the activity.

4.2 Fundamental, Incremental and No-go Alternatives

4.2.1 Fundamental Alternatives

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity.
- Alternative type of activity to be undertaken.
- Alternative technology to be used in the activity.

4.2.2 Incremental Alternatives

Incremental alternatives relate to 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 with respect to the current wind farm project, including:

- Alternative design or layout of the activity.
- Alternative operational aspects of the activity.

4.2.3 No-go Alternative

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

4.3 Analysis of Alternatives

Table 4-1 illustrates the methodology used to assess the identified alternatives. The table assesses the advantages and disadvantages, and provides further comments on the selected alternatives.

The categories of alternatives that are assessed include:

- Location;
- Activity;
- Associated technology;
- Design and layout; and
- No-go alternative.

Table 4-1. The alternatives for the proposed Dassiesridge WEF

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and Feasible	Comment
<p><u>Property or location</u> This refers to the <u>fundamental location options</u>, and the environmental risks and impacts associated with such options.</p>	<p>Alternative location 1 - Current proposed site (Preferred alternative).</p> <p>This site has been selected based on good wind resource potential and proximity to available electrical grid</p> <p>Alternative 1 is located in close proximity to the existing Grassridge WEF due to the strong wind resource in the area.</p>	<ul style="list-style-type: none"> - Located close to existing necessary Eskom electrical infrastructure. - Suitable wind resource. - Land availability (Dassiesridge and landowners have formally agreed to the proposed development on the site and are in full support of the use of this area). 	<ul style="list-style-type: none"> - Land previously undeveloped - Potential visual intrusion to surrounding communities. - Potential impacts on avifauna and bats. 	<p>YES</p>	<p>The main determining factors for selecting the proposed location were:-</p> <ul style="list-style-type: none"> - Proximity to a grid connection point. - Available land. - Available wind resource. <p>Preliminary investigations have identified that the proposed project site meets the above land specifications.</p>
	<p>Alternative location 2 - None identified as rights to private land must be sought from local landowners. Location 1 has been agreed to.</p> <p>Alternative sites in the area do not yield the same wind resource potential.</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<ul style="list-style-type: none"> - Alternative locations for the current project are limited and probably not reasonable or feasible due to lower wind resources. - The connectivity to the grid is a critical factor to the overall feasibility of the project. - The available wind resource was considered a critical aspect. - Therefore, alternative locations were not

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and Feasible	Comment
					assessed.
Type of technology This refers to the fundamental technology options, such as energy generation from wind vs. coal fired power plant, etc. and the environmental risks and impacts associated with such options.	Alternative energy technology 1 – Wind turbines (Preferred alternative)	<ul style="list-style-type: none"> - Clean and renewable energy. - Mitigate climate change - Does not require large areas of land. 	<ul style="list-style-type: none"> - Visually intrusive - Avifaunal impacts - Bat impacts 	YES	The activity is not mutually exclusive i.e. Intensive farming can still take place between turbines.
	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	Wind and solar energy facilities are not mutually exclusive but there is not enough solar radiation in the area for this option to be feasible (See below).
	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 a limiting factor. - Reflectivity of mirrors potentially a significant 	NO	Not enough intense radiation in the area to be considered viable. The solar atlas shows the project area to occur in an area that receives <6.0 kWh/m ² of solar radiation per day. Although favourable for solar radiation there are areas in South Africa that receive between 7 and 8

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and Feasible	Comment
			issue.		kWh/m ² radiation per day which is preferable when compared to areas that receive 6kWh/m ²
	Alternative energy technology 4 – Coal fired power plant	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	Not environmentally desirable.
	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	Not mutually exclusive.
	Alternative energy technology 6 – nuclear power	Greater electricity generation with little raw material required	<ul style="list-style-type: none"> – Raw material highly radioactive – Water availability a severe limitation. 	NO	Not mutually exclusive.
Design or layout This relates mostly to alternative ways in which the proposed	Alternative layout 1: Preferred WEF layout, access route and electrical switching station	The preferred access route and switching station has been selected according to	There may be impacts associated with upgrading and expanding road	YES	Considering the WEF layout: A maximum of 60 turbine structures will be assessed. The preferred layout will be

Alternative level	Alternatives	Advantages	Disadvantages	Reasonable and Feasible	Comment
development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts		the most appropriate technical design.	reserves in sensitive environments.		informed by the EIA process and associated specialist assessments. Thus the final proposed WEF layout included in the EIR will be the optimal layout from an environmental perspective, where all environmentally sensitive areas have been designated as NO-GO areas.
Operational aspects This relates mostly to alternative ways in which the development or activity can operate in order to reduce environmental risks or impacts	Alternative operational activities	Operational Management alternatives will be informed by specialist input (e.g. bird and bat monitoring). None have yet been identified.	N/A	YES	N/A
No-go option This refers to the current status quo and the risks and impacts associated to it.	Farm grassland: grazing and agriculture	Will remain relatively undisturbed	No contribution towards the national renewable energy target or to increased stability of the local Eskom grid.	YES	Assessed in the impact assessment process

5 RELEVANT LEGISLATION

The development of the proposed Dassiesridge WEF will be subject to the requirements of various items of South African legislation. These are described below.

5.1 The Constitution Act (No. 108 of 1996)

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

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

5.2 National Environmental Management Act (No.107 of 1998)

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

A key aspect of NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. Section 2 of NEMA contains principles (see Table 5-1) relevant to the proposed WEF project, and likely to be utilised in the process of decision making by DEA.

Table 5-1. NEMA Environmental Management Principles

(2)	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3)	Development must be socially, environmentally and economically sustainable.
(4)(a)	Sustainable development requires the consideration of all relevant factors including the following: <ul style="list-style-type: none"> i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-

	used or recycled where possible and otherwise disposed of in a responsible manner.
(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
(4)(j)	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(4)(p)	The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(4)(r)	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with these principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

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

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

In addition NEMA introduces a new framework for environmental impact assessments, the EIA Regulations (2010) discussed previously.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

5.3 National Environmental Management: Protected Areas Act (No. 57 of 2003)

The National Environmental Management: Protected Areas Act (No. 57 of 2003) (NEMPAA) mainly provides for the following:

- Declaration of nature reserves and determination of the type of reserve declared.
- Cooperative governance in the declaration and management of nature reserves.
- A system of protected areas in order to manage and conserve biodiversity.

- Utilization and participation of local communities in the management of protected areas.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *The Act will be relevant to the WEF developer if the WEF is located close to or within any areas proclaimed in terms of the Act.*

5.4 National Environment Management: Biodiversity Act (No. 10 of 2004)

The National Environment Management: Biodiversity Act (No. 10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection.

The objectives of this Act are to:

- Provide, within the framework of the National Environmental Management Act.
- Manage and conserve of biological diversity within the Republic.
- Promote the use of indigenous biological resources in a sustainable manner.

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act 107 of 1998. In terms of the Biodiversity Act, the developer has a responsibility for:

1. 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).
2. 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.
3. Limit further loss of biodiversity and conserve endangered ecosystems.

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations, which were promulgated in February 2007 and the Act's Threatened Ecosystems which were promulgated in November 2009

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *The WEF developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity;*
- *The WEF developer must assess the impacts of the proposed development on endangered ecosystems;*
- *The WEF developer may not remove or damage any protected species without a permit; and*
- *The WEF developer must ensure that the site is cleared of alien vegetation using appropriate means in consultation with the Act's Alien and Invasive Species Regulations promulgated in 2014.*

5.5 National Environmental Management: Waste Management Act (No. 59 of 2008)

The National Environmental Management: Waste Management Act (No. 59 of 2008) (NEMWMA) gives legal effect to the Government's policies and principles relating to waste management in South Africa, as reflected in the National Waste Management Strategy (NWMS).

The objects of the Act are (amongst others) to:

Protect health, well-being and the environment by providing reasonable measures for:

- minimising the consumption of natural resources.
- avoiding and minimising the generation of waste.
- reducing, re-using, recycling and recovering waste.
- treating and safely disposing of waste as a last resort.
- preventing pollution and ecological degradation.
- securing ecologically sustainable development while promoting justifiable economic and social development.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *The WEF developer must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act.*

5.6 National Forests Act (No. 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.
- 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 DASSIESRIDGE WEF

- *If any protected trees or indigenous forest in terms of this Act occur on site, the WEF developer will require a licence from the Department of Forestry (DAFF) to perform any of the above-listed activities.*

5.7 National Heritage Resources Act (No. 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 DASSIESRIDGE WEF

ECPHRA needs to be informed of the project and EIA process.

- *A heritage impact assessment (HIA) must be undertaken.*
- *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. For this reason a heritage impact assessment was undertaken.*
- *No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.*

5.8 Electricity Regulation Act (No. 4 of 2006)

The Electricity Regulation Act (Act No. 4 of 2006) came into effect 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.
- Promote competitiveness and customer and end user choice.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

5.9 Occupational Health and Safety Act (No. 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”. The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed Dassiesridge WEF. These cover, among other issues, noise and lighting.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

5.10 Aviation 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 Dassiesridge WEF 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.
- Turbine Lighting Assignment: The following guidelines should be followed to determine which turbines, need to be equipped with lighting fixtures. Again, the placement of the lights is contingent upon which type of configuration is being used.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *Due to requirements of the Act to ensure the safety of aircrafts, the WEF developer must engage directly with the Civil Aviation Authority regarding the structural details of the facility.*

5.11 National Environmental Management: Air Quality Act (No. 39 of 2004)

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

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

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

5.12 National Water Act (No. 36 of 1998)

The National Water Act (No. 36 of 1998) (NWA) provides for fundamental reform of the law relating to water resources in South Africa.

The purpose of the Act amongst other things is to:

- Ensure that the national water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:
 - Promoting equitable access to water.
 - Promoting the efficient, sustainable and beneficial use of water in the public interest.
 - Facilitating social and economic development.
 - Protecting aquatic and associated ecosystems and their biological diversity.
 - Reducing and preventing pollution and degradation of water resources.

The NWA is concerned with the overall management, equitable allocation and conservation of water resources in South Africa. To this end, it requires registration of water users and licenses to be obtained for water use except for certain limited instances set out in the Act. These instances include domestic use, certain recreational use, where the use occurs in terms of an existing lawful use or where the Department of Water Affairs (DWA) has issued a general authorisation that obviates the need for a permit.

Water use for which a permit is required

For the purposes of this Act, water uses for which a permit is required (amongst other), are defined in Section 21 as follows:

- Taking water from a water resource.
- Storing water.
- Impeding or diverting the flow of water in a watercourse.
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
- Disposing of waste in a manner which may detrimentally impact on a water resource.
- Altering the bed, banks, course or characteristics of a watercourse.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *There may be certain instances where the WEF developer may need to obtain approval in terms of the Water Act.*

5.13 Conservation of Agricultural Resources Act (No. 43 of 1983)

The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) is the main statute that deals with agricultural resource conservation.

The objects of the Act are to provide for the conservation of the natural agricultural resources of South Africa by the maintenance of the production potential of land. In order to maintain production potential of land, CARA provides for the following mechanisms; namely:

- Combating and prevention of erosion and weakening and destruction of water sources.
- Protection of vegetation.
- Combating of weeds and invader plants.

5.13.1 CARA Regulations

In order to give meaning to mechanisms aimed maintaining production potential of land provided for in CARA, Minister of Agriculture published regulations under CARA (CARA Regulations) which prescribes control measures which all land users have to comply, in respect of a number of matters, including the:

- Cultivation of virgin soil.
- Protection of cultivated land.
- Utilisation and protection of the veld.
- Control of weed and invader plants.
- Prevention and control of veld fires and the restoration and reclamation of eroded land.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *An agricultural potential assessment must be conducted to determine how the proposed development may impact on the agricultural production potential of the WEF site. For this reason, an Agriculture and Soils Impact Assessment was undertaken.*

It should be noted that the CARA regulations for the legal obligations regarding alien invasive plants in South Africa are superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014.

5.14 Subdivision of Agricultural Land Act (No. 70 of 1970)

The Subdivision of Agricultural Land Act (No. 70 of 1970) controls the subdivision of all agricultural land in South Africa and prohibits certain actions relating to agricultural land. In terms of the Act, the owner of agricultural land is required to obtain consent from the Minister of Agriculture in order to subdivide agricultural land.

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- *Approval will be required from the Department of Agriculture (DAFF) for any activities on the land zoned for agriculture and any proposed rezoning or sub-divisions of agricultural land.*
- *Although DAFF must approve rezoning or sub-divisions of agricultural land, the local authority issues the actual rezoning documentation.*

5.15 Mineral and Petroleum Resources Development Act (No. 28 of 2002)

Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) makes provision for equitable access to and sustainable development of the South Africa's mineral and petroleum resources and to provide for matters connected therewith.

The objects of this Act are (amongst others) to:

- Give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources.

- Promote equitable access to the nation’s mineral and petroleum resources to all the people of South Africa.
- Give effect to section 24 of the Constitution by ensuring that the nation’s mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.

Application for a mining right

As per Section 27 (1) of the Act, the Department of Minerals Resources (DMR) must grant permission for all mining operations. Both the removal of sand and/or stone from a borrow pit or quarry requires an application for a mining right.

There are two categories of permission relevant to borrow pits and hard rock quarries, namely; “Mining Permits” and secondly “Mining Rights or Licence.” As is reflected in the table below, these categories are linked to the size of the proposed operation and the proposed operational period.

Table 5-2. Categories of permission required for a borrow pit

Category	Size	Period of operation	DMR Requirement
Mining Permit	< 1.5ha	< 2 years	Environmental Management Plan (EMP)
Mining Right (Licence)	Not specified	Not specified	Scoping and EIA Environmental Management Programme Report

In addition, Section 53 of the Act requires that Ministerial approval is attained for “any person who intends to use the surface of any land in any way which may be contrary to any object of this Act or is likely to impede any such object”.

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

- Any activities associated with the WEF requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMR for either a mining permit or mining licence.
- The Dassiesridge WEF must apply to the Minister of Mineral Resources for approval to use the land for the purposes of the WEF.

5.16 National Road Traffic Act (No. 93 of 1996)

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

RELEVANCE TO THE PROPOSED DASSIESRIDGE WEF

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

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

The aim of the Act is to “prevent and combat veld, forest and mountain fires” in South Africa. Of particular relevance to the proposed Dassiesridge WEF development the following requirements of the Act need to be considered:

Relevant Section of the Act	Relevant to the proposed Dassiesridge WEF:
Section 3: Fire Protection Associations.	The proposed Dassiesridge WEF must register as a member of the fire protection association in the area.
Chapter 4 Section 12-14: Veld fire prevention: duty to prepare and maintain firebreaks	The proposed Dassiesridge WEF will be required to take all practicable measures to ensure that fire breaks are prepared and maintained according to the specifications contained in Section 12 – 14.
Section 17: Fire fighting: readiness	The proposed Dassiesridge WEF must have the appropriate equipment, protective clothing and trained personnel for extinguishing fires.

5.18 Other Relevant National Legislation

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

- 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 Telecommunication Act (1966) which has certain requirements with regard to potential impacts on signal reception;
- The Tourism Act 3 of 2014 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. Schedules 1 to 4 list protected and endangered plant and animal species.
- Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013 – came into force on 1 July 2015) aims to provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act.

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. It should be noted that until such a time as the relevant municipalities have the SLUMA mechanisms in place LUPO will stand.
- National Energy Regulator of South Africa (NERSA): Generation License
- Eskom: Connection agreement and Power Purchase Agreement (PPA)

6 DESCRIPTION OF THE AFFECTED ENVIRONMENT

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (d) A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;**

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 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 and the Nelson Mandela Bay Municipality is presented in Section 6.2 of this chapter. The profile includes basic demographic data on the municipal area.

6.1 Bio-physical Environment

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.

6.1.1 Topography

The project site is characterised by undulating hills arranged on an east-west axis. The elevation ranges from 400 meters above sea level (asl) in the north western section of the project site to 215 meters asl in the southern section of the project site.

6.1.2 Geology

The dominant geological features within the affected farm portions of the proposed Dassiesridge WEF are sedimentary deposits of the Bokkeveld Group which makes up part of the much larger Cape Supergroup located in the western sections, and the much younger Uitenhage Group of rocks contained in the central and eastern sections of the proposed site. The Uitenhage Group of rocks represent successions of the fault-controlled Algoa Basin and indicate the change from Jurassic to Cretaceous rocks. This rock consists mainly of non-fossiliferous sandstones of both fluvial and estuarine origin of the Kirkwood Formation, overlain by grey clays, silts and sands of the Sondagsriver Formation. Scattered Tertiary deposits consisting of the Nanaga sand and limestone

Formation as well as limestones, pebbly limestones and clays of the Alexandria Formation are also found on site.

Much older Devonian age rocks of the Bokkeveld Group are found in the western areas of the proposed site representing an extended timeframe (millions of years) of local surface erosion between these rocks and the much younger Jurassic and Cretaceous rock sequence found mostly in the central and eastern sections of the proposed Dassiesridge WEF site. The Bokkeveld rock consists of a series of alternating sandstone and shale formations.

6.1.3 Watercourses

Wetlands and drainage lines, including the 50m buffer placed around these, have been classified as having a HIGH sensitivity (Figure 6-4). It is recommended that no development occurs within the wetlands and that the impacts on drainage lines are kept to a minimum. The drainage lines and wetlands are important as they may act as refuge and/or corridors for faunal movement. Disturbance to these areas may affect animal habitats, particularly for amphibian species that are dependent on these areas.

Water courses affected by turbines and infrastructure

Only 3 artificial dams, identified by the NFEPA spatial planning tool, occur within the project site. None of these will be directly affected by the current position of the turbines and turbine infrastructure. Disturbance to these dams should be avoided.

Water courses affected by roads and below-ground power cables

Figures 6-1 to 6-3 below indicate the position of access roads and powerline infrastructure that traverse the drainage lines found within the project area. Each site is assessed below in terms of sensitivity and a recommendation made in terms of its location.

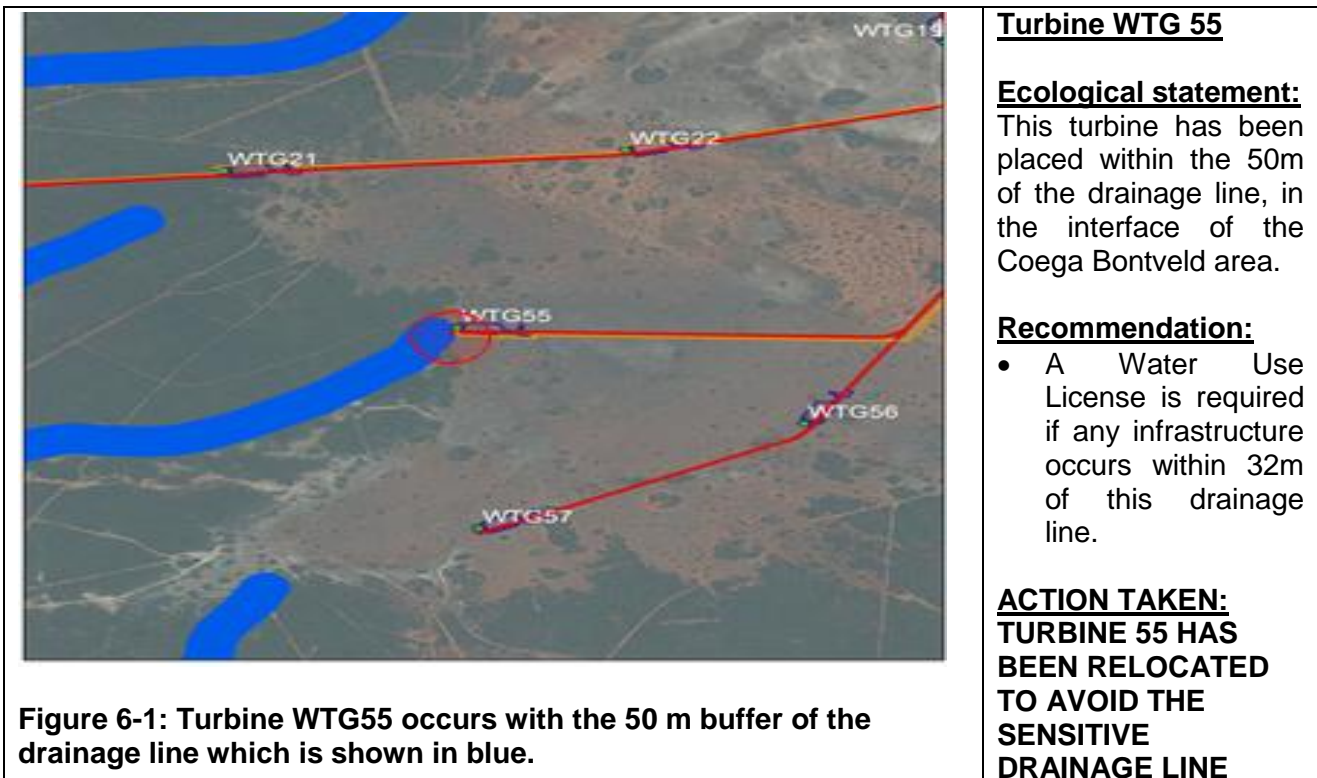


Figure 6-1: Turbine WTG55 occurs with the 50 m buffer of the drainage line which is shown in blue.

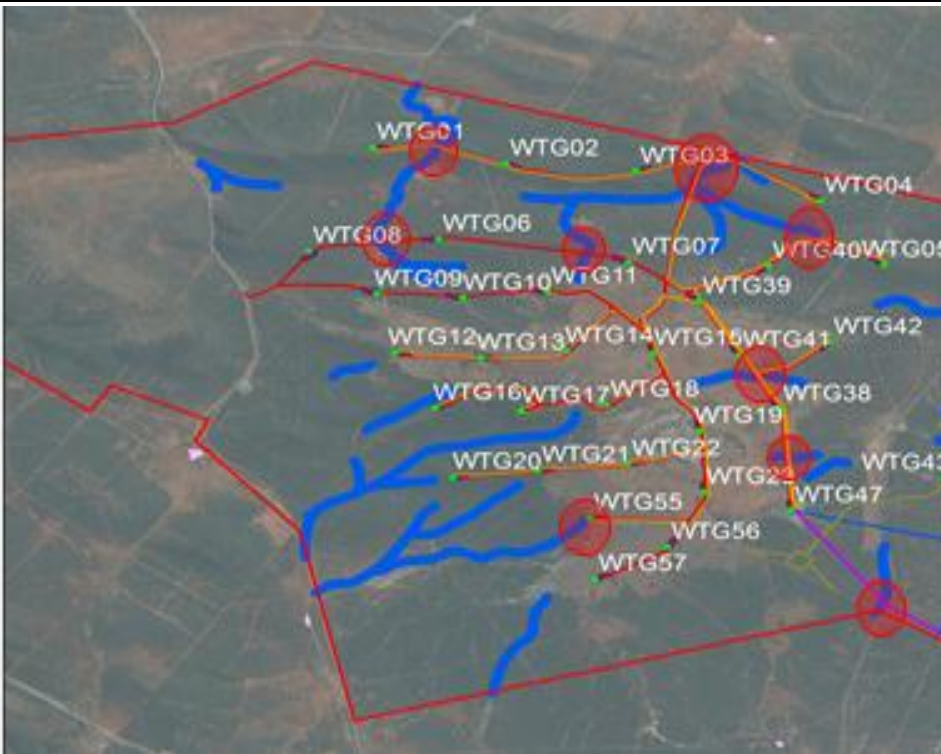


Figure 6-2: On the western portion of the project area access roads and powerline infrastructure traverse various drainage lines (indicated in red circles).

Ecological statement:
 In this region the access roads and powerline infrastructure traverse various drainage line.

- Recommendations:**
- Existing routes must be used as far as possible.
 - A Water Use License is required if any infrastructure occurs within 32m of any water course.

ACTION TAKEN:
 WATER USE LICENCE APPLICATIONS WILL BE SUBMITTED TO DWS SHOULD DASSIESRIDGE WEF BE GRANTED PREFERRED BIDDER STATUS

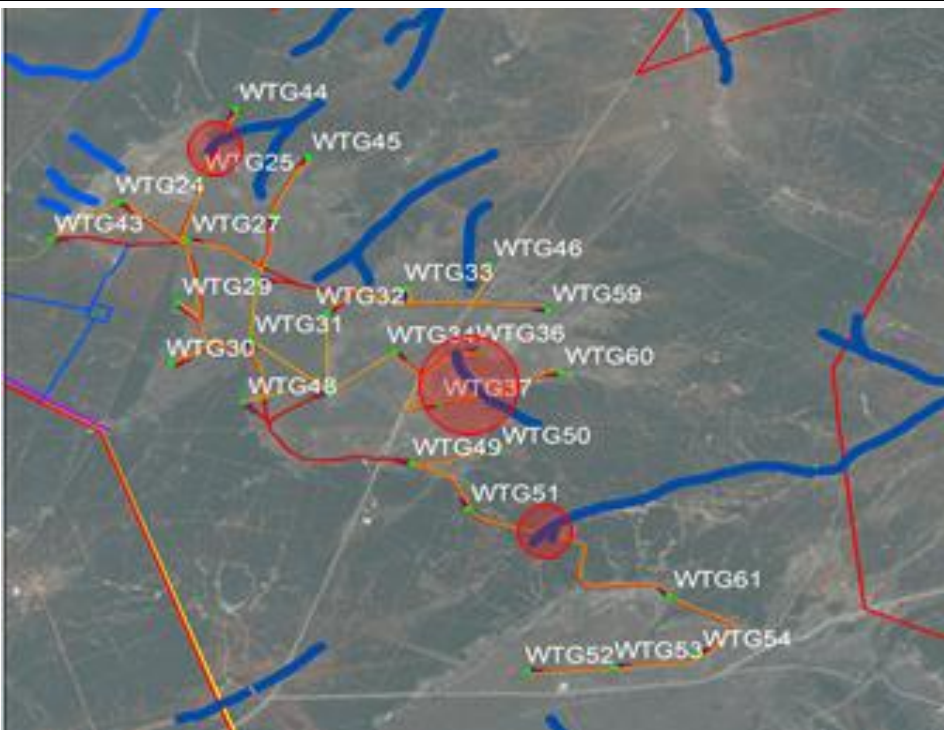
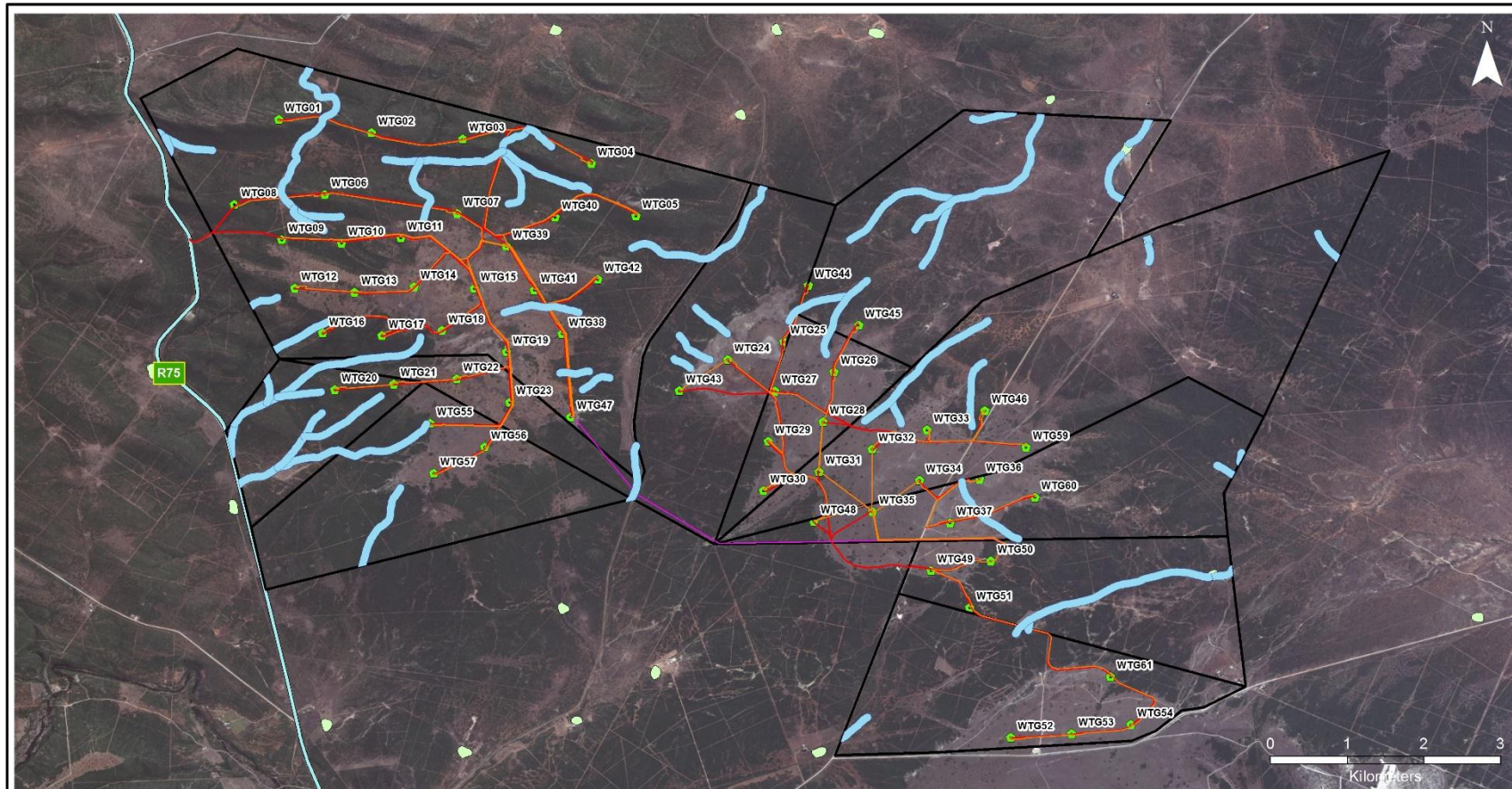


Figure 6-3: On the Eastern portion of the project area access roads and powerline infrastructure traverse various drainage lines (indicated in red circles).

Ecological statement:
 In this region the access roads and powerline infrastructure traverse various drainage lines

- Recommendations:**
- Existing routes must be used as far as possible
 - A Water Use License is required if any infrastructure occurs within 32m of any water course.

ACTION TAKEN:
 WATER USE LICENCE APPLICATIONS WILL BE SUBMITTED TO DWS SHOULD DASSIESRIDGE WEF BE GRANTED PREFERRED BIDDER STATUS



Map source: X:\PROJECTS\CURRENT LARGE Above R250 000\InnoWind Dassiesridge WEF EIA (172)\PICS&MAPS\Projects\Scoping Report Mapping\Dassiesridge Draft Scoping Report - Locality.mxd


 Coastal and Environmental Services	TITLE:	Legend [Black Outline] Study Area [Green Dot] Turbine Layout [Blue Line] Drainage Line - 50m Buffer [Light Green Area] Wetland - 32m Buffer [Red Line] Roads [Purple Line] Site Internal Cable 22 kV [Yellow Line] Site Internal Cable 22 kV
	PROJECT:	
Drawn by: Thomas King	Infrastructure Layout & Drainage Lines	Roads and Cables
Date: 17.02.2014	InnoWind Dassiesridge WEF	
CES Project Code: 172		

Figure 6-4: Watercourses on the Dassiesridge WEF site

6.1.4 Climate

The Eastern Cape Province has a complex climate due to its location at the confluence of two 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 climate description is based on data from the Uitenhage weather station, which is the closest to the site. The area is characterised by non-seasonal rainfall with a peak in precipitation between March and October/November (Mucina and Rutherford, 2006). Mean annual rainfall for the area is approximately 427mm, frost occurs between 3 and 8 days a year (South African Weather Bureau, 2014). The average temperature is 18.2°C with the hottest month occurring in January with an average high of 28°C and the coldest month occurring in July with an average low of 8°C.

6.1.5 Current Land Use

The project area is used for a combination of activities. These range from livestock farming which includes cattle, goats and sheep as well as game farming and, according to the landowners, some areas are also used for small scale hunting.

6.1.6 Vegetation of the Study Area

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 WEF site area:

a) *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 majority of the project site.

b) Coega Bontveld

The Coega Bontveld takes its name from the area that it occurs in. It is found the Eastern Cape Province northeast of Port Elizabeth in the Coega area as well as in a few small patches in Addo. This vegetation type occurs on moderately undulating plains and is characterised by a mosaic open grasslands and low thicket built mainly of bushclumps. It is often restricted to small patches in a matrix of typical valley thicket and is composed of a mixture of Fynbos, Grassland and Succulent Karoo elements. It is classified as **Least Threatened** with a conservation target of 19%. 10% has been conserved in the Greater Addo Elephant National Park and 6% has been transformed by cultivation and urbanisation.

However, it should be noted that the conservation status and significance of the Coega Bontveld has come under debate and is considered to be poorly protected. This is a result of its localised distribution in the Eastern Cape and due to the threat from mining activities in the area. Watson (2002) believes that development could push this vegetation type to near extinction unless it is properly managed.

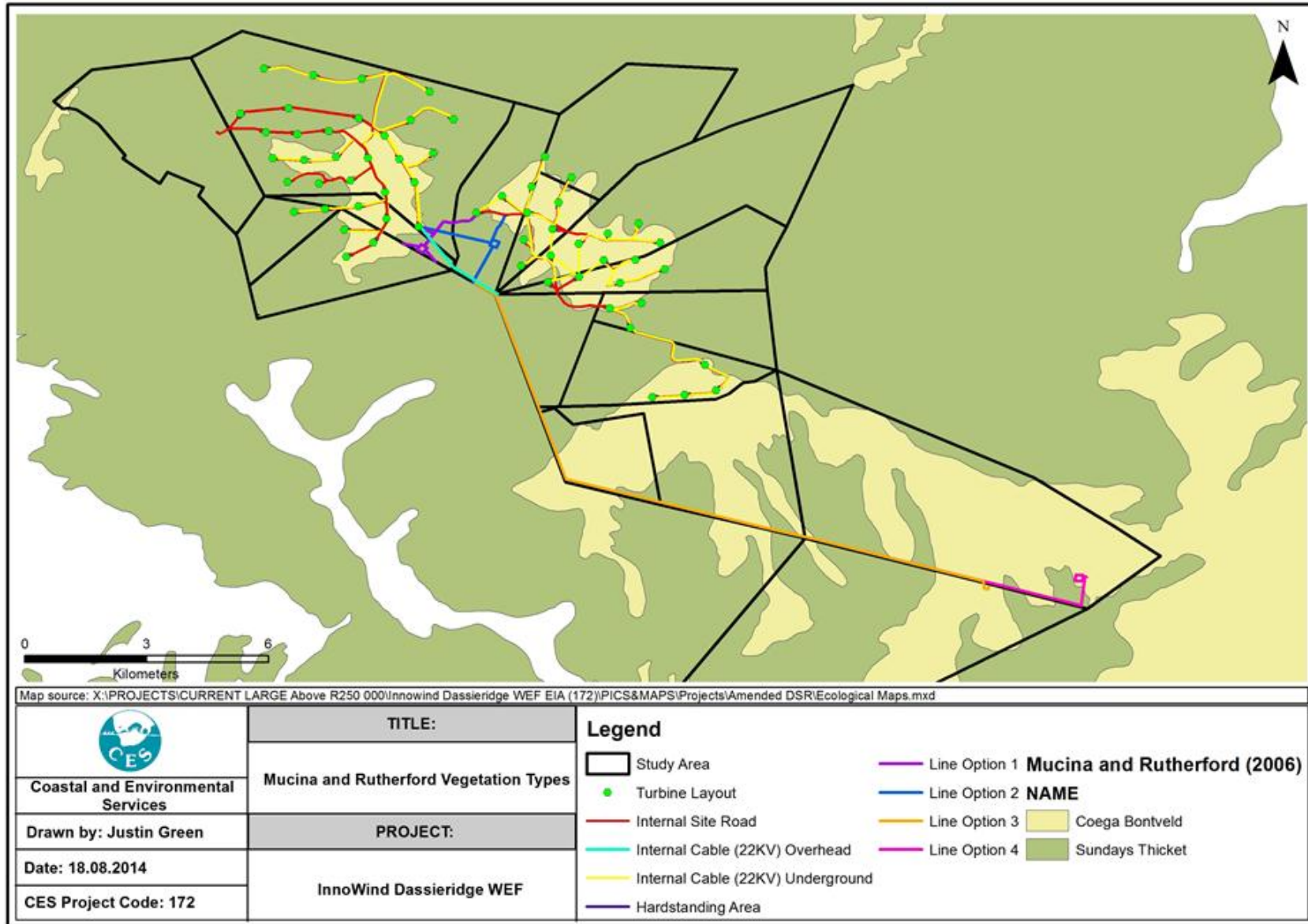


Figure 6-5: Mucina and Rutherford vegetation map of the study area

Subtropical Thicket Ecosystem Planning (STEP) Project

The Subtropical Thicket 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 looked specifically at the thicket biome and have provided a finer scale map of the project area than the Mucina and Rutherford map explaining why the two vegetation maps look slightly different.

Each of the municipalities in the project area have finer-scale biodiversity conservation plans than STEP. The Nelson Mandela Bay Metropolitan Municipality has the NMB Metropolitan Open Space System (MOSS) and the Sundays River Municipality has the Biodiversity Sector Plan. Priority areas for conservation have been identified using these plans, and not STEP.

STEP (Figure 6-6) identifies 4 vegetation types in this region. Pierce and Mader (2006) define the following vegetation types from which source these descriptions are derived:

a) 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.

b) 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 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.

c) Koedoeskloof Karroid Thicket

These thicket clumps are typical of Sundays Spekboom Thicket; the matrix is succulent karoo dominated by asbossie (*Pteronia incana*) and grasses (*Aristida spp.*, *Digitaria eriantha*) and with maerman (*Drimia elata*) abundant and a characteristic feature. This vegetation type is listed as currently not vulnerable (Pierce *et al.* 2005).

d) Grassridge Bontveld

This vegetation type occurs on crests and plateaus. This unit, a mosaic of the Sunday's River Thicket, is restricted to outcrops of limestone. The community composition is distinct from thicket. It's distribution in a regional context is not clear at this time, but it is thought to only occur in 4 or 5 places in the Eastern Cape, most of which are under threat from mining (J. Watson, pers. comm.).

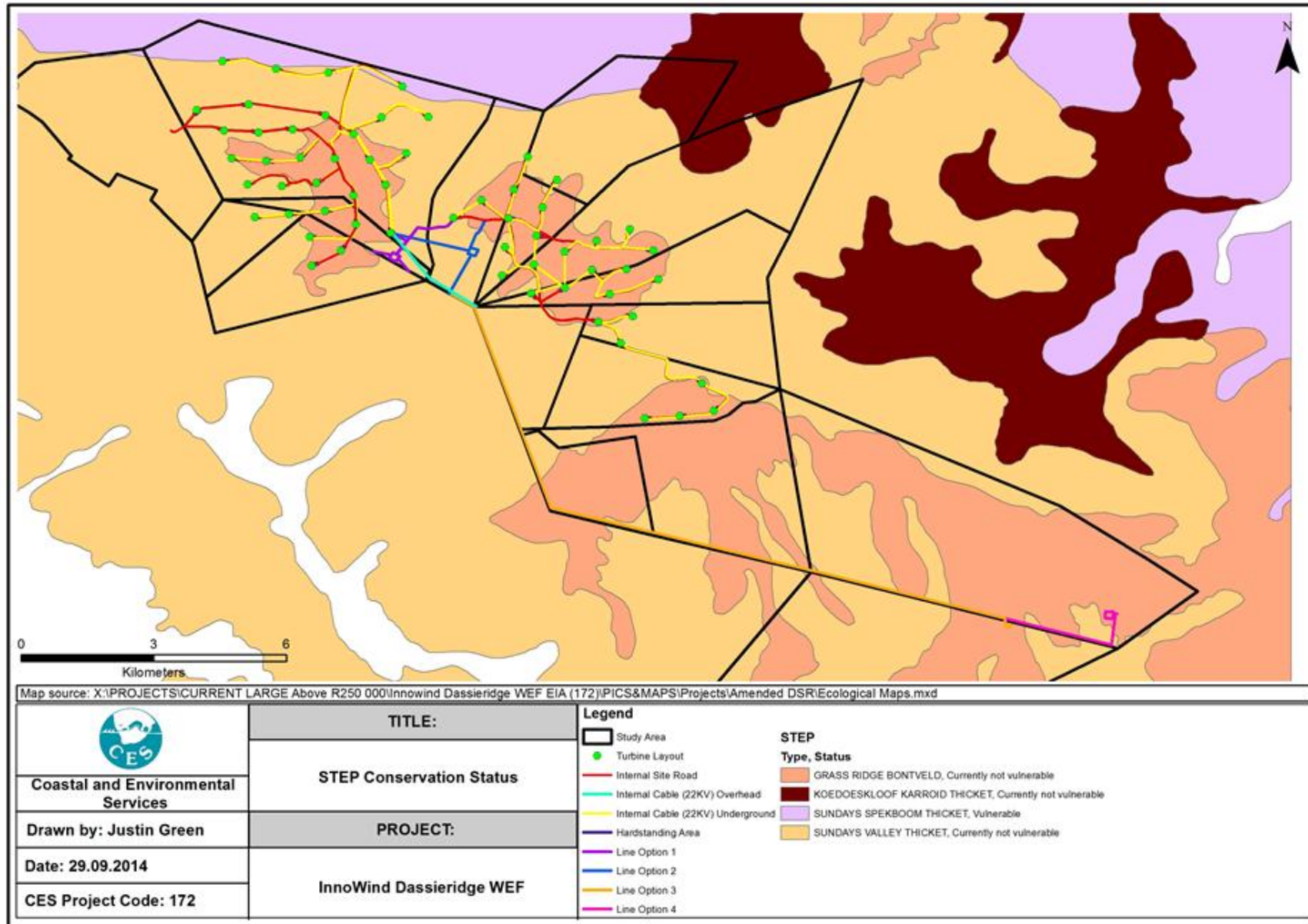


Figure 6-6: STEP vegetation map of the study area

6.1.7 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, 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 90 000 km² 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 species of special concern (SSC) include all those plants listed in terms of the IUCN, CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) and both national and provincial legislation that may occur in the area of study.

The IUCN is an international conservation body that has been assessing the conservation status of species, on a global scale, to highlight taxa that are threatened with extinction and to promote their conservation. CITES is an international agreement between governments that aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The South African Red Data List was created using the same categories that the IUCN red list uses. This list assigns a conservation status to South African species and provides guidelines for species of conservation concern found on a proposed development site.

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) provides a list of critically endangered, endangered, vulnerable and protected species. These species are protected under South African legislation and require permits for their removal.

The National Forests Act, 1998 (Act No. 84 of 1998) provides a list of protected tree species. Permits will be required should any of the species, found during the pre-construction micro-siting, be protected under national legislation then permits will be required for their removal.

The Nature and Environmental Conservation Ordinance (No. 10 of 1974) lists species that are protected at a provincial level. Permits for their removal will need to be obtained from the provincial authorities.

Table 6-1 is a summary of the number of potential SSC that could occur in the area. Based on historical records for the region, it is likely that approximately forty-four threatened species occur in this area (Table 6-2) (SIBIS, 2013).

Table 6-1: Number of plant species that occur on the IUCN, SA Red Data List, NEMBA, CITES, PNCO and Protected Tree Species.

Conservation Body	IUCN	Number of Species
IUCN	Endangered	1
	Least concern	8

	Data Deficient	2
SA Red Data List	Critically Rare	7
	Endangered	16
	Vulnerable	17
	Near Threatened	15
	Rare	12
	Declining	7
	Least Concern	750
	Data Deficient – Insufficient Info	1
	Data Deficient – Taxonomically Problematic	22
	Not Evaluated	74
	NEMBA	Protected
Endangered		1
CITES	Appendix II	21
PNCO	Schedule 3	1
	Schedule 4	138
Protected Trees		5

Table 6-2: Threatened Species that are likely to occur within the study site (SIBIS, 2013)

Species Name	IUCN	Red List Status	NEMBA	Protected Trees	PNCO
<i>Agathosma stenopetala</i>	-	Vulnerable	-	-	
<i>Aloe striata</i>	-	Vulnerable	-	-	
<i>Amphiglossa callunoides</i>	-	Vulnerable	-	-	
<i>Aspalathus candicans</i>	-	Endangered	-	-	
<i>Aspalathus retroflexa</i>	-	Critically Rare	-	-	
<i>Babiana sambucina</i>	-	Endangered	-	-	Schedule 4
<i>Capparis tomentosa</i>	-	-	-	Yes	
<i>Crassula perforata</i>	-	Critically Rare	-	-	
<i>Cullumia cirsioides</i>	-	Vulnerable	-	-	
<i>Dioscorea sylvatica</i>	-	Vulnerable	-	-	
<i>Disa lugens</i>	-	Endangered	-	-	Schedule 4
<i>Encephalartos horridus</i>	Endangered	Endangered	Endangered	-	Schedule 4
<i>Erica abelii</i>	-	Vulnerable	-	-	Schedule 4
<i>Erica zeyheriana</i>	-	Vulnerable	-	-	Schedule 4
<i>Eriospermum capense</i>	-	Vulnerable	-	-	
<i>Euphorbia globosa</i>	-	Endangered	-	-	Schedule 4
<i>Euphorbia meloformis</i>	-	-	Protected Species	-	Schedule 4
<i>Euphorbia obesa</i>	-	Endangered	Protected Species	-	Schedule 4
<i>Euphorbia polycephala</i>	-	Vulnerable	-	-	
<i>Euryops ericifolius</i>	-	Endangered	-	-	
<i>Faucaria tigrina</i>	-	Endangered	-	-	Schedule 4
<i>Glottiphyllum linguiforme</i>	-	Vulnerable	-	-	Schedule 4

<i>Haworthia aristata</i>	-	Endangered	-	-	
<i>Haworthia attenuata</i>	-	Endangered	-	-	
<i>Haworthia cooperi</i>	-	Critically Rare	-	-	
<i>Haworthia longiana</i>	-	Endangered	-	-	
<i>Haworthia sordida</i>	-	Vulnerable	-	-	
<i>Hypodiscus procurrens</i>	-	Endangered	-	-	
<i>Lebeckia gracilis</i>	-	Endangered	-	-	
<i>Leucadendron orientale</i>	-	Endangered	-	-	Schedule 4
<i>Leucadendron spissifolium</i>	-	Vulnerable	-	-	Schedule 4
<i>Lotononis acuminata</i>	-	Vulnerable	-	-	
<i>Merxmuellera papposa</i>	-	Vulnerable	-	-	
<i>Ornithogalum juncifolium</i>	-	Critically Rare	-	-	
<i>Orthopterum coegana</i>	-	Critically Rare	-	-	Schedule 4
<i>Pelargonium ochroleucum</i>	-	Vulnerable	-	-	
<i>Podocarpus falcatus</i>	-	-	-	Yes	
<i>Rhombophyllum rhomboideum</i>	-	Endangered	-	-	Schedule 4
<i>Salvia obtusata</i>	-	Vulnerable	-		
<i>Sideroxylon inerme</i>	-	-	-	Yes	
<i>Sterculia alexandri</i>	-	-	-	Yes	
<i>Strelitzia juncea</i>	-	Vulnerable	-	-	
<i>Syncarpha recurvata</i>	-	Endangered	-	-	
<i>Widdringtonia nodiflora</i>	-	-	-	Yes	

6.1.8 Amphibians

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).

6.1.9 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 44 species of reptiles are likely to occur in the project site. None are listed as species of special concern on the IUCN Red Data List nor as a schedule 1 species on the PNCO list. However, all lizards and tortoises are listed as a schedule 2 species on the PNCO list and *Bitis albanica* is listed as critically endangered on the South African Red Data List and will therefore require permits for their removal.

6.1.10 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. Frog abundance and diversity is a poignant reflection of the general health and well-being of aquatic ecosystems. According to historical records, 14 species of frog have been documented in the Quarter Degree Squares that the project area falls in. Of these 14 species, none are listed as species of conservation concern nor as a schedule 1 on the PNCO list. However, all frogs and toads are listed as schedule 2 species on the PNCO list and will therefore require permits for their removal.

6.1.11 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 are two **Vulnerable** species and seven **Near Threatened** species likely to be found in the area (Table 6-3). The Blue Crane (*Anthropoides paradiseus*) is listed on Appendix II of CITES and Denham's Bustard (*Neotis denhami*) is listed as protected.

Table 6-3: Threatened bird species that are likely to occur in the project area (BirdlifeSA, 2014).

Family	Scientific Name	Common name	Red List status	CITES	NEMBA	PNCO
GRUIDAE	<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable	Appendix II	-	Schedule 2
PICIDAE	<i>Campethera notata</i>	Knysna Woodpecker	Near Threatened	-	-	Schedule 2
ACCIPITRIDAE	<i>Circus maurus</i>	Black Harrier	Vulnerable	-	-	Schedule 2
CORACIIDAE	<i>Coracias garrulus</i>	European Roller	Near Threatened	-	-	Schedule 2
OTIDIDAE	<i>Neotis denhami</i>	Denham's Bustard	Near Threatened	-	Protected Species	Schedule 2
ANATIDAE	<i>Oxyura maccoa</i>	Maccoa Duck	Near Threatened	-	-	Schedule 2
ACCIPITRIDAE	<i>Polemaetus bellicosus</i>	Martial Eagle	Near Threatened	-	-	Schedule 2
ACCIPITRIDAE	<i>Stephanoaetus coronatus</i>	Crowned Eagle	Near Threatened	-	-	Schedule 2

Important Bird Areas (IBA's) – Birdlife International

The selection of Important Bird Areas (IBAs) is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations, and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental and global levels.

It is crucial to understand why a site is important, and to do this it is necessary to examine its international significance in terms of the presence and abundance of species that occur there, year round or seasonally. At the global level, a set of four categories and criteria are used to assess the significance of the site.

The global IBA criteria are as follows:

A1. Globally threatened species

- Criterion: The site is known or thought to hold significant numbers of a globally threatened species, or other species of global conservation concern.
- The site qualifies if it is known, estimated or thought to hold a population of a species categorized by the IUCN Red List as Critically Endangered, Endangered or Vulnerable. In general, the regular presence of a Critical or Endangered species, irrespective of population size, at a site may be sufficient for a site to qualify as an IBA. For Vulnerable species, the presence of more than threshold numbers at a site is necessary to trigger selection.

A2. Restricted-range species

- Criterion: The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).
- This category is for species of Endemic Bird Areas (EBAs). EBAs are defined as places where two or more species of restricted range, i.e. with world distributions of less than 50 000 km², occur together. More than 70% of such species are also globally threatened. Also included here are species of Secondary Areas.

A3. Biome-restricted species

- Criterion: The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.
- This category applies to groups of species with largely shared distributions of greater than 50 000km², which occur mostly or wholly within all or part of a particular biome and are, therefore, of global importance.

A4. Congregations

- Criteria: A site may qualify on any one or more of the four criteria listed below:
 - i. The site is known or thought to hold, on a regular basis, $\geq 1\%$ of a biogeographic population of a congregatory waterbird species.
 - ii. The site is known or thought to hold, on a regular basis, $\geq 1\%$ of the global population of a congregatory seabird or terrestrial species.
 - iii. The site is known or thought to hold, on a regular basis, $\geq 20\ 000$ waterbirds or $\geq 10\ 000$ pairs of seabirds of one or more species.
 - iv. The site is known or thought to exceed thresholds set for migratory species at bottleneck sites.

Important Bird Areas (IBA's) – South Africa

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:

- Alexandria Coastal Belt (26 kilometres away)
 - Partially protected IBA with a global IBA status of A1, A2 and A3.
- Swartkops Estuary, Red House and Chatty Salt pans (19 kilometres away).
 - Partially protected IBA with a global status of A4i and iii

6.1.12 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 5-4). Based on habitat availability it is likely that all four of these species may 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 6-4: Mammals of conservation concern likely to be found within the project site.

Scientific Name	Common Name	IUCN	NEMBA	PNCO
<i>Atelerix frontalis</i>	South African hedgehog	-	Protected	Schedule 2
<i>Miniopterus schreibersii</i>	Schreibers Long-fingered bat	NT	-	Schedule 2
<i>Mystromys albicaudatus</i>	White-tailed mouse	EN	-	-
<i>Panthera pardus</i>	Leopard	NT	Vulnerable	Schedule 2
<i>Mellivora capensis</i>	Honey Badger	-	Protected	Schedule 2
<i>Vulpes chama</i>	Cape Fox	LC	Protected	-

6.1.13 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 6-5 below.

Table 6-5: Conservation and planning tools considered for the proposed project

Tool	Motivation	Relevancy	Implications
NATIONAL			
Protected Areas National Environmental Management: Protected Areas (Act No. 57 of 2003)	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 Springs Local Authority Nature Reserve is within 10 km of the study site. The closest project boundary is located 7.4km from the Springs Local Authority Nature Reserve	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.

Tool	Motivation	Relevancy	Implications
National Protected Areas Expansion Strategy (NPAES)	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. There are areas designated as NPAES Focus Areas within 10 km of the study site.	The study area is not within an area designated as an NPAES or EC PAES area, but is within 10 km of areas designated as such. The EC PAES for the surrounding project area is vastly similar to the NPAES.
National Freshwater Ecosystem Priority Areas Guideline Document	A nationwide strategy developed for the protection of freshwater biodiversity. Defined all of South Africa's freshwater ecosystems according to their contribution to biodiversity, their risk of loss, and by considering both these variables-their need for protection.	Not relevant. Spatial datasets do not indicate any Freshwater Ecosystem Priority Areas (FEPA) within the project site.	N/A
National List of Ecosystems that are Threatened and in need of Protection. (NEMBA, Act 10 of 2004) National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GoN 1002), 9 December 2011).	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 degradation and loss of structure, function and composition of threatened ecosystems.	Not Relevant. No threatened ecosystems occur within the project site.	N/A
Important Bird Area (IBA) Guideline Document	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.	Not relevant. The study site does not occur within 10 km of any Important Bird Areas.	Regardless of the fact that the study site does not fall within 10 km of an IBA, an avifaunal specialist study, inclusive of long term monitoring, will be required.
Provincial			
At a broad scale, the Subtropical Thicket Ecosystem Project (STEP) and the Eastern Cape Biodiversity Conservation Plan (ECBCP) are applicable to the project area. But both municipalities have undertaken finer-scale biodiversity planning, based on STEP and ECBCP amongst other considerations. The result was the Nelson Mandela Bay Metropolitan Open Space System (NMB			

Tool	Motivation	Relevancy	Implications
MOSS) for the Nelson Mandela Bay Municipality, and the Sundays River Valley Municipality Biodiversity Sector Plan.			
Municipal			
Nelson Mandela Metropolitan Open Space System (MOSS) Systematic Conservation Plan	The Nelson Mandela Bay Municipality have implemented a systematic conservation assessment and plan to conserve a representative proportion of all biodiversity in the Municipality. To achieve this goal, a suite of Critical Biodiversity Areas (CBAs) and Critical Ecosystem Support Areas (CESAs) were identified. These areas, if safe guarded, will facilitate the long-term persistence of a representative portion of all biodiversity patterns, ecological processes and species of special concern.	Relevant. The southern portion of the site is classified as a CBA by NMBM MOSS.	This will be further investigated in Chapter 10.
SRVM Biodiversity Sector Plan Guideline Document	Provides information on biodiversity for the SRVM to assist in planning procedures. Developed in 2012, this plan is a finer scale revision of the ECBCP CBA map and the STEP map and was developed specifically for the SRVM. Divides the landscape into formal Protected Areas, Critical Biodiversity Areas, Ecological Support Areas, Other Natural Areas and No Natural Areas Remaining. The first 3 categories should be maintained in a natural or near natural state with only low intensity developments possible. The last 2 categories can be targeted for sustainable development.	Relevant. The central portion of the site is defined as an “Ecological Support Area”.	This will be further investigated in Chapter 10.

6.1.14 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”

Figure 6-4 shows formal protected areas and National Protected Area Expansion Strategy (NPAES) focus areas surrounding the project site. There are no turbines within 10 kilometers of the nearest National Park (Addo) (distance calculated from the eastern boundary of the project area). Additionally, the project area is approximately 7.5km from the Springs Local Authority Nature Reserve. The Groendal Nature Reserve, which is approximately 14km from the project boundary has been incorporated into the Baviaanskloof Nature Reserve which forms the core of the Baviaanskloof Mega Reserve.

Should the alternative option to connect to the 400kV line be undertaken, it will fall within the 10km buffer of Addo Elephant National Park and therefore activity 16 of GNR 546 will be triggered. It has therefore been included in the application form.

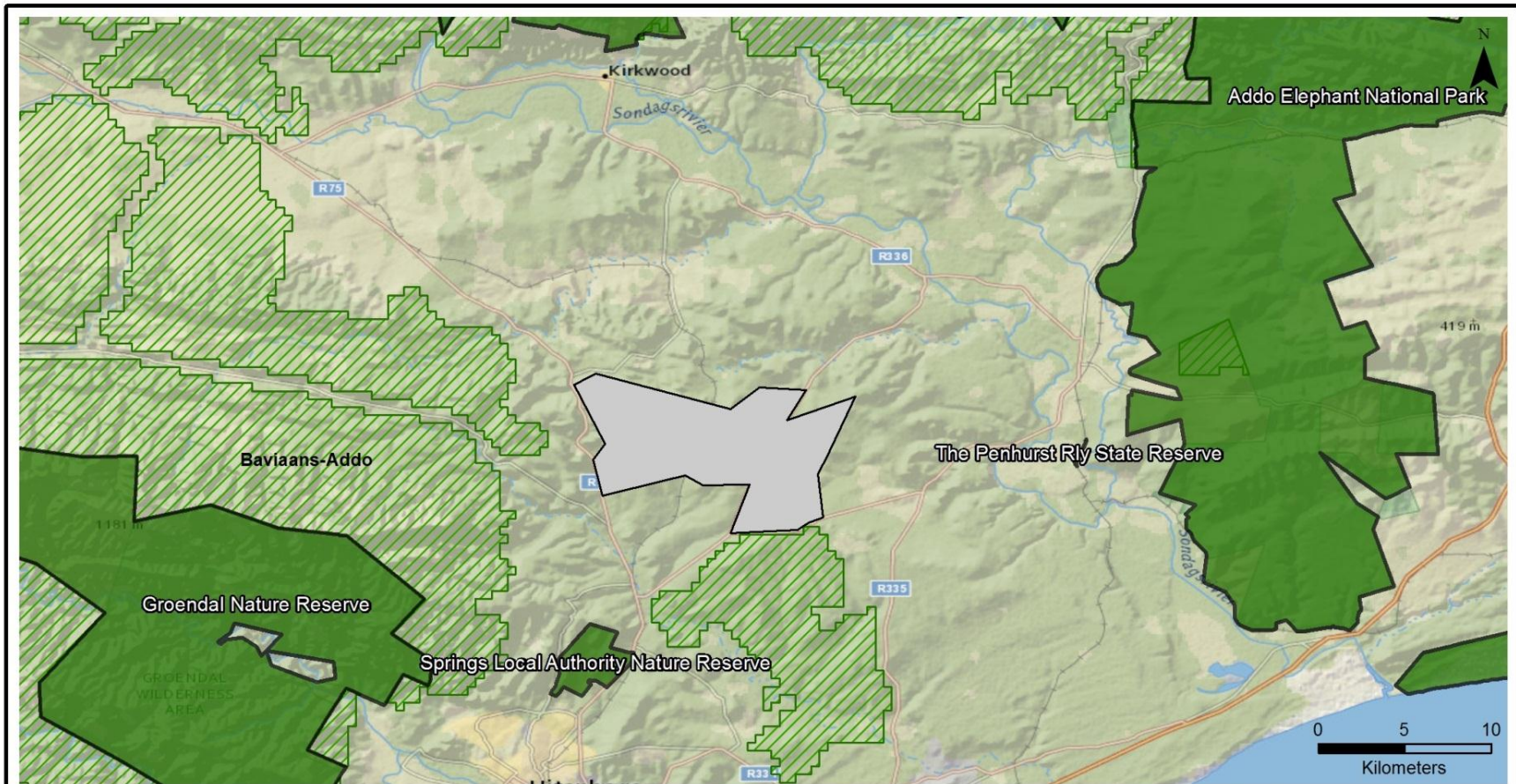
6.1.15 Protected Areas Expansion strategy

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 (Government of South Africa, 2010):

- 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; and
- 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.

The project study area is not within any area delineated as an NPAES focus area. The 400 kV power line will not impact a focus area either.



Map source: X:\PROJECTS\CURRENT LARGE Above R250 000\Innowind Dassieridge WEF EIA (172)\PICS&MAPS\Projects\Scoping Report Mapping\Dassiesridge Draft Scoping Report - Ecological





 Coastal and Environmental Services	TITLE:	Legend  Study Area  Protected Areas NBA 2011  NPAES Focus Areas Completable
	Protected Areas and Expansion Strategy Focus Areas	
Drawn by: Thomas King	PROJECT:	
Date: 15.01.2014	InnoWind Dassieridge WEF	
CES Project Code: 172		

Figure 6-7: Protected Areas and Expansion Strategy Areas

6.1.16 National Freshwater Ecosystem Priority Areas

In designing the National Wetlands Inventory, the Department of Environmental Affairs and Tourism (DEAT), through the Wetlands Conservation Programme, embarked on a thorough process of consultation with stakeholders in the country, as well as with the United States National Wetlands Inventory (NWI), a unit of the United States Fish and Wildlife Services. The classification system forms a fundamental basis on which wetlands diversity and condition will be assessed and analysed.

The inventory dataset presents information on the extent, location and distribution of wetlands systems in South Africa. Upon completion of the project, a clear picture will exist of the extent, distribution and diversity of South Africa's wetlands, in the form of GIS-based digital coverage and printed maps. A national database, containing the attributes, functions and values of individual wetlands will be linked to this spatial data. Wetland habitats were mapped and classified from remote sensing imagery. The methodology for mapping wetlands, as well as the kind of remote sensing to be used, was determined in the pilot study. Spatial information generated through the remote sensing mapping exercise will be stored in a GIS linked to a database containing supplementary wetland attribute information.

The national wetland coverage generated by the inventory seeks to establish a baseline for measuring future change in wetland area, function and values, and permit status, and if possible, trends analyses to be carried out in order to assess the need for, or effectiveness of, specific wetland conservation strategies. These analyses will be incorporated into various conservation and environmental management reports. The Wetland Classification System has been developed and applied to the National Wetlands Inventory.

NFEPA was a three-year partnership project between South African National Biodiversity Institute (SANBI), CSIR, Water Research Commission (WRC), Department of Environmental Affairs (DEA), Department of Water Affairs (DWA), Worldwide Fund for Nature (WWF), South African Institute of Aquatic Biodiversity (SAIAB) and South African National Parks (SANParks). NFEPA map products provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources. These strategic spatial priorities are known as Freshwater Ecosystem Priority Areas, or FEPAs. FEPAs were determined through a process of systematic biodiversity planning and involved collaboration of over 100 freshwater researchers and practitioners. FEPAs were identified based on a range of criteria dealing with the maintenance of key ecological processes and the conservation of ecosystem types and species associated with rivers, wetlands and estuaries (Implementation Manual for Freshwater Ecosystem Priority Areas, 2011).

Only 3 artificial dams occur on site and are identified by NFEPA. These are not considered sensitive but must not be impacted on as they play an important role in the current land use of the properties.

6.1.17 The NM MOSS

The Nelson Mandela Bay Metropolitan Open Space System (MOSS) divides the metropolitan area into areas of biodiversity importance, nature reserves, natural open spaces and areas too expensive or too sensitive to develop (NMBM, 2009).

According to the NMB MOSS the project area is within a vulnerable ecosystem (NMBM, 2015). There are no critical ecological process corridors within the study area. Vulnerable areas outside of CBAs must be managed for sustainable development. This means that some loss of natural habitat is allowed but this needs to be within the limits of cumulative impacts of the transformation threshold of the Ecosystem Status. Natural vegetation close to CBAs may provide important ecological processes and it is therefore encouraged that these areas are given to biodiversity friendly forms of management and where appropriate restored. Degraded or disturbed areas must be rehabilitated as part of development proposal or existing developments if these areas could connect natural patches of vegetation to adjacent patches e.g. drainage lines.

Four turbines are located within an area defined as a Critical Biodiversity Area (CBA). The recommendation strategy is that areas identified as CBAs must be maintained as natural vegetation cover and no further loss of natural habitat should occur. However, the ecological specialist found this area to be degraded as a result of the current landuse with very few bushclumps remaining in the vegetation type which is classified as Coega Bontveld. The area is also highly dissected by roads.

6.1.18 SRVM Biodiversity Sector Plan

The Biodiversity Sector Plan (BSP) for the SRVM represents the biodiversity informant for all multi-sectoral planning procedures, such as the Integrated Development Plan and Spatial Development Framework (Vromans *et al.*, 2012). It is intended to support land-use planning and decision-making in order to achieve the sustainable development agenda. The BSP is comprised of a relatively fine-scale Critical Biodiversity Areas (CBA) Map, mapped at a scale of 1:20 000 (Skowno and Holness, 2012). Associated with the CBA Map is a set of biodiversity-compatible land-use guidelines, including a series of land and water use management guidelines. The BSP also includes an explanatory handbook (with a biodiversity profile) and the various maps used to prepare the CBA Map (e.g. vegetation, rivers, wetlands and land cover).

The CBA Map has refined the spatial accuracy of the Eastern Cape Biodiversity Conservation Plan's (ECBCP) CBA Map (Berliner and Desmet, 2007), including the Subtropical Thicket Ecosystem Programme (STEP) Map (Cowling *et al.*, 2003). In other words, it is a more accurate spatial representation of important biodiversity areas in the SRVM and therefore supersedes the aforementioned maps. The CBA Map divides the landscape into formal Protected Areas, Critical Biodiversity Areas, Ecological Support Areas, Other Natural Areas and No Natural Areas Remaining. The first three categories represent the biodiversity priority areas, which should be maintained in a natural to near-natural state, with low intensity developments possible. The remaining two categories are not considered biodiversity priority areas, and can be targeted for sustainable development. The land use guidelines are specified for Critical Biodiversity Areas and Ecological Support Areas, while the general land use management guidelines are specified for Critical Biodiversity Areas, Ecological Support Areas and Other Natural Areas (The Sunday's River Valley Municipality Final IDP 2013/2014).

According to the Sunday's River Valley Municipality Biodiversity Sector Plan, some of the turbines and infrastructure are located within an Ecological Support Area. According to the plan, areas defined as Ecological Support Areas (along with Protected Areas and Critical Biodiversity Areas) should be "maintained in a natural or near natural state" (Holness and Skowno, 2012). Ecological Support Areas (ESA) are supporting zones or areas which must be safeguarded as they are needed to prevent degradation of Critical Biodiversity Areas and formal Protected Areas. Although many ESA consist of natural veld, there are areas of land - partially or wholly transformed or degraded - that have been classified as ESA even though they are no longer in a natural state. Although these areas are heavily degraded or transformed, they still play an important role in supporting ecological processes.

Areas classified as Other Natural Areas (ONA) are natural areas not included in the above categories and include degraded areas. These areas should be managed sustainably within general rural land-use principles.

Table 6-6: A summary of the NM MOSS and SRVM BSP guidelines and the implications for the project.

NM MOSS			SRVM BSP		
Type of System	Number of Turbines	Implications	Type of System	Number of Turbines	Implications
Vulnerable Ecosystem	37	Vulnerable areas outside of CBAs must be managed for sustainable development. This means that some loss of natural habitat is allowed but this needs to be within the limits of cumulative impacts of the transformation threshold of the Ecosystem Status.	Ecological Support Area	8	Should be maintained in a natural or near natural state.
CBA	4	No further loss of the natural habitat can be allowed within these areas and that no infrastructure and/or developments should be allowed as it is not compatible with conservation efforts. Even if degraded, rehabilitation or restoration should be the first option to recreate and maintain natural ecological processes.	Other Natural Area	15	Should be managed sustainably within general rural land-use principles.

6.2 Socio-Economic Profile

6.2.1 Sundays River Valley Local Municipality

Part of the proposed Dassiesridge 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 Metropolitan 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 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 6-7 to 6-10. 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's population.

Table 6-7: Population groups in the Sundays River Valley Local Municipality (Census, 2011)

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

Table 6-8: Employment status in the Sundays River Valley Municipality (Census, 2011)

Employment Status	Percentage
Employed	29.5
Unemployed	5.2
Not Economically Active	65.3

Table 6-9: Income groups (based on annual income) in the SRVLM (Census, 2011)

Income	Percentage
None income	11,7%
R1 - R4,800	3,7%
R4,801 - R9,600	6,6%
R9,601 - R19,600	25,3%
R19,601 - R38,200	26,7%
R38,201 - R76,4000	15,3%
R76,401 - R153,800	5,4%
R153,801 - R307,600	2,9%
R307,601 - R614,400	1,6%
R614,001 - R1,228,800	0,3%
R1,228,801 - R2,457,600	0,1%
R2,457,601+	0,3%

The largest industry in the area is Agriculture followed by Community and Social Services (Table 6-10). The majority of those who do earn an income earn within the R19601 - 38200 bracket. This reflects the level of poverty within the municipality.

Table 6-10: Employment in the Sundays River Valley Municipality (Community Survey, 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
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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.

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.

6.2.2 Nelson Mandela Bay Metropolitan Municipality

The Nelson Mandela Metropolitan Municipality encompasses the towns of Port Elizabeth, Uitenhage, Despatch and the surrounding agricultural areas. It is a major seaport and automotive manufacturing centre.

The NMBM has a total population of 1,152,115 (Census, 2011). From 2001 to 2011, the population grew by 1.36% annually. The age distribution of the municipality is as follows:

- 0 – 14 years: 25.5 % of the population or 293,789 people.
- 15 – 35 years: 37.1 % of the population or 427,435 people.
- 36 – 64 years: 31.4 % of the population or 361,764 people.
- 65 +: 6 % of the population or 69,127 people.

Tables 6-11 to 6-13 present some key statistics for the NMBM.

Table 6-11: Representative population groups in the NMBM (Census, 2011).

Population Group	Percentage
Black	60.1 %
Coloured	23.6 %
Indian/Asian	1.1 %
White	14.4 %

Table 6-12: Employment status in the NMBM (Census, 2011)

Employment Status	Number
Employed	290,155
Unemployed	167,229
Discouraged Work Seeker	41,859
Not Economically Active	289,969

Table 6-13: Income groups in the NMBM (Census, 2011)

Income	Percentage
None income	15,8%
R1 - R4,800	4,4%
R4,801 - R9,600	6,1%
R9,601 - R19,600	15,9%
R19,601 - R38,200	17,2%
R38,201 - R76,4000	12,9%
R76,401 - R153,800	10,7%
R153,801 - R307,600	9%
R307,601 - R614,400	5,6%
R614,001 - R1,228,800	1,6%

R1,228,801 - R2,457,600	0,4%
R2,457,601+	0,3%

The largest economic sectors in the Nelson Mandela Metro are manufacturing, finance, community services and transport. Community services, trade and manufacturing sectors are the sectors that create the most employment in the metro.

7 APPROACH TO THE ENVIRONMENTAL IMPACT ASSESSMENT

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (h) An indication of the methodology used in determining the significance of potential environmental impacts.

In line with the above-mentioned legislative requirement, this chapter of the EIR details the approach to the EIA phase of the proposed Dassiesridge Wind Energy Facility with a particular focus on the methodology that was used when determining the significance of potential environmental impacts.

7.1 General Impact Assessment

A general impact assessment was conducted based on site visits and information relating to the construction and operation of the wind energy facility provided by InnoWind.

7.2 Specialist Impact Assessments

A series of specialist studies were conducted during the EIA and the outcomes will be summarised in this EIR. The team of specialists that conducted the studies were required to assess the foreseeable impacts of the proposed project from all possible angles and also to address the issues raised by I&APs in their reports by gathering baseline information and identifying the possible impacts related to the proposed project. Mitigation measures for impacts were also provided.

The detailed specialist studies have been compiled into a separate Specialist Studies Volume: Proposed Dassiesridge Wind Energy Facility: Specialist Reports (CES, September 2015) for the proposed project. The details and expertise of each of the specialists as well as signed declarations of their independence are also included in the Specialist Studies section and are therefore not repeated here.

7.3 Methodology for Assessing Impacts and Alternatives

The relationship of the issue to the temporal scale, spatial scale and the severity are combined to describe the overall importance rating, namely the significance.

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.

- 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 7-1 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 7-2, to determine the overall significance of the impact (Table 7-3). 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 7-1: 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)

	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 7-2: 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 7-3: 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

8 PUBLIC PARTICIPATION

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (e) Details of the public participation process conducted in terms of regulation 1, including-**
- (i) Steps undertaken in accordance with the plan of study;**
 - (ii) A list of persons, organisations and organs of state that were registered as interested and affected parties;**
 - (iii) A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and**
 - (iv) Copies of any representations and comments received from registered interested and affected parties.**

8.1 Notification of Interested and Affected Parties

Please note that all proof of Public notification (images and photographs) are attached in Appendix A, Section 14.1.

- The Eastern Cape Herald
- Uitenhage Dispatch (UD) News

1. Newspaper advertisement

An advertisement was placed in a provincial newspaper, The Eastern Cape Herald, on 29 November 2013 and in a local newspaper (Uitenhage Dispatch (UD) News) on 5 December 2013 to:

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

A second round of advertisements were placed in a provincial newspaper, The Eastern Cape Herald, on 18 April 2014 and in a local newspaper (UD News) on 18 April 2014 to:

- Advise readers that the Draft Scoping Report had been released for review
- Indicate the review period
- Provide details of where this document was available for review
- Provide details of when and where the public meeting was to be held.

2. Onsite notice

A notice board, measuring 800 X 600mm was placed at three sites within the proposed Dassiesridge WEF project area. The onsite notices are clearly visible from the road and will remain in situ for the duration of the EIA process (See Appendix A, 14.1.2 for photographic evidence).

3. Interested and Affected Parties (IAPs) identification and notification

In addition to the above notification, certain I&APs were identified based on their potential interest in the project. In Table 8.1, relevant organisations were contacted either via e-mail or directly for comment and were sent a Letter of Notification and a Background Information Document (BID). In addition, surrounding landowners and additional I&APs were identified and notified, the details of

which can be found in Appendix B.

8.1.1 Surrounding and Affected Landowners

The residents of the surrounding areas were provided with an initial letter of introduction to the project and a BID during the site meetings. These documents included the contact details of the EAP in order for the landowners to register themselves and/or submit their comments on the proposed development.

8.1.2 Registered I&APS

Other than I&APs initially identified, any person requesting to be registered as an I&AP was included into the I&AP database (Appendix B, Section 14.2).

8.1.3 The Public Participation Process followed includes:

Release of the Draft Scoping Report for Authority, Stakeholder and Public review.

The Draft Scoping Report was available for public review from the 17th April 2014 – 2nd June 2014 (40 days). Subsequently the application was amended and a second draft scoping report released for public comment from the 13 October – 24 November 2014.

1. Hard copies of the Draft Scoping Report were made available at: Port Elizabeth Public Library (Market Square, Govan Mbeki Avenue, PE), Uitenhage Public Library (Market Street, Uitenhage Central, Uitenhage) and Kirkwood Public Library (Middelstraat, Kirkwood)
2. Electronic copies were emailed to all stakeholders.
3. Electronic copies were made available on the EOH CES website (www.cesnet.co.za)

Release of the Draft Environmental Impact Assessment Report for Authority, Stakeholder and Public review.

The Draft EIR Report was available for public review from the 7th September 2015 – 12th October 2015 (30 days).

1. Hard copies of the Draft Scoping Report were made available at: Port Elizabeth Public Library (Market Square, Govan Mbeki Avenue, PE), Uitenhage Public Library (Market Street, Uitenhage Central, Uitenhage) and Kirkwood Public Library (Middelstraat, Kirkwood)
2. Electronic copies were emailed to all stakeholders.
3. Electronic copies were made available on the EOH CES website (www.cesnet.co.za)
4. A public meeting was held at the Daniel Pienaar School Clubhouse on the 30th September 2015

Release of the Final Environmental Impact Assessment Report for Authority, Stakeholder and Public review

The Final EIR will be available for public review from the **3rd December** until the **15th January 2016**

Hard copies of this report are available at:

1. Port Elizabeth Public Library (Market Square, Govan Mbeki Avenue, PE), Uitenhage Public Library (Market Street, Uitenhage Central, Uitenhage) and Kirkwood Public Library (Middelstraat, Kirkwood)
2. Electronic copies have been emailed to all stakeholders.

3. Electronic copies have made available on the EOH CES website (www.cesnet.co.za)

8.1.4 Issues and Response Trail

Two meetings were held, where key issues were raised. The tables (Table 8-1, 8-2 and 8-3) below summarise the main issues raised through group meetings and during the public review period, and includes the EAP responses to these issues. These tables have been updated throughout the process and includes all comments received (including any comments received during the scheduled public meetings) from the beginning of the process until the release of the FINAL EIR.

Table 8-1. Issues Raised by I&APs and Responses (Environmental Impact Assessment Phase)

	Name	Issue	Date	Response
1	John Vosloo	<p>1. Under paragraphs 9.7.2: Impacts bullet number 10 - it is stated that "there is an impact on civil and private aviation, with moderate overall significance due to the limited number of people that are impacted"</p> <p>❖ With all due respect, whether one person has a significant objection resulting in an impact or many people have an objection resulting in an impact has no bearing. As such, client objects to the description of the impact (his impact on civil and private aviation) being classified as a moderate overall significance. This holds no water. What is evident is that the IAP has limited its response to the objection of our client on the basis that he is the only aviator who makes use of that airspace. For instance, there is no evidence that the IAP has made any enquiries about its use by other aviators. The conclusion that only one person (i.e. the objector) will be impacted is therefore not empirical and with it the conclusion that it has only a moderate overall significance as neither of them are supported by any facts produced in the report.</p>	12 October 2015	<p>To ensure a direct comparison between various specialist studies, standard rating scales have been defined for assessing and quantifying the identified impacts for the Dassiesridge WEF. This is necessary since impacts have a number of parameters that need to be assessed.</p> <p>Four factors need to be considered when assessing the significance of impacts, namely:</p> <ol style="list-style-type: none"> 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 party. <p>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' does not equate to 'compensation', but also includes 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.</p>

	Name	Issue	Date	Response
				<p>4. The likelihood of the impact occurring - the likelihood of impacts taking place as a result of project actions differs between potential impacts. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance</p> <p>Using this tool, the specialist determined the impact to be of moderate significance based on the information available. According to the CAA, disclosure of flight paths to the public is prohibited in terms of their internal disclosure policies and the CAA regulation (CAR Part 67). Such information may only be disclosed in the event of an accident and/or incident after appropriate approval from the civil aviation authority. Unless other affected IAPs come forward, indicating that they will be impacted on by the WEF, the study must use the best available information which in this case is that one I&AP may have their flight path affected. It should be noted that the socio-economic specialist requested the concerned I&AP to send their flight path in order to verify that the wind farm would indeed affect the I&AP's flight path. The I&AP has not shared this information. We have also requested the CAA to send the I&AP's flight path and received an email from Ntozonke Simelane at ATNS stating that they are not allowed to share the flight path and do not understand why the I&AP has not shared this information(Appendix U).</p>
2	John Vosloo	<p>2. In re Impact 9: Attitude formation, interest group activity, communication mobilization under cause and comment the following comment is made:</p> <ul style="list-style-type: none"> • bullet 1 – “two distressed I&AP's have 	12 October 2015	<p>During the public meeting it was made very clear to all IAPS that should they wish to discuss any of the issues further that they should contact the EAP and set up a meeting. To date, neither Mr Vosloo nor his client have requested a meeting with the EAP or the developer.</p>

	Name	Issue	Date	Response
		<p><i>obtained legal representation and legal action could be implemented should the grievances not be addressed. These relate to aviation issues and potential economic impacts in the operational phase"</i></p> <ul style="list-style-type: none"> ❖ To this end the mitigation suggested is that "<i>during planning phases meet with grieved interested and affected parties and open and direct communication and seek amicable solutions</i>". ❖ At the most recent meeting, when it was raised as to when, with whom, where and to what extent such communication would take place and what the extent of the amicable solutions would be, the parties present at the meeting were unable to supply answers. This is unacceptable. To make matters worse, the significant statement refers to low overall significance. The listed activity should not be allowed until the "amenable solution" has been found as otherwise the "horse will of bolted" leaving the objector at a significant disadvantage in any negation over the supposed solution as the developer will undoubtedly contend that it does not have to do anything as it has a lawful authorisation. If the developer has proposals on a solution they must be tabled now for the consideration of 		<p>Using the impact rating methodology described under point 1.the specialist determined this impact to be of low significance. Impacts that are of low significance without mitigation measures generally don't require any further mitigation measures.</p> <p>It is suggested that Mr Vosloo request a meeting with the EAP and developer to determine whether an amenable solution can be reached. It is advised that the I&AP provide the flight path information so that the developer can address this concern using correct and factual information.</p>

	Name	Issue	Date	Response
		<p>our client as such information will inform his decisions on persisting with his objections, noting an appeal under s43 of NEMA (which now suspends the operation of any authorisation until it is disposed of and then if needs be a judicial review).</p>		
3	John Vosloo	<p>3. Under Impact 7: Impacts on aviation, the following comments under bullets 6 and 7 are made:</p> <ul style="list-style-type: none"> • bullet 6 - it is stated "<i>the flight path provided by the interested and affected party do not cross Dassieridge site</i>". ❖ This is factually incorrect and our instructions are that they in fact do cross directly across the Dassieridge site, Our client also fails to comprehend on what basis such a statement can be made when the flight logs (as supplied to yourselves) do not indicate the route and we were advised at the recent meeting that an enquiry to the Civil Aviation Authorities at Port Elizabeth Flight Control Centre were not successful in determining our client's flight route. This issue needs to be addressed and/or rectified as it is simply not true. 	12 October 2015	<p>Noted. This section of the report has been amended as follows: <i>No information has been made available to confirm that the I&APs flight path crosses the Dassiesridge site.</i></p> <p>This refers to impact 7 found in the EIR:</p> <p>The IAP has indicated that his flight path crosses directly over the Dassiesridge WEF. When requested to provide proof of the flight path so that this could be included in the specialist report and reported on accurately, the IAP directed the specialist to the CAA telling her to request this information from them. When the CAA was contacted they responded on the 4 March 2015 as follows (refer to Appendix U for a copy of this email):</p> <p>Good day Ms Terblance,</p> <p>I am uncertain why Mr Sunderland referred you to us for the provision of the information you require because he should be more than capable to provide same. I have attempted to provide you with response to your individual questions in your initial email below</p> <p>I need to bring to your attention that all our day-to-day operations are recorded and considered confidential. Disclosure of such information to the public is</p>

	Name	Issue	Date	Response
				<p>prohibited in terms of our internal disclosure policies and the CAA regulation (CAR Part 67). Such information may only be disclosed in the event of an accident and/or incident after appropriate approval from the civil aviation authority</p> <p>As I have indicated, Mr Sutherland should have this information and I am unsure why he cannot provide you with such himself.</p> <p>Regards Ntozonke Simelane</p> <p>The IAP was not forthcoming with this information and appears to have been aware that the CAA would not have authorisation to provide the specialist with this information.</p> <p>To date there is no information, despite continued efforts to try and obtain this, to support or refute the statement that the I&AP flies his helicopter over the Dassiesridge WEF.</p>
4		<ul style="list-style-type: none"> • bullet 7 - it is stated that "<i>TMA is 2 500 feet and there is adequate clearance below the controlled airspace for the pilot to fly over the wind turbines, should he wish to do so. No daily flight plan would this be required,</i>" <ul style="list-style-type: none"> ❖ Whilst it is so that the TMA in respect of the relevant area has recently been raised to 2 500 feet as opposed to 2 000 when the initial objections were raised, and upon proper construction of the respective 		<p>Responses indicated here are based upon advice provided by a representative of the Civil Aviation Authority and as such are assumed to be correct at the time of publication of this document.</p> <ol style="list-style-type: none"> a. This is correct (refers to the 300ft corridor resulting from the change in the TMA from 2000ft to 2500ft)). The pilot could fly in that 300ft corridor depending on the individual pilots' experience and abilities, and would not need to file a daily flight plan. b. No mention is made of the horizontal distance limits in the regulations (CAR 91.06.32). The representative further referred the EAP to CAR 91.06.32 (2), which indicates that helicopters

	Name	Issue	Date	Response
		<p>heights, the following is to be borne in mind:</p> <ul style="list-style-type: none"> a. Our instructions are that aviation regulations stipulate that our client may not fly less than 500 feet above any obstruction on the ground. This is in a vertical position and as such should our client wish to fly over the wind farm as your expert proposes, he would have a narrow 300 feet corridor within which to do it. This would be unsafe and would also result in further expenses to our client in that he would have to take extra time to gain height to the appropriate altitude also incurring further costs. b. It however goes further than that, we are instructed that the relevant aviation regulations also state that not only may our client not fly in a 		<p>may fly below the limits indicated in point (1), based on the experience and abilities of the pilot, and the judgement of the pilot, as to whether it is safe to do so.</p>

	Name	Issue	Date	Response
		<p>vertical position less than 500 feet above any obstruction, BUT he is also to avoid such obstruction by 500 feet on a horizontal level. This thus squarely forces our client to fly around the proposed wind farm and skirt the outside towers by at least 500 feet on a horizontal basis. If he flies through the narrow corridor on a vertical basis, he is still in breach of aviation regulation.</p> <p>c. As such, the proposal in bullet 7 is factually incorrect and the contents thereof are denied.</p>		
5	John Vosloo	<p>More concerning is that the mitigation measures proposed is that no mitigation is required. This is unacceptable to our client as mitigation is clearly required. The report is fatally defective in that no mitigation is proposed to a situation where mitigation is most definitely required.</p>	12 October 2015	<p>Using the impact rating tool described above, the impact was rated as having a Low Significance without mitigation measures as it only affects one individual. In circumstances such as this, where the impact is of low significance without mitigation measures, no further mitigation measures are required.</p>
6	John Vosloo	<p>General</p> <p>1. It is therefore clear that there are aspects in the aforementioned report that are</p>		<p>Please refer to our response above (points 2, 3 and 4).</p>

	Name	Issue	Date	Response
		factually incorrect and need to be rectified.		
7	John Vosloo	2. There are aspects in the aforementioned report which most certainly require mitigation in circumstances where the report states that it requires no mitigation and these issues need to be addressed.		Please refer to our response above (point 2 and 5).
8	John Vosloo	3. Insofar as the recent meeting is concerned, we wish to record that the persons present were unable to give confident or meaningful answers to questions that were asked, seemed unequipped to deal with the questions that were asked and relied only on the contents of the report as handed to the relevant interested and affected party.		The primary reason for the disclosure of the EIR is to discuss the information contained therein. In addition the issue raised by the respondent (that the EAP seemed unable to answer questions posed) is inaccurate and misleading as the EAP responded to each question in detail as can be seen from the issues and response trail and from the meeting minutes produced. It should be noted that the information requested by the respondent (with the exception of the contact details of the specialist) were contained in the report, thus the EAP referred the respondent to the relevant pages this information could be obtained from. It should also be noted that a number of the questions were related to flight regulations and safety issues around flight paths. The EAP is not an expert in this field and therefore could not comment on these specific queries.
9	John Vosloo	4. Insofar as the previous written objection to the Dassieridge Wind Energy Facility as forwarded to yourselves is concerned, same still stands but with the necessary amendments as set out herein to be incorporated therein.		Noted.
10	John Vosloo	5. We may further respectfully point out that should our client's concerns not be appropriately addressed in an appropriate manner, our client will not hesitate appealing against the ROD should it be successful and taking the		Noted.

	Name	Issue	Date	Response
11	Kitchings Inc. Tessa Knoetze/Almero Kritzinger on behalf of: 1. Mr Gideon Jacobus van Eck 2. Mrs Natasha Nanette van Eck of the farm Prentice Kraal being Portion 2 of the remainder of Portion 233 in the Registration Division of Uitenhage Road	<p>matter further.</p> <p>Visual Impact Assessment We refer to client's letter dated the 28th of May 2015 and more specifically paragraph 2.1 thereof. The contents of this paragraph and more specifically the concerns raised therein are re-iterated herein with regards to the erection of the wind turbines as proposed in terms of the EIA as clients are of the opinion that the wind turbines would be clearly visible from basically every vantage point on their farm which would necessarily have a negative impact on any proposed hunting operations on the farm. In terms of the Environmental Impact Assessment Report and more specifically paragraph 10.3.6 thereof is it clear under the mitigations measures that no mitigation measures will change the significance of the landscape impact other than to plant shielding vegetation around the affected residents. This will have no effect on client's concerns as the operation of a hunting enterprise is not only operated from the homestead but on the farm as a whole. It is further stated at Impact 2 that there are no mitigation measures that can reduce the perception of a negative impact significantly unless the site is avoided.</p> <p>Its client's instructions that in terms of paragraph 9.8.4 of the EIA report is it stated that in terms of the specialist opinion must authentic efforts be considered to ensure that certain benefits accrue to those in close proximity to the Development. Clients have not received any indication of what such benefits would entail and are still awaiting any feedback with regards to</p>	12 October 2015	<p>Please note that the statement in paragraph 9.8.4 refers to the financial benefits associated with the project namely, landowner lease rental payments, local socio-economic development contributions made by the Project (as required by the Department of Energy's REIPPPP under which this projects aims to be contracted) and job creation to individuals situated in close proximity to the WEF. The Social Impact Assessment assesses each of the positive financial impacts in detail and includes who the recipient groups will be.</p> <p>The public meeting during which the EIR was presented to the public included the steps to take should an I&AP wish to meet privately with the EAP, developers and specific specialists of their choice. To date, no arrangements have been made by any of the I&APs to discuss any of the issues raised.</p> <p>Please note that the WEF is assessed in its entirety by specialists and all parties must be considered during the process. The statement "potential losses of scenic resources are not sufficiently significant to present a fatal flaw to the proposed project" was made by the visual impact assessor considering ALL vantage points used during the visual impact assessment. A second factor which was considered in this concluding statement is the fact that Wind Energy Facilities are not new features in the existing landscape due to the Grassridge Wind Energy Facility situated approximately 6km from the proposed Dassiesridge Wind Energy Facility.</p>

	Name	Issue	Date	Response
		<p>the same.</p> <p>It is further stated in the closing paragraph of paragraph 9.8.4 that the potential losses of scenic resources are not significantly significant to present a fatal flaw to the proposed project. Clients have considered this and does not agree with the same as clients are of the opinion that any visual impact of the nature envisaged by the said project would definitely have a negative financial implication on their future hunting operations as no foreign hunter would wish to hunt on a farm where the wind turbines is visible as it would be in this instance of client.</p>		
	<p>Kitchings Inc. Tessa Knoetze/Almero Kritzinger on behalf of:</p> <ol style="list-style-type: none"> 1. Mr Gideon Jacobus van Eck 2. Mrs Natasha Nanette van Eck <p>of the farm Prentice Kraal being Portion 2 of the remainder of Portion 233 in the Registration Division of Uitenhage Road</p>	<p><u>Impact on land values for surrounding properties</u></p> <p>This assessment as discussed at Impact 6 on page 160 of the EIA report. Clients do not agree with the specialist opinion in this said section and confirm that, as stated, would the nearest turbine be approximately 900m from their property's border. A great total of these turbines would be visible from every angle/vantage point on clients' farm which would definitely detract from the wildlife experience of any overseas or local hunter as such environment is definitely not conducive to any hunting experience. Clients confirm that the Eskom power line do run along the northern border of the property but is definitely not as visible as the wind turbines would be in this specific circumstance. Further reference is made to a railway line on clients' property and do clients confirm that this is incorrect and does the railway line run on the</p>	<p>12 October 2015</p>	<p>This impact assesses the value of the property as the property currently stands rather than the value of the property in the future based on potential, future operations. The purpose of this impact is also not to assess the impact of the WEF on the land use of the property, which the I&AP indicates is intended for hunting, as this impact is dealt with separately under Impact 9 "Potential Impacts on incomes: Gaming/ Hunting industry".</p> <p>Having said that, we agree that the mitigation measures proposed would not result in this impact being of low significance and we have therefore amended this in the report to moderate significance with mitigation measures.</p> <p>The report has been amended to state that the unused railway line runs along the border of the property rather than through the property.</p> <p>There is very little evidence to support or refute the</p>

	Name	Issue	Date	Response
		<p>border of their property and is the railway line also not in use anymore. Clients further do not agree with the overall significance being rated as moderate without mitigation and low with mitigation.</p> <p>Clients further refers to the Jeffreys Bay windfarm and more specifically the visual impact it has at night with the flickering of the red warning lights on top of the wind turbines being visible for many kilometers away. Its clients' instructions that the proposed wind turbines would be on their border and would the reflecting red alert lights be even more visible and would it further negatively impact on any hunting operations to be conducted by themselves in the future. The same will once again detract from the wildlife experience of any hunters and as referred to earlier would the first turbine be only 900m away from their property, which is in very close proximity to their property.</p>		<p>impact that the wind farm will have on the local hunting/game farming industry as this is based on perceptions. It is just as likely that for all the hunters that choose to hunt in areas that are considered natural and unspoilt, there are also hunters who are not bothered by the presence of power lines, tarred roads and wind turbines. However, the developer acknowledges the visual impact on this particular farm is high and will consider initiating a discussion with the I&AP to investigate if some of the 70 wind turbine positions applied for in this EIA, that are in close proximity to the I&AP's property could be dropped or relocated to other parts of the site in order lower the impact on the I&AP, while allowing the applicant to develop and build a competitive 140 MW wind farm.</p>
	<p>Kitchings Inc. Tessa Knoetze/Almero Kritzinger on behalf of: 1. Mr Gideon Jacobus van Eck 2. Mrs Natasha Nanette van Eck of the farm Prentice Kraal being Portion 2 of the remainder of Portion 233 in</p>	<p><u>Impact on incomes: gaming, hunting industry</u></p> <p>This assessment is referred to at Impact 9 on page 163 of the Environmental Impact Assessment Report.</p> <p>Client agrees that the income potential from an economic point of view is something that could be debated by different role players as different role players will have different opinions and views.</p> <p>1. Client confirms that the current Eskom</p>	<p>12 October 2015</p>	<p>1. As stated previously, there is little evidence to support or refute the impact that the wind farm will have on the local hunting/game farming industry as this is based on perceptions. It is just as likely that for all the hunters that choose to hunt in areas that are considered natural and unspoilt, there are also hunters who are not bothered by the presence of power lines, tarred roads and wind turbines as is currently the case on the I&AP's property. The developer cannot be held responsible for claims on future enterprises that are not yet in place. However, the developer will consider initiating a discussion with the I&AP in order to investigate if some of the 70 wind turbines positions applied for in this EIA, that are in close proximity to the</p>

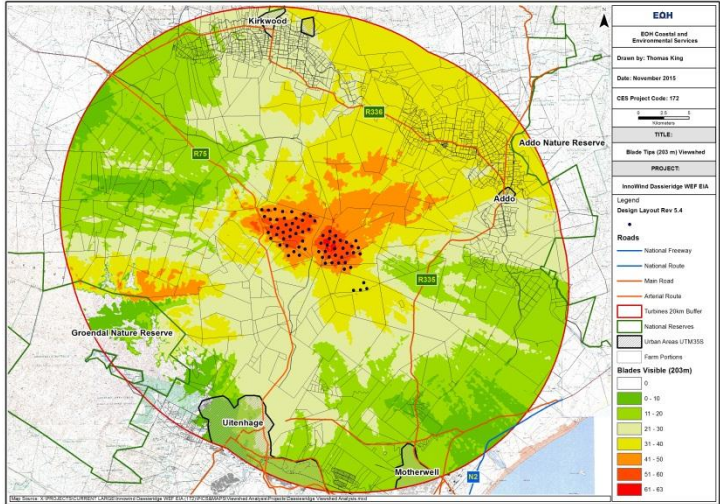
	Name	Issue	Date	Response
	the Registration Division of Uitenhage Road	<p>Power Line along the northern boundary as well as the railway line that runs next to his property do not have a negative impact on his hunting operations as the Eskom power lines is not clearly visible from all vantage points on his farm, as the proposed Wind Farm Turbines would be, and further is the railway line not in use anymore and does it not detract from any wildlife experience. Clients further confirms that the Grassridge wind turbines can only be seen from one vantage point on their farm and should the same not cause a further negative economic impact for themselves. Its clients instructions that the fact that the turbines would be visible within a 1km range from their farm would definitely have a negative economic impact on any commercial hunting operation now or in the future. The fact that clients are not fully operational as of yet does not mean that it would not negatively economically impact on their future operations.</p> <p>2. The reference to a property owner directly involved with the project and on whose farm an approximate 100 local and international hunters hunt per year and which farmer is not concerned that there would be a negative impact on his commercial operations do clients respond as follows. Any negative impact on the said farmer would be negated by any profits generated from the rental income from the wind turbines and will</p>		<p>I&AP's property, could be dropped or relocated to other parts of the site in order lower the impact on the I&AP, while allowing the applicant to develop and build a competitive 140 MW wind farm..</p> <p>2. As stated in the report this information was to illustrate the diversity of opinions and is not intended for comparative purposes. This approach was used as there is no substantive evidence available in South Africa to support or refute that WEFs will have a negative impact on the hunting/game farming industry.</p> <p>The public meeting during which the EIR was presented to the public included the steps to take should an I&AP wish to meet privately with the EAP, developers and specific specialists of their choice. To date, no arrangements have been made by any of the I&APs to discuss any of the issues raised.</p>

	Name	Issue	Date	Response
		<p>thus negate his losses. Our clients are not in that position and will any economic losses directly negatively impact on themselves. The concerns of the two parties can therefore not be compared in this instance. Clients cannot comment on the agricultural farm located adjacent to the Cookhouse WEF as no further information is given with regards to the visual impact on the said farm and if it in any way or form can be compared to the current location of clients' farm. Reference to game farms who have wind turbines on the property cannot be considered as these landowners and properties generate income from the rental income of the wind turbines and can they cushion any economic losses incurred as a result of declining hunting activity on the farm as a result of the wind turbines.</p> <p>Clients take note of the mitigation measures where an open and direct consultation with the concerned and effected landowners will take place and are clients eagerly awaiting the said consultation process. Clients have taken note of the balance of this paragraph.</p>		
	<p>Kitchings Inc. Tessa Knoetze/Almero Kritzinger on behalf of: 1. Mr Gideon Jacobus van Eck</p>	<p><u>Visual Impact Assessment</u> With regards to the visual impact assessment done are clients' instructions as follows.</p> <p>Clients' property is referred to as point number 8 being paragraph 4.3.8 of the Visual Impact Assessment Report. It is correctly stated that not</p>	<p>12 October 2015</p>	<p>As per response above. Please note that the statement in paragraph 9.8.4 refers to the financial benefits in terms of landowner lease payments, local economic development (as required by the Department of Energy's REIPPPP under which this projects aims to be contracted) and job creation to individuals situated</p>

	Name	Issue	Date	Response
	<p>2. Mrs Natasha Nanette van Eck of the farm Prentice Kraal being Portion 2 of the remainder of Portion 233 in the Registration Division of Uitenhage Road</p>	<p>all the turbines will be highly visible from the vantage point as indicated. It is also correctly stated that from an elevated panorama a much higher volume of the turbines will be visible. In that lays the concern of clients as the totality of the farm will be utilized for the hunting operations as previously indicated and not only the homestead. It is therefore inevitable that a high percentage of the wind turbines will be visible to prospective hunters, which will detract from the overall wildlife experience as previously indicated. Clients property is situated directly underneath the proposed wind turbines which will therefore definitely impact visually on their hunting enterprise or future hunting enterprises.</p> <p>In terms of paragraph 5.4.1 being the direct visual impacts in terms of the Receptor Assessment is it proposed that parties being of the opinion that they are negatively impacted can mitigate the process by erecting a vegetation screen for the homestead. Its client's instructions that the erection of the said vegetation screens will have no positive effect on mitigating the said situation and can the significant post-mitigation not be described as moderate but rather as high. The further fact that the project would last for approximately 20-25 years and would the land thereafter be rehabilitated is of no consolation to clients as by then their hunting operation would have deteriorated to the extent of non-viability.</p> <p>Clients are further still concerned with the noise pollution levels which can occur during the construction phase as well as the real possibility</p>		<p>in close proximity to the WEF. The Social Impact Assessment assesses each of the positive financial impacts in detail and includes who the recipient groups will be. It is suggested that the I&AP contact the developer and arrange a meeting to discuss their concerns.</p> <p>Please note that the WEF is assessed in its entirety by specialists and all parties must be considered during the process. The statement “potential losses of scenic resources are not sufficiently significant to present a fatal flaw to the proposed project” was made by the visual impact assessor considering ALL vantage points used during the visual impact assessment. A second factor which was considered in this concluding statement is the fact that Wind Energy Facilities are not new features in the existing landscape due to the Grassridge Wind Energy Facility situated approximately 6km from the proposed Dassiesridge Wind Energy Facility.</p> <p>The noise impacts associated with the construction phase of the WEF have been assessed in the Noise Impact Assessment and mitigation measures to ensure that dust and noise are reduced and carefully managed during construction are outlined in the EMPr which forms part of the EIR documentation.</p>

	Name	Issue	Date	Response
		<p>of dust pollution under the prevailing winds also during the construction phase.</p> <p>Its clients instructions that the visual impact during the day as well as night will definitely have a substantial negative economic impact on their future hunting enterprise as it would detract from the wildlife experience of the hunter.</p> <p>Its clients instructions that the only possible resolve would be to enter into meaningful discussions between all effected parties in this specific instance to try and see of an amicable solution cannot be found which would be to the benefit of all parties involved.</p> <p>Kindly take further note that all clients rights are reserved and should clients' failure not to answer to each and every aspect not be construed as their acceptance thereof and do they reserve the right to further fully ventilate the said matters, should the same be necessary.</p>		<p>The public meeting during which the EIR was presented to the public included the steps to take should an I&AP wish to meet privately with the EAP, developers and specific specialists of their choice. To date, no arrangements have been made by any of the I&APs to discuss any of the issues raised.</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p><u>Introduction</u> Thank you for providing the Eastern Cape Parks and Tourism Agency (ECPTA) with the opportunity to review and comment on the Draft Environmental Impact Assessment (EIA) Report for the proposed Dassieridge Wind Energy Facility (WEF). After scrutinizing the Draft EIA we would like to make the following comments: Please note that our comments only pertain to the biodiversity related impacts and not to the overall desirability of the proposed development.</p>	<p>12 October 2015</p>	<p>Noted</p>

	Name	Issue	Date	Response
	Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)	❖ The ECPTA is the designated managing authority of Groendal Nature Reserve (GNR), which now forms part of the Baviaanskloof World Heritage Site (WHS). The buffer zone of GNR has therefore been extended from 5km to 10km. The distance of the proposed development from the GNR boundary is approximately 14 -15km. We request that the EIA take into account the close proximity of the project area to the WHS as no reference is made to this.	12 October 2015	Section 6.1.14 of the EIA has been updated to include reference to the Baviaanskloof World Heritage Site of which Groendal Nature Reserve now forms a part. The paragraph now reads: “Figure 6-4 shows formal protected areas and National Protected Area Expansion Strategy (NPAES) focus areas surrounding the project site. There are no turbines within 10 kilometers of the nearest National Park (Addo) (distance calculated from the eastern boundary of the project area). Additionally, the project area is approximately 7.5km from the Springs Local Authority Nature Reserve. <i>The Groendal Nature Reserve, which is approximately 14km from the project boundary has been incorporated into the Baviaanskloof Nature Reserve. This is of importance as the Baviaanskloof Nature Reserve, which forms the core of the Baviaanskloof Mega-reserve, was recently given the status of a World Heritage Site.</i> ”
	Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)	❖ Referring to the Visual Impact Assessment (VIA), we noted that the selected observer points 1, 2, 8, 9 and 10 are surrounding GNR. The estimated visibility impact from these selected observer points are medium (50-75%) to high (75-100%). We are thus concerned about the visibility impact of the WEF on GNR. We therefore request a view shed analysis from GNR as the construction of a WEF in close proximity of the 10km buffer zone of the WHS is considered inappropriate.	12 October 2015	A viewshed analysis using the new layout was done for turbines with a height of 203m (which is the worst case scenario in terms of turbine tip heights applied for) and the viewshed analysis shown in the map below. This map is reproduced at full size in appendix W. The GNR is approximately 14km from the boundary of the proposed WEF and approximately 16km from the closest turbine. Observer points 1, 2, 8, 9 and 10 are considered medium and high impact due to the consideration of both their distance and the number of turbines which are visible from these points. The viewshed analysis (appendix W) illustrates that the WEF is only visible from the very high points of the GNR from which a range of between 1 and 30 30 turbines can be seen depending on the selected

	Name	Issue	Date	Response
				<p>vantage point. It should be noted (as per the Visual Impact Assessment) that the impact of turbines (visual significance) decreases with distance and in the opinion of the specialist the majority of the GNR can be considered to have a LOW significance from the majority of the reserve. The vantage points at the eastern most boundary of the reserve are considered to be of MODERATE significance.</p>  <p>Figure 2: Turbines with a height of 203m.</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p>❖ The Nelson Mandela Bay Municipality (NMBM) Conservation Assessment has recently been revised by SRK Consulting. The revision has included new landcover maps for the municipality and this has enabled determination of the remaining extent of vegetation types and of the rate of loss of these</p>	<p>12 October 2015</p>	<p>Please refer to section 6.1.17 which refers to the latest NMBM MOSS spatial planning tool available for CBAs on the BGIS website. The 2015 Ecosystem Status map was consulted and the study area found to be in a vegetation type listed as Vulnerable. A reference has been added to the report.</p> <p>In addition, the following paragraph has been added to</p>

	Name	Issue	Date	Response
		<p>vegetation types due to development. The proposed development must be framed within the context of the revised NMBM Conservation Assessment. What are the biodiversity targets for the vegetation types that will be affected and how will the development impact on the biodiversity targets?</p>		<p>the report <i>Four turbines are located within an area defined as a Critical Biodiversity Area (CBA). The recommendation strategy is that areas identified as CBAs must be maintained as natural vegetation cover and no further loss of natural habitat should occur. However, the ecological specialist found this area to be degraded as a result of the current landuse with very few bushclumps remaining in the vegetation type which is classified as Coega Bontveld. The area is also highly dissected by roads.</i></p> <p>It is understood that this tool was gazetted on the 30 March 2015. Our understanding is that the CBA and Vegetation spatial planning tools are currently being reviewed by SRK and have not been made available in the public domain (per comm: SRK)</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p>❖ Impacts on the NMBM Conservation Network: Portions of the site have been identified as Critical Biodiversity Areas (CBAs) by the NMBM Conservation Assessment, these areas are required for the NMBM's biodiversity targets and should remain in a natural state;</p>	<p>12 October 2015</p>	<p>The CBA occurring in the study area as per the NMBM Conservation Network and where 4 turbines are located, was found to be degraded by the specialist. Although this can be rehabilitated it is unlikely that the landowner will take responsibility for this portion of land and conserve and rehabilitate it back to its natural state. Should the four turbines remain in this area, InnoWind are committed to conserving the portion of CBA that they are located in and contributing towards rehabilitation efforts.</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p>❖ Possible impacts on Grass Ridge Bontveld: Grass Ridge Bontveld is a rare vegetation type and is extremely limited in extent, occurring only in the north-eastern sector of the NMBM. This vegetation type is currently listed as Vulnerable in the NMBM Conservation Assessment but planned developments</p>	<p>12 October 2015</p>	<p>The ecological specialist recommended that a number of turbines and roads be moved so as to avoid these unique bushclumps and reduce the impact on this sensitive environment. The developer has heeded this advice and relocated infrastructure so as to avoid impacting large and medium sized bushclumps. In addition, the project area is laced with existing tracks and the developer has ensured that these existing</p>

	Name	Issue	Date	Response
		<p>in the next few years (most notably mining of limestone for cement) will likely push this vegetation type to Critically Endangered. Grass Ridge Bontveld occurs on calcrete soils and is a mosaic of thicket clumps (in deeper soils which form in fissures in the calcrete) in a matrix of grassland and fynbos (on shallower soils). Recent work by Prof. Campbell at Nelson Mandela Metropolitan University (NMMU) has shown that the thicket clumps are unique assemblages of plant species and are not related to the surrounding solid thicket. Concern should not only be about the direct loss of this unique habitat that would occur through the development but also about edge effects that would occur though the fragmentation by roads;</p>		<p>roads are used where feasible so as to avoid unnecessary fragmentation and edge effects. Where this has not been possible, the road and cable layout has been designed to avoid areas of high sensitivity.</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p>❖ The project area falls within a Critical Biodiversity Area 2 as based on the Eastern Cape Biodiversity Conservation Plan (ECBCP) and the species <i>Bitis albanica</i>, <i>Chordylus tasmani</i>, <i>Aloeides clarki</i> and <i>Lepidochrysops bacchus</i> are expected to occur within or near the project area. We also would like have a specialist study regarding the impact of these species. However, please note that Tasman's girdled lizard (<i>Cordylus tasmani</i>) is now not considered a valid species- it's been lumped back with Cape girdled lizard (<i>Cordylus cordylus</i>); and</p>	<p>12 October 2015</p>	<p>The reptile species (<i>Bitis albanica</i>) is listed as Critically Endangered on the Atlas and Red List of the Reptiles (2014). This species is typically a cryptic species and difficult to find. We have therefore taken a precautionary approach and assumed this species may be present within the project area. An impact assessing and rating the significance of the project on this species has been added to the EIR (impact 2.3) and mitigation measures suggested (e.g. a reptile search and rescue plan must be under taken prior to construction phase).</p> <p>Since <i>Cordylus tasmani</i> has been lumped back with <i>Cordylus cordylus</i> (Cape Girdled Lizard) the assessment needs to be based on the current description. This species is listed as Least Concern by</p>

	Name	Issue	Date	Response
				<p>the Atlas and Red List of the Reptiles (2014) and is widely distributed from the Cedarberg and Saldanha in the Western Cape to the south eastern Free State, south western Lesotho and southern Kwa-zulu Natal.</p> <p><i>Lepidochrysops bacchus</i> (Wineland Blue Butterfly) is currently listed on the IUCN (2015) as Lower Risk/near threatened having been downgraded from its status of “Rare”. This species is widespread from Coega to Piketberg and Namaqualand and a few specimens have also been found in the Swartland.</p> <p>The Coega Copper (<i>Aloeides clarki</i> Tite & Dickson) is a rare butterfly, classified as Endangered in the Conservation Assessment of Butterflies of South Africa, Lesotho and Swaziland, Red List and Atlas, published by the Animal Demography Unit in 2013. It is also listed as a protected species under the TOPS regulations. The butterfly is found in restricted populations within the Coega Bontveld, where it is confined to small localities in calcareous rocky outcrops. At present, only three substantial localities are known for the species, two within the Coega IDZ, and one at the Sundays River mouth. Each locality covers an area of approximately one hectare. An opinion letter on the likelihood of this species occurring in the study area was provided by Ernest Pringle, a wellrespected Lepidopterist living in the Eastern Cape (Appendix V).</p> <p>In 1981 Ernest discovered a small locality for the species some distance inland, in the Grassridge area between Motherwell and Addo. This was a weak population, also on a small calcareous rocky outcrop. These outcrops consist of soft limestone containing many fossilised marine shells; they are extremely</p>

	Name	Issue	Date	Response
				<p>limited in extent. The species has never been found in or around Addo Thicket, or in grassland areas. They are not found on all such calcareous deposits, because the larvae of the butterfly are associated with ants of the genus <i>Lepisiota</i> or <i>Monomonium</i>, which they require to complete their life cycles. Ernest has suggested that all limestone outcrops within the area of the proposed development are checked as part of the proposed micro siting exercise prior to construction, to ascertain whether this species occurs there. Because of their specialised behaviour they are restricted to very small areas, which are relatively easy to conserve. Should it be found that project infrastructure is located in close proximity to a population, mitigation measures such as amending the infrastructure's layout so as to stay away from this sensitive area will be implemented.</p>
	<p>Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)</p>	<p>❖ The Albany adder (<i>Bitis albanica</i>) is one of South Africa's rarest and most threatened snakes. It is classified as Critically Endangered and the only currently known population occurs in the Grass Ridge Bontveld. This species could be affected by the proposed development through habitat loss and direct mortality (road kills).</p>	<p>12 October 2015</p>	<p>Prior to construction, an ecological walkthrough will be done to survey the position of each turbine and the road and cable layout. The EIR and EMPr have been updated to recommend that a herpetologist is present for this survey to guide development away from areas that may be deemed sensitive for this species.</p> <p>In addition, a reptile search and rescue plan will be implemented and reptiles of conservation concern relocated to areas outside of the construction site.</p> <p>The threat of road kills to this and any other faunal species is likely to be of concern during the construction phase which is relatively short (12-18 months). Once operational the vehicular traffic within the site will be significantly reduced. Having said that, to reduce the number of potential road kills, speed limits within the project area have been suggested in the EMPr and will form part of the Environmental</p>

	Name	Issue	Date	Response
				Authorisation should it be accepted by the Department of Environmental Affairs. These speed limits will be enforced by the ECO and HSO employed during the construction and operational phases and fines will be given to contractors and personnel that ignore these rules.
	Eastern Cape Parks and Tourism Agency (Shane October / Dr Dean Peinke)	<p>CONCLUSION Having reviewed the Draft EIA, ECPTA recognizes the importance of shifting to a more sustainable energy mix, and strongly supports entering into partnerships with landowners in areas with biodiversity sensitivity. However, as a designated biodiversity management body, our perspective needs to be wider than these opportunities, as the project will have a negative impact, as noted above.</p>	12 October 2015	Noted and we thank you for your comments.
PUBLIC MEETING: PRESENTATION OF THE EIR (30th September 2015)				
	Almero Kritzinger on behalf of Mr van Eck	<p>Not happy with the responses provided in the IRT and may be interested in requesting an informal one on one consultation. Would like to know who to contact regarding setting up a one on one consultation (including contact details).</p> <p>Would like to be informed about the rest of the public participation process which remains.</p> <p>Would he be able to contact the specialists directly?</p>	30 September 2015	<p>The public participation process is an ongoing process during which the EAP invites all forms of public consultation. Mr Kritzinger may contact the EAP directly and request a meeting with specialists, the developer, etc. Mr Kritzinger was provided with the EAPs contact details.</p> <p>The public participation remains an open process during which consultation is welcomed. The draft public participation date ends on the 12th October, but additional meetings can be set up at the I&APs request. The final EIR will be out for public consultation for 21 days during which the reports may be reviewed again.</p> <p>For the sake of open public record it is preferred that consultation with specialists be directed through the EAP. The issues and responses can then be added to</p>

	Name	Issue	Date	Response
				the documentation and can be addressed by the developer, EAP and other specialists.
	John Vosloo	<p>Section 7 of the report refers to a CAA expert, who is he can I contact him directly. The CAA expert mentions flight logs and Mr Vosloo would like to know if he went to the flight coordinators to get the physical logs as the current logs do not provide flight routes.</p> <p>Is the CAA specialist from PE?</p> <p>Where is the social scientist based?</p> <p>Does the Final EIR go to everybody and to the DEA as the same time? Is the review period 21 calendar days or working days?</p>	30 September 2015	<p>The CAA expert is Mr Harry Roberts, an obstacle specialist. It is preferred that the correspondence relating to issues in the EIR documentation be conducted through the EAP to ensure that the public participation process is open and fair to all parties involved. The flight coordinators are not allowed to supply private flight logs. The flight logs were requested but we were informed that they could not be released without approval from the pilot in question (Mr van der Westhuizen, Mr Vosloo's client), this permission was not granted and the CAA expert and Social expert were therefore not given access to any records indicating routes, despite numerous efforts to obtain these.</p> <p>The CAA expert is from Gauteng.</p> <p>The social specialist is from Gauteng.</p> <p>The final EIR will be made available to all parties, including the competent authority, for the 21 day public participation period.</p> <p>The 21 day public participation period is 21 calendar days (excluding public holidays).</p>
	Mr Ginkel Venter from Blue Cliff Safaris	<p>Not in favour of the project due to visual impact.</p> <p>Can the reports be emailed to us?</p>	30 September 2015	<p>Please submit all objections in writing to the EAP during the public consultation period so that issues may be assessed accordingly.</p> <p>The reports are made available on the EAP website (www.cesnet.co.za), however should you wish to have specific reports emailed to you instead of downloading the reports online then you may request said reports (specific specialist reports).</p>

	Name	Issue	Date	Response
	Johan Snowman	Renewable energy is a critical need in our country and we should be supporting the development of wind farms for the future of South Africa.	30 September 2015	Noted.

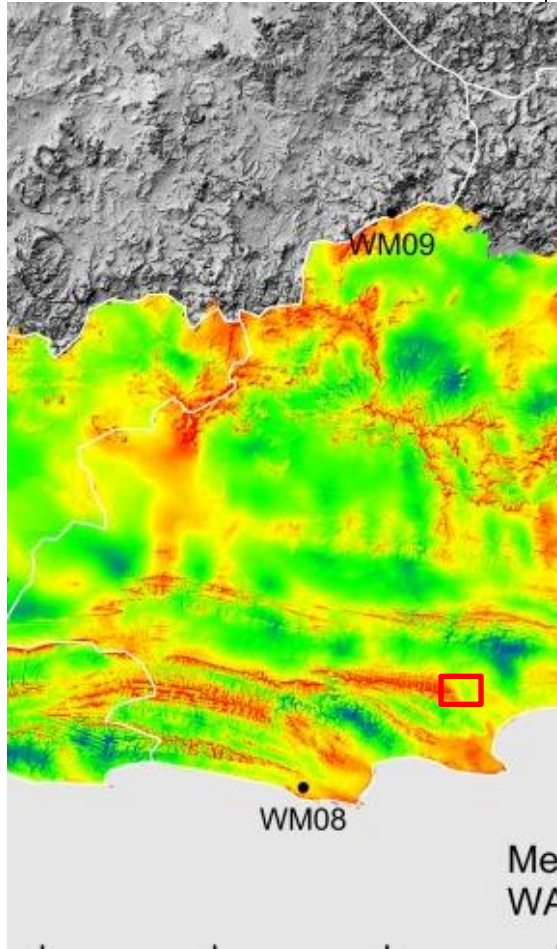
Table 8-2. Issues Raised by DEDEAT and Responses (Environmental Impact Assessment Phase)

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
Page i	Turbine Design Specifications	Substation Options	The shortest route must be used: namely Option 1: a 132 kV line	The selection of the most suitable connection option is based on a combination of factors which includes, the least environmentally sensitive option as well as technical and commercial aspects of the connection option. It should be noted that the power line routes follow an existing servitude for the most part.
Page 3	1.2 Environmental Authorisation in South Africa	Table 1-2: Third Row		
Page 3	1.2 Environmental Authorisation in South Africa	Table 1-2: Second Last Row		
Page iii	Figure 1		Is the new layout' for the turbines indicated on this map?	This is the layout that the specialists used to assess the site. Based on the recommendations from the specialists, the developer repositioned the turbines and associated infrastructure to avoid impacting areas of high sensitivity where feasible.
Page 2	1.1 Background to the	Last Paragraph	Has DEA confirmed in writing that the EIA may be undertaken in terms of the 2010 Regulations?	The application and Scoping report were submitted and accepted under the 2010 regulations. As such, the EIA must

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
	Study			continue using these regulations.
Page 3	1.2 Environmental Authorisation in South Africa	Table 1-2: Second Row	Was DWS consulted with regards to the drainage line crossings: will a General Authorization apply or will a WULA have to be submitted?	DWS are aware of the project and have been given the opportunity to comment on the scoping report and draft EIR. The EAP will be guided by DWS with regard to the type of licence required but it is anticipated that this will be a general authorisation as there will be no significant impacts to water courses. For WEF in the Eastern Cape, water applications are only processed after being awarded preferred bidder status by the DoE.
Page 3	1.2 Environmental Authorisation in South Africa	Table 1-2: Last Row	<ul style="list-style-type: none"> This is the EIR phase. Were the different power line options assessed? 	All five power line options were assessed by the specialists during the EIR phase. The paragraph has been updated to reflect this.
Page 14	Electrical connections	Second Paragraph		
Page 5	1.2 Environmental Authorisation in South Africa	Last Paragraph	Mention the PNCO and the National Forest Act as permits may be required in terms of them to destroy / relocate plants.	Please note that this is discussed in Section 5 of the report as its own legislative section. Section 1.2 refers specifically to the process of applying for Environmental Authorisation. Additional permits and relevant legislation have been identified in section 5.
Page 12	2.3.1 Preliminary Civil	First Line	Permits are a legal prerequisite to destroy / relocate any plants that have a legal status.	This specific section describes the activities associated with the construction and operation of the

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	Works			project. The mention of permits is made under the impacts section of the report (Chapter 10). Reference to the permits is noted under <i>Impact 2.1 – Loss of Species of conservation concern</i> In the EIR.
Page 13	2.3.2 Construction	d)Site preparation: First Line		
Page 13	2.3.2 Construction	e)Establishment of substation		
Page 13	2.3.2 Construction	Second Paragraph: Second Bullet	A crane that requires the minimum width of road should be used.	The selection of the crane to be used during the construction phase will depend on the model and size of the wind turbine selected by the developer.
Page 13	2.3.2 Construction	Second Paragraph: Last Bullet	Why are passing places required? Once the civil works are complete there is far less traffic Trucks to deliver and cranes to erect turbines need only travel in one direction. As roads are one of the biggest impacts during the construction of WEFs, road width should be kept as narrow as feasible.	Once the project goes to the final detail design after authorisation, passing places will be minimised where possible and areas impacted during construction but not required for the operational phase will be rehabilitated.
Page 12	2.3.2 Construction	a) Geotechnical studies	How will overburden and spoil be disposed of?	This will be used for backfill where possible, a large amount can also be used in the construction of the roads. However, where there is excess soils that can't be used in a useful manner on site this can be used to rehabilitate nearby quarries and borrow pits. As a last resort, this will be disposed of at a landfill site.
Page 23	3.3 Site Locality: Wind Data	First Paragraph: First Line	This reference is not in the References on Page 206. Please check that all references in the text are included in the reference list (13. References) on Page 206.	This has been updated to reflect the Wind Energy website.
Page 23	3.3 Site Locality: Wind Data	First Paragraph: Third Line	Should 'metallurgical' not read 'meteorological'?	Noted and changed.
Page 23	3.3 Site Locality:	Second Paragraph	The cumulative impact of their two WEFs is of concern. This implies that the minimum number of	This has been noted by the developer and will be accommodated where

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	Wind Data		turbines possible should be erected on Dassiesridge to generate 140 MW.	possible. It is important to note that less turbines will mean using bigger machines.
Page 23	3.3 Site Locality: Wind Data	Last Paragraph	What infrastructure will both WEFs use?	The particular turbine model has not been chosen yet for Dassiesridge. Grassridge uses the Vestas V112 3MW machine. Other infrastructure associated with this project includes roads, cables, substation and overhead power lines. The infrastructure that may be shared will be assessed at the final design stage after authorisation.
Page 27	Table 4-1	Second Column: Alternatives: Second Paragraph	What is the 'available grid'?	This refers to the Eskom electrical grid and the availability of potential interconnection points near the Dassiesridge sites.
Page 27	Table 4-1	Second Column: Alternatives: Last Paragraph	This statement about the wind resource needs to be substantiated by providing data	Two meteorological masts with anemometers have been erected on site; one at 60 m and one at 120 m. The 60 m mast has been collecting data since the 6th of January 2014, and the 120 m mast has been collecting data since the 23rd of March 2015. A 34 m mast was used to collect data from the 1st of January 2014 till March 2015 when it was decommissioned. In addition, data for the Grassridge wind farm nearby, which has received authorisation, showed this WEF to be feasible. In addition, the Wind Atlas shows this area to have high windspeeds (see red box on map below). Areas that are
Page 27	Table 4-1	Last Column: Second Last Bullet		

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				<p>yellow, orange and red are desirable areas.</p> 
Page 27	Table 4-1	Fourth Column: Disadvantages	Visual intrusion and potential impacts on birds and bats are the biggest negative impacts of WEFs. Although there is little that can be done about the former, all mitigation measures prescribed by the	Noted.

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			specialists to reduce impacts on birds and bats must be included as conditions of any authorization and implemented through the EMPr.	
Page 28	Table 4-1	Third Column: Third Bullet	The statement 'does not require large areas of land' is made yet the total project area is 17 000ha.	The farm portions in the application equate to 14 300ha (Section 2.1, 3 rd sentence) in total. However, the actual footprint of the WEF will be significantly smaller and will be less than 100ha. Please refer to section 1.1, 3 rd paragraph.
Page 28	Table 4-1	Last Column: Comment	The statements that there is not enough solar and intense radiation to make solar facility should be substantiated by providing data	The solar atlas shows the project area to occur in an area that receives <6.0 kWh/m ² of solar radiation per day. Although favourable for solar radiation there are areas in South Africa that receive between 7 and 8 kWh/m ² radiation per day which is preferable when compared to areas that receive 6kWh/m ² . This has been added to the report.
Page 29	Table 4-1	Last Column: Comment	What is implied by not mutually exclusive'?	This has been clarified by amending the sentence as follows: <i>Wind and solar energy facilities are not mutually exclusive but there is not enough solar radiation in the area for this option to be economically viable in the context of the Department of Energy's Renewable Energy's Independent Power Producer Procurement Program (REIPPPP).</i>
Page 31	5.1 The Constitution Act	Shaded Box	Please note that the development must be based on these two legal obligations.	Noted.
Page 31 and Page 32	Table 5-1	Paragraph below Table	There should be no development of this nature if these principles are not applied.	Noted. These principals have been applied throughout the EIA and have been translated for the construction and

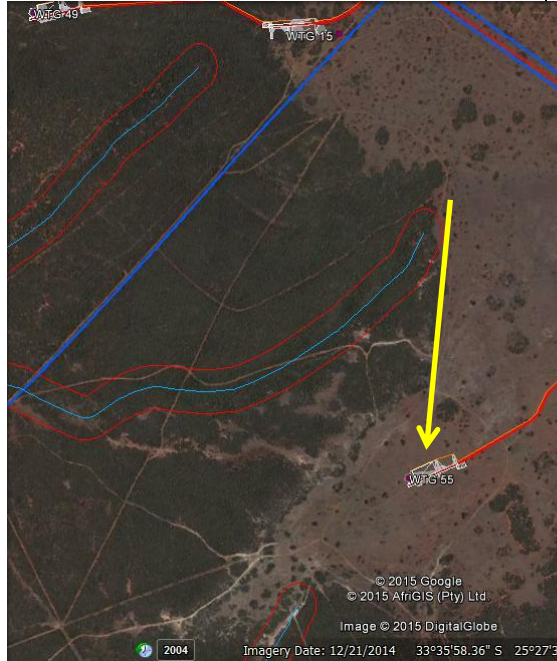
Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				operational phases in EMPr
Page 33	NEM: PAA	First Shaded Box	How 'close'? Are there any such areas?	<p>Please refer to section 6.1.14 which describes where Protected Areas are in relation to the project facility.</p> <p>This has been reproduced below for ease of reference: <i>There are no turbines within 10 kilometers of the nearest National Park (Addo) (distance calculated from the eastern boundary of the project area). Additionally, the project area is approximately 7.5km from the Springs Local Authority Nature Reserve. The Groendal Nature Reserve, which is approximately 14km from the project boundary has been incorporated into the Baviaanskloof Nature Reserve which forms the core of the Baviaanskloof Mega Reserve.</i></p>
Page 33	NEM: BA	1.	Mention the 2011 Regulations that promulgated Endangered Ecosystems.	Mention of the threatened ecosystems has been added to this section.
Page 33	NEM: BA	Second Shaded Box: Last Bullet	Mention the 2014 AIS Regulations.	Mention of this has been added to the bullet point.
Page 34	NEM: WMA	First Shaded Box	Are there any requirements in terms of licences?	No listed activities in the Waste Act Regulations (GN R 921) are triggered by the development. The Contractor will be required to provide an onsite waste management plan.
Page 34	5.7 National Heritage Resources Act	Shaded Box: Second Bullet	Mention that a Heritage Impact Assessment was undertaken.	This has been added to the report.
Page 36	5.10 Aviation	Shaded Box	Was written clearance of the project provided by Civil Aviation?	The South African Civil Aviation Authority (SACAA) has been notified

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Page 86	Act Table 8-1	Second Row: Last Cell	about the project through the public participation process and are aware of the project. The developer is dealing with them directly and the approval is only required when the project is bid. Through the correspondence with the CAA the developer has received provisional clearance confirming the project has “no impact on aerodrome operations”.
Page 37	5.12 National Water Act	Shaded Box	<p>Explain in more detail? What is a GA; Would a WULA be required. What buffers for water courses and wetlands are applicable in terms of the Act and the ECBCP?</p> <p>Buffers around water courses and wetlands required in terms of ECBCP have been implemented. In addition, any activities within 500m of a wetland will require authorisation from DWS (the ECBCP put this at 50m for wetlands and is therefore outdated).</p> <p>A Water Use authorisation for any activity impeding or diverting the flow of water in a watercourse (21c) and/or altering the bed, banks, course or characteristics of a water course (21i) will need to be applied for when roads and infrastructure cross streams.</p>
Page 37	5.13 1 CARA Regulations	Second Last Bullet	<p>Do the AIS Regulations supercede these regulations in terms of the control of 'weed and invader plants'?</p> <p>Correct. The following sentence has been added to this section to provide further clarification:</p> <p><i>It should be noted that the CARA regulations for the legal obligations regarding alien invasive plants in South Africa have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species</i></p>

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				(AIS) Regulations which became law on 1 October 2014.
Page 38	5.13 1 CARA Regulations	Shaded Box	Mention that an Agriculture and Soils Impact Assessment was undertaken.	This has been added to the shaded box as requested.
Page 38	5.14 Subdivision of Agricultural Land Act	First Paragraph	Does SPLUMA (Act 16 of 2013) have any relevance here?	Details on SPLUMA have been added to section 5.18.
Page 38	Subdivision of Agricultural Land Act	Shaded Box	<ul style="list-style-type: none"> • Mention that a WEF cannot be established on land zoned Agriculture. The developer must apply for special consent for the duration of the project. • Although DAFF must approve rezoning or subdivisions of agricultural land, the local authority issues the actual rezoning documentation. 	<ul style="list-style-type: none"> • This has been explained in the shaded box which currently reads: <i>Approval will be required from the Department of Agriculture (DAFF) for any activities on the land zoned for agriculture and any proposed rezoning or sub-divisions of agricultural land.</i> • Noted. This has been added to the report.
Page 38	MPRDA	First Paragraph: Last Line	A Licence is first issued for a maximum number of times. Only then can a Right be applied for. Borrow pits are operated under Licences as they are small, short term supplies of material. Quarries are usually operated under Rights as they are longer, larger and much more complex to manage from an environmental aspect.	This information will only be known once the project has been selected as a preferred bidder by the DOE, once the design and necessary requirements have been finalised. Permits will be applied for if required.
Page 38	MPRDA	Table 5-2	<ul style="list-style-type: none"> • Since the 2014 Regulations were promulgated, it has become obligatory to follow a Basic Assessment process (BAR and EMP_r) and Scoping and an E1A process (EIR and EMP_r) when applying for a Licence and a Right respectively. • What will the source of material (sand and aggregate) be for this project? 	<ul style="list-style-type: none"> • Noted, Basic Assessment has been added to the permit table. • This information will only be known once the project has been selected as a preferred bidder by the DOE, once the design and necessary requirements have been finalised.

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Page 39	MPRDA	Shaded Box: Second Bullet	Was the Minister approached for approval? This should be included in this EIR.	An application in terms of section 53 has been submitted to Port Elizabeth office of the Department of Mineral Resources.
Page 39	5.17 National Veld and Forest Fire Act	Chapter 4	A Fire Management Plan must be drafted. Fire belts can have many negative impacts on the environment and are costly to maintain. They should only be established if they are required. An expert with appropriate practical experience should thus be appointed to provide input to this Plan.	This will be incorporated into the Open Space management Plan.
Page 40	5.18 Other Relevant National Legislation	First Bullet	This Act was discussed under 5.13.	Noted. Reference to this Act has been removed.
Page 40	5.18 Other Relevant National Legislation	Mountain Catchment Act	This Act would not be applicable to this development.	This Act has been removed from the list.
Page 40	5.18 Other Relevant National Legislation	Development Facilitation Act	How would this Act be relevant to this development?	It is no longer relevant as it has been repealed and replaced with SPLUMA (Act 16 of 2013) (Implemented in July 2015).
Page 40	5.18 Other Relevant National Legislation	Telecommunications Act	Was this issue resolved with ICASA?	The developer will be communicating directly with ICASA and its members. The developer has approval from relevant telecom operators.
Page 40	5.18 Other Relevant National Legislation	Physical Planning Act	Is this plan still enforced?	It is no longer relevant as it has been repealed and replaced with SPLUMA (Act 16 of 2013) (Implemented in July 2015).
Page 40	5.18 Other Relevant National Legislation	Tourism Act 72 of 1993	Is this Act still in force? How would it be applicable to this development?	It has been repealed and replaced with, Tourism Act (Act 3 of 2014). In light of the fact that there are tourism facilities in the general area the development may have an impact on tourism.
Page 40	5.18 Other	PNCO	Although it is provincial and not national legislation, it	Noted, thank you. This has been

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	Relevant National Legislation		is very relevant to the project for permitting purposes.	covered in the Ecological Impact Assessment, in the Impacts section of this report and in the EMPr.
Page 40	5.18 Other Relevant National Legislation	Last Paragraph: First Bullet	Was LUPO repealed and replaced by SPLUMA on 1st July 2015?	Yes correct, but LUPO will still be applied until such time as the municipalities have implemented by-laws and set up a tribunal to deal with applications.
Page 42	6.1.3 Watercourses	First Paragraph	<ul style="list-style-type: none"> • Mention the buffers in the text that were applied to give wetlands and drainage lines in Figure 6-4 a High Sensitivity. • Are they the same buffers described in the ECBCP? • That no development occurs within these buffers in order to prevent impacts on wetlands and drainage lines should be a condition of any authorization. • The dams should not be disturbed. If water is abstracted from them, water tankers must not drive within the buffer. Based on agreement with DWS, water should be pumped to a tanks and trucks filled from a standpoint 	<ul style="list-style-type: none"> • This has been added to the text. A 50m buffer was placed around wetlands and 32m around all drainage lines. • The ECBCP recommends 50m around mountain streams and upper foothills of all 1:500 000 rivers; 100m around lower foothills and lowland rivers of all 1: 500 000 rivers and 32 m around all remaining streams. They also recommend that 50m be placed around all wetlands. The sensitivity buffers in this report meet the recommendations set out in the ECBCP. • It is agreed that no unnecessary development should occur within these areas. However, there are instances where roads and cables need to cross these areas. As such, one can't say that no development occurs within these buffers. All activities within these buffers will only take place once authorised by the Department of Water and Sanitation. • Noted. If a pump with a level meter

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				is installed, a tanker can be rapidly filled from a full tank, and then only once the level of the tank goes below a certain level will the pump switch on again.
Page 42	6.1.3 Watercourses	Third Paragraph	<ul style="list-style-type: none"> • Has DWS been consulted regarding drainage line crossings? Is a GA applicable or must a WULA be submitted? • Underground cables to be laid in road reserves (existing routes) to minimise crossings. 	<ul style="list-style-type: none"> • Please refer to response above. • This is preferred by the developer and will be done by the where feasible.
Page 43	Figures 6-2 and 6-3			
Page 42	6.1.3 Watercourses	Figure 6-1	The relocation of Turbine 55 is supported. How far is it from the water course now?	<p>This turbine has been removed from this area. The turbine has been moved due south, approximately 300m from the watercourse buffer.</p> 

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Page 45	6.1.5 Current Land Use		Are there any game fences in the project area that could be affected by the development as this may have impacts on registered CAEs?	There are game fences within the project area and these will be addressed once the design is finalised and should the project be selected by the Department of Energy as a preferred bidder
Page 46	b) Coega Bontveld	Last Paragraph	<ul style="list-style-type: none"> • This Department is concerned about the conservation status of Coega Bontveld due to various impacts, particularly large scale limestone mining • Bush clumps, of whatever size must be avoided: no roads, cable trenches, laydown areas, power lines and so on must impact on them. • This project can thus only be authorised if all the mitigation measures prescribed in the EIR and EMPr are included in an Environmental Authorisation and they are strictly implemented and enforced. • There must be a genuine commitment from the developer to sustainably manage the construction and operation phases. 	<ul style="list-style-type: none"> • Noted. Although the construction of the WEF on the site will have some impacts on this vegetation type, it will also serve to protect the area from limestone mining during its lifespan which could be considered a long term benefit. • The developers have repositioned turbines and realigned roads and cables to avoid bushclumps as per the ecological specialist's recommendations. • Noted. • Noted. The developer is committed to managing the construction and operation of the site sustainably.
Page 69	8.1.3 The Public Participati on Process followed includes:	Third Paragraph	As the project was advertised at the end of last year, it should have been re-advertised prior to the release of the Draft EIR.	All registered I&APs were notified. Since this is not a requirement of the legislation it was not advertised. The public participation process was run as per the legal requirements of the Public Participation Process.
Page 70	Table 8-1	Dr Paul Martin	The mitigation measures prescribed by the Bird Specialist for the outer guy wires of the wind measuring masts must be implemented.	Noted.
Page 70	Table 8-1	Dr Paul Martin	Cumulative impacts of all the WEFs in the Cacadu District are of concern. The information requested should thus be provided.	Cumulative impacts have been addressed in section 10.5 of the EIR.

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Page 71	Table 8-1	Dr Paul Martin	The impacts on bats must be mitigated by using the measures proposed by the Bat Specialist.	Noted.
Page 77	Table 8-1	Third Row: Second Cell	This Department is still of this opinion. Please refer to the comment on cumulative impacts on Page 23.	Noted. As mentioned previously, the turbine capacities and number of towers are determined through a thorough assessment of the wind resources in the area. The developer will select the most suitable model to optimise power output while having the least environmental impact.
Page 78	Table 8-1	First Row: Last Cell	Has DWS provided comments on what information may be required?	Please refer to the response above that provides information of the involvement of DWS to date.
Page 78	Table 8-1	Second Last Row: Second Last Cell	It is not only the suitability of the site but how effectively any impacts can be mitigated over the duration of the project. Will all the requirements of NEMA be met?	Impacts with and without mitigation measures have been included in Chapter 10 – Impact Assessment. This provides an impact rating based on the effectiveness of the mitigation measures. The EIA has been conducted in line with the regulations and NEMA principals. These principals will be followed and adhered to during construction and operation phases of the project.
Page 78	Table 8-1	Last Row: Last Cell	This information is available. The model and height of the turbines must be known to determine effective mitigation measures.	We have a proposed hub height and blade diameter in the EIR which has been used for the assessment (Please refer to table 1 under General Site Information on page iii). The model of turbine have a significantly different environmental impact so long as the same turbine dimensions are used.
Page 79	Table 8-1	Second Row: Last Cell	If deeper soils were not used where would they be disposed of? They should be used for some useful purpose on site.	As mentioned previously they will be used for backfill where possible. It is also possible to use some of the rock and subsoil in road construction on site.

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				However, where there is excess soil that can't be used in a useful manner on site these will be disposed of at a landfill site as an option of last resort only.
Page 80	Table 8-1	Second Row: Last Cell	Although the developers are primarily driven by economic factors' they have a legal and moral obligation to ensure that the environment is not compromised during the construction and operation of the WEF.	Noted.
Page 81	Table 8-1	Third Row: Last Cell	Was contact made with DMR? Please answer these queries.	DMR was listed as an I&AP and the application in terms of Section 53 of the Minerals and Petroleum Resources Development Act has been submitted.
Page 81	Table 8-1	Third Last Row: Last Cell	Please refer to comment on page 46	Please refer to the response to this comment above.
Page 84	Table 8-1	Second Last Row: Last Cell	Sometimes the basic requirements of the Regulations/ National Department do not ensure adequate public participation.	Noted. The Stakeholder list was updated to include stakeholders that wished to be part of this process. Some that DEDEAT recommended declined to be added as an I&AP.
Page 85	Table 8-1	Fourth Row: Last Cell	A condition of any Environmental Authorization is that a Traffic Impact Assessment must be undertaken.	A traffic impact assessment was not requested in the conditions set out in the acceptance of the application nor the Final Scoping Report. As mentioned previously, a traffic impact assessment will only be done post authorisation and possibly only post preferred bidder approval.
Page 85	Table 8-1	Third Last Row: Second Cell	This statement still applies. The reduction in the number of turbines is welcomed. Due to the fairly flat topography, moving turbines will not significantly reduce the visual impact.	As noted in the VIA, it is difficult to mitigate the visual impact of a WEF.
Page 86	Table 8-1	First Row: Last Cell	All the mitigation measures stipulated by the Bat Specialist must be implemented.	Noted.
Page 86	Table 8-1	Fourth Row: Last Cell	All these requirements should be included as Conditions in any authorization. Was the 1: 100 year	Noted. The flood line is determined as part of

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
			flood line calculated?	<p>detailed engineering design. In addition, all infrastructure associated with the WEF is usually limited to 32/50m from the bank of a watercourse. This is generally outside of the 1:100 flooding.</p> <p>As previously mentioned, the EAP will be guided by the Department of Water Affairs when/if the project is successful in the bidding round of the REIPPPP.</p>
Page 86	Table 8-1	Third Last Row: Second Cell	Please check that the Ecological Specialist considered all these aspects as they are all very relevant.	<ul style="list-style-type: none"> • <i>Providing adequate information on Species of Special Concern from a legal perspective as this information may be required for permitting purposes – Please refer to section 4.3 of the ecological report.</i> • <i>the ECBCP buffers are a legal requirement - the buffers around rivers, drainage lines and wetlands were created using the ECBCP guidelines.</i> • <i>Certain areas may have to be excluded from development once various planning tools have been interrogated (particularly the NM MOSS and the SRVM Biodiversity Sector Plan) – The ecological report assesses this. Refer to section 4.1 and 4.2 of the Ecological report.</i> • <i>No-go areas; provision for Rehabilitation; - Refer to chapter 6 and chapter 8.</i> • <i>Fire Management and Alien Vegetation Plans – Refer to the mitigation measure under the impacts section specifically Impact 3 and impact 8.</i>

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				<ul style="list-style-type: none"> <i>no abstraction of water from natural water bodies</i> – This is dealt with in the EIR. If water is required to be abstracted from any waterbody on the site, authorisation will be sought from the Department of Water and Sanitation.
Page 87	Table 8-1	Fourth Row: Second Cell	Were the requirements of this letter met?	Yes they were.
Page 91	9.1.3 Recommendations		They are supported. They should be included in any authorization as conditions.	Noted.
Page 91	9.1.4 Conclusion and Specialist Opinion			
Page 97	9.3.3 Recommendations			
Page 98	9.3.4 Conclusion and Specialist Opinion			
Page 101	9.5.3 Recommendations			
Page 102	9.5.4 Conclusion and Specialist Opinion			
Page 103	9.6.3 Recommendations			
Page	9.6.4			

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104	Conclusion and Specialist Opinion		
Page 106	9.7.3 Recommendations		
Page 106	9.7.4 Conclusion and Specialist Opinion		
Page 107	9.8.3 Recommendations		
Page 108	9.8.4 Conclusion and Specialist Opinion		
Page 109	9.9.3 Recommendations		
Page 109	9.9.4 Conclusion and Specialist Opinion		
Page 93	Impact 1: Loss of Coega Bontveld		<p>Bush clumps and succulent patches must be avoided by all infrastructures. Restrict these to the grassland.</p> <p>Noted. The specialist has made these recommendations to the developer who has repositioned turbines to avoid bush clumps. Prior to construction, the final layout will be micro sited to ensure that no turbines are situated within bush clumps or succulent patches.</p>
Page 93	Impact 2:		<p>Infrastructure should be located in open patches.</p> <p>Where feasible, infrastructure will be</p>

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	Loss of Thicket Vegetation			located in areas that are degraded. Areas of high sensitivity will be avoided. Prior to construction, the final layout will be micro sited to ensure that no turbines are situated within bush clumps or succulent patches.
Page 93	Impact 3: Loss of plant SCC		<ul style="list-style-type: none"> • <i>Encephalartos</i> is a ToPS species. Due to the rapid decline of the populations of most Cycads they are receiving special attention from DEA. Were the National Cycad Strategy and Draft Biodiversity Management Plan for Species consulted during the compilation of this EIR? • One of the requirements of the BMP is that a survey be undertaken of <i>E. horridus</i>. This will include the properties that make up the project area of this application • A decision on this application will thus most probably not be made until a census of this species is undertaken and the potential impact on this species assessed. 	The BMP for cycads has been consulted retrospectively with specific attention being paid to <i>E. horridus</i> . The population found on site is a small one with only a few individuals. It has been recommended that a ground truthing survey is done prior to construction and that these sensitive areas be avoided by repositioning turbines and infrastructure.
Page 95	Impact 10: Loss of Coega Bontveld vegetation	Impact 10: Loss of Coega Bontveld vegetation: Last Paragraph	<ul style="list-style-type: none"> • Is this not the same as Issue 1 (Page 93)? Should they not be combined? • What would rehabilitating the area entail? 	These impacts were repeated as the second set relates to cumulative impacts while the first set relates to direct impacts. To avoid confusion, the second set have been removed and are dealt with under section 10.5.
Page 96	9.2.3 Recommendations		Unless all the mitigation measures prescribed are implemented effectively impacts of this proposed development will result in unacceptably high impacts.	Agreed and noted in the report on page 96: <i>All the mitigation measures provided in the Ecological Impact Assessment are to be implemented in the Construction and Operation Phases of the proposed Dassiesridge WEF.</i>
Page 96	9.2.4 Conclusion and		This Department agrees that associated impacts are not 'deemed insurmountable' and 'can be effectively mitigated' but the developer must accept	Noted. The developer has made every effort to ensure that the final layout respects all ecological buffers.

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	Specialist Opinion		that the proposed buffers are critical and that turbines and infrastructure must be located where the EAP and specialists have decided are the most appropriate areas. All mitigation measures must be implemented effectively.	
Page 100	9.4.3 Recommendations		They are supported and that the request that 'turbines outlined in the impacts section should be moved out of highly sensitive areas' be met and that 'all turbine locations are respective of bat sensitive areas and do not encroach on them'.	Agreed and noted.
Page 100	9.4.4 Conclusion and Specialist Opinion		This is supported. Please refer to above-mentioned comment.	Noted.
Page 111	Impact 2.1	Mitigation Measures	A Spill Response Contingency Plan must be drafted and put in place.	This mitigation measure has been added to Impact 2.1.
Page 112	Impact 2.2	Mitigation Measures	Wash water from cleaning vehicles and implements must be managed: stored on site and disposed off-site at a licenced WWTW; waste manifests to prove legal disposal.	This recommendation has been added to impact 2.2 in the report.
Page 112	Impact 3.1	Mitigation Measures: First Bullet	Structures to be located 50m from wetlands.	This recommendation was already included in the report and reads as follows: <ul style="list-style-type: none"> <i>All structures must be located at least 500m from the delineated edge of wetlands unless authorised by the Department of Water and Sanitation. No non-linear structures will be allowed within 50m of the delineated edge unless authorised by the DWS.</i>
Page 113	Impact 4.1	Mitigation Measures: First Bullet	Appropriate siting of turbines is critical to prevent future problems.	This is noted in the report under impact 4.1, mitigation measures.

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Page 114	Impact 1.1	Mitigation Measures: First Bullet	<ul style="list-style-type: none"> • What are 'un-surfaces'? • Potable water should not be used. • Water should only be obtained from licenced sources. 	<p>This is a typo and was meant to read "un-surfaced". It has been corrected in the report.</p> <p>Only water from a licensed source will be used.</p>
Page 114	Impact 1.1	Mitigation Measures: Fourth Bullet	Activities that create dust must stop in high winds.	Dust control measures such as damping down will be implemented during conditions of high winds.
Page 114	Impact 1.1	Mitigation Measures: Last Bullet	<ul style="list-style-type: none"> • All trucks to be covered with tarpaulins whether loaded or unloaded. • Surface all access roads with a gravel layer before commencing any construction activities. 	<ul style="list-style-type: none"> • Noted, this recommendation will be communicated to the developer for consideration. • This recommendation has been communicated to the developer
Page 115	Impact 2.1	Mitigation Measures: First Bullet	Locate the construction area where bush clearing is not required.	<ul style="list-style-type: none"> • The following recommendation has been added to the report: <i>The construction area must be located in a degraded area where very little to no bush clearing is required to the extent possible. Where permits will be required to remove plants, these will be applied for by the developer prior to the start of construction.</i>
Page 115	Impact 2.1	Mitigation Measures: Last Bullet	If there is a concrete batching site, it should be fenced. Shade cloth should be attached to the fence to stop sand blowing around.	Agreed, this recommendation has been added to the report.
Page 115	Impact 2.2	Mitigation Measures: Bullet	<ul style="list-style-type: none"> • Cooking fires should be prohibited. • A Fire Management Plan must be drafted. • Preferably no smoking. If it is allowed then in a designated area with a fire hydrant. 	<ul style="list-style-type: none"> • Designate a suitable area for cooking fires within the fenced area of the site camp. • Agreed.
Page 116	Impact 2.3	Mitigation Measures: First Bullet	Lids of bins must not allow animals to get in and scavenge.	Agreed. This has been added to the report.
Page 116	Impact 2.3	Mitigation Measures: Second Bullet	There must be sufficient litter bins on site and they should be emptied daily. Waste manifests to be provided by the municipality to prove legal	The recommendation has been added to the report and reads as follows: <i>There must be sufficient litter bins on</i>

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			disposal.	<i>site and they should be emptied regularly and as necessary. Waste manifests to be provided by the municipality to prove legal disposal</i>
Page 116	Impact 1.1	Mitigation Measures: First Bullet	No-go areas to be barricaded with orange snow netting.	The recommendation has been added to the report.
Page 116	Impact 1.1	Mitigation Measures: Second Bullet	Roads are one of the major impacts of WEFs. Thus it is imperative that existing roads be used and they kept as narrow as possible	Existing roads will be used where feasible and their width will be kept as narrow as possible.
Page 118	Impact 1.2	Mitigation Measures: Second Bullet		
Page 116	Impact 1.1	Mitigation Measures: Third Bullet	<ul style="list-style-type: none"> • Why Aloe species in particular. All SSC should be avoided. • No <i>E. horridus</i> should be disturbed. Infrastructure must be relocated to at least 10 m from plants. They must be barricaded during construction. Their locality must not be revealed off-site. 	<ul style="list-style-type: none"> • This has been amended to read: <i>Areas with large populations of SCC must be avoided.</i> • This recommendation has been added to the report.
Page 117	Impact 1.1	Mitigation Measures: First Bullet	<ul style="list-style-type: none"> • A permit is required from this Department to remove species protected in terms of the PNCO and ToPS Regulations and one from DAFF to remove protected trees in terms of the National Forest Act. • The feasibility of moving plants directly from development areas to undeveloped areas (thus not keeping them in a temporary nursery) should be investigated. 	<ul style="list-style-type: none"> • Reference to the permit applications have been added to the report under the mitigation measures. • Agreed, moving the SCC to undeveloped areas is preferable to keeping them in a temporary nursery.
Page 118	Impact 1.2	Mitigation Measures: Last Bullet		
Page 117	Impact 1.1	Mitigation Measures: Second Bullet	Rehabilitation of disturbed areas that will not be affected by construction should be a condition of any authorization. This will make a contribution to off-set the impact the development.	Noted. The developer is committed to rehabilitate all areas affected by construction of facility. Based on our experience, the DEA will not require developers to rehabilitate areas where construction does not occur and/or create any impact
Page 117	Impact 1.2	Cause and Comment		

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Page 117	Impact 1.1	Mitigation Measures: Third Bullet	What is considered a 'bush clump'? No bush clumps, no matter what size, should be impacted.	Bush clumps are considered to be groups of thicket species occurring in grassland areas. Collectively the grassland areas, succulent patches and bush clumps are known as the vegetation type "Coega Bontveld". A ground truthing survey will be done prior to construction to ensure that bush clumps are avoided.
Page 117	Impact 1.1	Mitigation Measures: Second Last Bullet	Barricade bush clumps with snow netting to show construction crews they may not be disturbed.	This recommendation has been added to the report.
Page 118	Impact 1.2	Mitigation Measures: First Bullet	Barricade no-go areas with snow netting to show construction crews they may not be disturbed.	This recommendation has been added to the report.
Page 118	Impact 2.1	Cause and Comment	<ul style="list-style-type: none"> • Please refer to all previous comments on <i>E. horridus</i>. • Gound-truthing turbine sites, hard-stand areas, roads, substations and power line routes should be a condition of any authorization. 	<ul style="list-style-type: none"> • Please refer to comments related to this species above. • As described in the report, the final layout will be ground truthed prior to construction commencing.
Page 119	Impact 2.1	Mitigation Measures: Second Last Bullet		
Page 118	Impact 2.1	Mitigation Measures: First Bullet	That no development should occur in bush clumps should be a condition of any authorisation.	All bushclumps exceeding 8m ² will be avoided and anything smaller will be avoided where possible.
Page 119	Impact 2.1	Mitigation Measures: Second Bullet	Which species cannot be transplanted?	This has been reworded as follows: <i>A search and rescue plan must be developed in order to identify and transplant SCC. Where there are large, viable populations of SCC, these areas should be avoided as far as possible and be left undisturbed.</i>
Page 119	Impact 2.1	Mitigation Measures: Fourth Bullet	The Compliance and Enforcement Section of this Department will investigate the contravention of any legislation it has the mandate to enforce.	Noted.
Page 119	Impact 2.2	Mitigation Measures: Second		

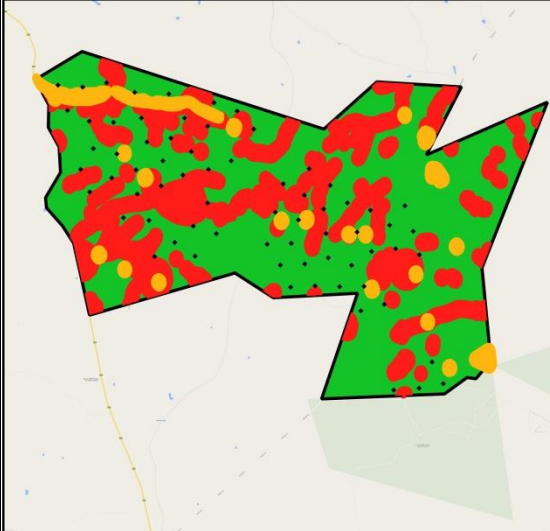
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		Bullet		
Page 119	Impact 2.1	Mitigation Measures: Fifth Bullet	Fires should be prohibited on site.	Agreed. This has been reworded as follows: <i>Fires must be prohibited on site.</i>
Page 119	Impact 2.1	Mitigation Measures: Last Bullet	The ECO will ensure that the conditions prescribed in any Authorization or EMPr will be enforced. The ECO should be permanently on site of a project of this size and complexity.	A full time Environmental Site Officer (ESO) will be employed and the ECO will do regular checks. It is anticipated that the ECO will visit once a week during the civil works phase (site clearing) and then once a month during the turbine installation and electrical works.
Page 119	Impact 2.2	Mitigation Measures: First Bullet	The term 'intact areas' is very vague. What are they in practical terms?	This has been reworded as follows: <i>Clearing or damaging of intact areas of vegetation (i.e. areas that have little to no disturbance) should be avoided.</i>
Page 120	Impact 2.2	Mitigation Measures: First Bullet	A search and rescue operation must be undertaken of all areas where construction will take place.	The following recommendation has been added to impact 2.2: <i>A search and rescue operation must be undertaken of all areas where construction will take place. Since the main SCC in the area are likely to be reptiles it is recommended that a qualified herpetologist focuses on the reptile SCC in the area.</i>
Page 120	Impact 2.2	Mitigation Measures: Second Bullet	There should be no night driving unless there is an emergency.	The following recommendation has been added to the report: <i>Where feasible, the number of vehicles driving on site must be limited after sunset to only those necessary (should driving at night be required) for specified construction activities.</i>
Page	Impact 2.2	Mitigation Measures:	This is a construction site. There will be noise during	This was a typo and has been reworded

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120		Last Bullet	the day.	as follows: <i>Activities that generate noise must only occur during daylight hours to avoid disturbance.</i>
Page 120	Impact 2.3	Mitigation Measures: First Bullet	All areas that will not be developed must be set aside for conservation and thus contribute towards this 'corridor area'. A management plan should be drafted and implemented.	All of the land outside of the land zoned for the WEF is not under the control of the developer. It is thus not possible for the developer to take on the management of these areas as it is up to the private landowner as to what they want to do with the land (e.g. Cattle farming).
Page 120	Impact 2.3	Mitigation Measures: Second Bullet		
Page 121	Impact 3.1	Mitigation Measures: Last Bullet		
Page 121	Issue 3:	Last Paragraph: Fourth Line	What are 'undesirable' species?	Undesirable species refers to alien species.
Page 121	Impact 3.1	Mitigation Measures: Second and Fourth Bullets	No developments should be permitted in sensitive areas.	This has been added to the report.
Page 122	Impact 3.1	Mitigation Measures: First Bullet	These recommendations should be summarised here.	Noted.
Page 122	Impact 3.2	Cause and Comment: First Paragraph: Last Line	No construction activities after 13:00 on Saturdays; not on Sundays or Public Holidays.	There will be no construction activities after 13:00 on Saturdays; nor on Sundays or Public Holidays UNLESS otherwise agreed to by the landowner. It should be noted that in order to minimise the construction time and thus the disturbance to the environment, construction may need to take place during these times. Also, the erection of the wind turbines are only possible during periods of low wind and this may again occur during these times.
Page 122	Impact 3.2	Mitigation Measures: Dust:	<ul style="list-style-type: none"> • Cease construction activities that cause dust in high winds. 	<ul style="list-style-type: none"> • Dust suppression measures such as wetting of the project area during

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		First and Second Bullets	<ul style="list-style-type: none"> • Vehicles to be covered with tarpaulins at all times. • Limit the height of stockpiles to 1.5 m; actively manage them for alien vegetation and erosion. • Water used for dust suppression must not be potable and abstracted from a licenced source. 	<p>dry, windy periods using water from a licensed source will be used to reduce dust during high winds. Construction activities will only cease if these mitigation measures are not effective.</p> <ul style="list-style-type: none"> • The developer does not feel this is a reasonable request due to the size of the turbine components. Only vehicles carrying dusty and light loads will be covered with a tarpaulin. • This bullet point has been added as a mitigation measure to the report. • This bullet point has been added as a mitigation measure to the report.
Page 122	Impact 3.2	Mitigation Measures: Third Bullet	Delete 'Where practical' and 'large'.	This sentence now reads as follows: <i>Do not leave cleared areas exposed for longer than necessary.</i>
Page 123	Impact 3.2	Mitigation Measures: Second Bullet	Vehicles not to exceed 30 km/h on site.	40km/h has been recommended as this is the accepted speed limit on construction sites.
Page 123	Impact 1	Mitigation Measures: First Bullet	<ul style="list-style-type: none"> • Particular attention should be-given to hydraulic hoses. • No servicing of machinery or plant on site; only at a service provider. 	<p>These two bullet points have been updated to now read as follows:</p> <ul style="list-style-type: none"> • <i>Machinery must be properly maintained to keep oil leaks in check. Particular attention must be given to hydraulic hoses;</i> • <i>No servicing of construction machinery on site. This must only be done at a service provider.</i>
Page 123	Impact 1	Mitigation Measures: Second Bullet	All vehicles should be parked over and plant operated at drip trays. Drip trays to be emptied daily,	The mitigation measures have been updated as follows:

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			and more frequently if it rains, into a bunded container. Water to be disposed of at a licenced WWTW and waste manifests obtained from the local municipality to prove legal disposal.	<ul style="list-style-type: none"> • <i>Machinery must be properly maintained to keep oil leaks in check. Particular attention must be given to hydraulic hoses;</i> • <i>No servicing of construction machinery on site. This must only be done at a service provider.</i> • <i>Machinery must be placed in a bunded area or on a drip tray. Drip trays must be emptied daily (and more frequently if it rains) into a bunded container.</i> • <i>Water must be disposed of at a licensed Waste Water Treatment Works and waste manifests obtained from the local municipality to prove they have been disposed of legally.</i>
Page 123	Impact 1	Mitigation Measures: Fourth Bullet	Spill kits to be kept in vehicles to deal with small spills.	Spill kits will be available at every site where work is taking place as well as at the site office.
Page 124	Impact 2	Mitigation Measures: First Bullet	Smoking should preferably not be allowed on site.	Smoking will only be allowed in demarcated areas with easy access to fire fighting equipment.
Page 124	Impact 2	Mitigation Measures: Fourth Bullet	The WEF should be a member of the local Fire Protection Association.	Agreed and added to the report.
Page 125	Impact 3	Mitigation Measures: Last Bullet	Limit the height of stockpiles to 1.5 m; actively manage them for alien vegetation and erosion	This mitigation measure has been added to the report.
Page 126	Impact 4	Mitigation Measures: Last Bullet	Subsoil should be compacted before backfilling with topsoil.	This mitigation measure has been added to the report.
Page 126	Impact 1	Mitigation Measures: Bullet	Hardstand areas and turbine footprints should also avoid sensitive areas.	Noted and agreed.
Page 127	Impact 2	Mitigation Measures: Bullet	This is a vague, non-committal statement. Specific mitigation measures should be determined for	This has been updated as follows:

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			<p>particular vulnerable species / sensitive breeding sites known to occur on-site before construction starts. They should be included in the EMPr.</p> <p><i>Since we are not aware of any breeding sites at this stage, and mitigation measures for such situations are species and situation specific, we cannot specify mitigation in more detail at this stage. If nests of sensitive species are found mitigation is likely to consist of either spatial, temporal or both spatial and temporal limitations to construction during breeding season of that species</i></p> <p>Prior to construction (post positive REIPPPP outcome), the final layout will be groundtruthed by a number of specialists – the findings of this exercise will be incorporated into the Final EMPr document. This is where the site/species-specific mitigation measures will be appropriately specified.</p>
Page 127	Impact 3	Mitigation Measures: First Bullet	<p>Although it may be difficult to mitigate for the displacement of birds, commitment by the developer, contractors and ECO to implement good housekeeping could significantly reduce impacts.</p> <p>The following sentence has been added to this mitigation measure: <i>A commitment by the developer, contractors and ECO to implement good housekeeping rules could assist in reducing these impacts.</i></p>
Page 127	Impact 3	Mitigation Measures: Second Bullet	<p>What is 'pre-construction monitoring'?</p> <p>12 months of pre-construction monitoring has already been completed. This bullet point has been removed.</p>

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Page 128	Impact 1	Cause and comment	Under no circumstances should turbines be constructed in sensitive bat foraging habitat. No larger trees and riparian / dense valley vegetation may be destroyed. They should be buffered. This Department will not accept loss of this habitat as a consequence of the development of this WEFF. Specialists must ensure that turbines are erected outside this habitat.	<p>Turbines have been repositioned to avoid areas determined by the bat specialist to be highly sensitive. Please refer to figure 11-9 which illustrates the new layout that has been designed to</p>  <p>avoid these areas. All turbines have been removed from the sensitive bat areas. This map is reproduced below:</p>
Page 128	Impact 2	Cause and comment	This paragraph should be rewritten as it is confusing	<p>This has been reworded to the following: <i>Sensitive bat roosting habitats include the hollows and crevices associated with large trees and riparian/dense valley vegetation. This habitat may be destroyed during the construction phase of the WEF if turbines and associated infrastructure are constructed in these sensitive habitats.</i></p>

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Page 131	Impact 1	Mitigation Measures	Monitoring should be undertaken by a professional palaeontologist.	<p>The Paleontological specialist has recommended (as per the mitigation measures in the report) that the two small, potentially sensitive areas for fossil remains are inspected by a professional palaeontologist, once bedrock excavations for infrastructure are opened, with recording and sampling of any significant fossil remains.</p> <p>He is of the opinion that monitoring of all deeper (> 1m) excavations for newly exposed fossil material (bones, teeth, shells, petrified wood, etc.) of other areas during the construction phase can be done by an ECO. If there are any significant finds, the ECO will report these to ECPHRA for possible recording and sampling by a professional palaeontologist</p>
Page 131	Impact 1	Mitigation Measures	As the visual impact of turbines cannot be mitigated it is absolutely imperative that all other mitigation measures are effectively implemented. This will be the developer's commitment to make this a sustainable development project.	Agreed. These mitigation measures have been included in the EMP, have been agreed to by the developer and will be a condition of the authorisation.
Page 142	Impact 9	Mitigation Measures: First Bullet	Was a meeting with the aggrieved IA&Ps held? What was the outcome of this meeting?	Both I&APS and/or their legal representation were present at the public meeting for disclosure of the scoping report and the disclosure of the draft EIR. A request for a private meeting was never received from the IAPs and thus no meetings have been held at this stage. However, they have submitted their comments and concerns during both the Scoping phase and now

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				<p>the EIA phase of this process and the social scientist has met with both I&APs to document their concerns.</p> <p>The EAP has responded to their concerns with written responses.</p>
Page 143	Impact 10	Fourth Bullet	This Department should be represented on the EMC and PSC.	Noted. The mitigation measure has been updated to recommend that DEDEAT is represented on the EMC and PSC.
Page 143	Impact 10	Mitigation Measures: Second Bullet		
Page 145	Impact 13	Mitigation Measures: Second Bullet	Waste manifests to be provided by the municipality to prove legal disposal.	<p>These mitigation measures have been updated to include this recommendation as follows:</p> <ul style="list-style-type: none"> • Dispose of the various types of waste generated in the appropriate manner at licensed waste fill sites at regular intervals. Waste manifests must be provided by the municipality to prove that the waste has been legally disposed of. • Provide sufficient chemical / portable toilets that are cleaned regularly. Waste manifests must be provided by the municipality to prove that the waste has been legally disposed of
Page 145	Impact 13	Mitigation Measures: fifth Bullet		
Page 146	Impact 14	Cause and Comment: Second Paragraph	Visitors to report to site office.	<p>This paragraph has been updated to include this recommendation and now reads as follows:</p> <p><i>Unauthorized access to the construction site could also pose safety concerns for humans and the fencing of construction areas should be done where appropriate and if required to minimise</i></p>

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				<i>accidents, trespassing and theft. Visitors must report to the site office on arrival.</i>
Page 146	Impact 14	Mitigation Measures: Fourth Bullet	No fires should be permitted on site.	This mitigation measure has been reworded to be more specific: <ul style="list-style-type: none"> Designate a suitable area for cooking fires within the fenced area of the site camp.
Page 146	Impact 14	Mitigation Measures: Third Last Bullet	Please refer to all previous comments on vehicles.	<ul style="list-style-type: none"> 40km/h has been recommended as this is the accepted speed limit on construction sites.
Page 148	Impact 16	Mitigation Measures: First Bullet	Please explain the Second Sentence.	This has been reworded as follows: <i>Generally construction activities should not take place before 8am and after 5pm and not on Sundays and public holidays unless an agreement is made between landowner and developer. These times are not always realistic, as deadlines and specific construction activities may require longer working days. For example, pouring of concrete for a turbine foundation cannot be stopped at 5pm and then restarted the following morning. Specific permission to continue with construction outside of regular working hours will be obtained from the landowners.</i>
Page 148	Impact 16	Mitigation Measures: Second Bullet	Display this information on a signboard at the junction of the R75 and access road.	This mitigation measure has been updated as follows: <ul style="list-style-type: none"> Make the contact details of the Contractor and procedures to lodge complaints available to the local communities. This

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				information must be displayed in a public area such as on a signboard at the junction of the R75 and access road.
Page 148	Impact 16	Mitigation Measures: Fifth Bullet	Cover trucks with tarpaulins whether loaded or unloaded	The following mitigation measure has been suggested instead of requiring all trucks to be covered with a tarpaulin which may not always be feasible: <i>Vehicles carrying dusty or light materials should be securely covered with a tarpaulin before leaving the site.</i>
Page 148	Impact 16	Mitigation Measures: Sixth Bullet	Please refer to all previous comments on dust mitigation.	This bullet point has been updated as follows: <ul style="list-style-type: none"> <i>All dust-generating activities and dirt roads should be damped down, especially during dry weather.</i>
Page 148	Impact 16	Mitigation Measures: Eight Bullet	This sentence does not make sense.	This has been updated in the report as follows: <ul style="list-style-type: none"> <i>Avoid the use of long-term stockpiles on site wherever possible unless it performs the function of visual or noise screening.</i>
Page 148	Impact 16	Mitigation: Ninth Bullet	Keep stockpiles outside buffer areas for wetlands, water courses and sensitive areas. What are mounds?	<ul style="list-style-type: none"> <i>This should read: Always keep stockpiles away from the site boundary, sensitive receptors, watercourses and surface drains.</i>
Page 148	Impact 16	Mitigation: Third Last Bullet	This sentence does not make sense: 'using wet methods'.	This bullet point has been amended as follows: <ul style="list-style-type: none"> <i>Erect fences or use windbreaks such as hedges and earth-banks of</i>

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				<i>similar height and size to the stockpile to act as wind barriers. Topsoil stockpiles can be covered to prevent soil loss.</i>
Page 148	Impact 16	Mitigation Measures: Second	No servicing of machinery or plant on site; only at a service provider.	This bullet point has been updated as follows: <ul style="list-style-type: none"> <i>Engines and exhaust systems should be regularly serviced according to manufacturer's recommendations and maintained to meet statutory limits/opacity tests. Machinery should be serviced at the service provider and not on site unless there is a designated service area that is bunded with spill kits.</i>
Page 149	Impact 16	Mitigation Measures: First Bullet	Please refer to all previous comments on vehicle maintenance.	Please refer to previous comments that address this question.
Page 150	Impact 1	Mitigation Measures: First Bullet	Pre-development run-off must be at least the same as post-development run-off	This recommendation has been added to the report.
Page 152	Significance Statement		All these mitigation measures must be implemented as prescribed in this paragraph.	Noted and agreed.
Page 153	Impact 2	Mitigation Measures	<ul style="list-style-type: none"> As it is "extremely difficult to mitigate for post-construction" all the mitigation measures on Page 152 must be implemented. Correct final turbine layout is critical. What post-construction mitigation options are feasible? 	<ul style="list-style-type: none"> Noted These could include options such as: "restriction of turbine operation" if strong patterns in collision risk are evident; "turbine shutdown on demand" based on actual collision risk detected by automated systems or human observers; "habitat management" where it can be shown that this could play a role in influencing collision risk, and not have detrimental secondary effects; "deployment of audible deterrents"

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				to deter particular at risk birds from site; and any others identified by the relevant specialist conducting operational phase bird monitoring.
Page 153	Impact 1	Mitigation Measures	<ul style="list-style-type: none"> This Department is very concerned about impacts on bats. Thus all mitigation measures prescribed by the Bat Specialist must be implemented. 	<ul style="list-style-type: none"> Noted Noted
Page 154	Impact 1	Mitigation Measures	It is imperative that all mitigation measures to reduce the impact of the wind farm are effectively implemented as this will indicate a commitment by the developer to environmental best practices despite the fact that turbines are very visible and there is little that can be done to reduce this impact.	Noted
Page 154	Impact 2	Mitigation Measures	<ul style="list-style-type: none"> What does the sentence "It has been shown that uncluttered sites are preferred for wind farms". 	Uncluttered sites refer to areas in which additional development (such as industry) has already impacted on the site in terms of its visual impact. The more clutter there is on a site (other significant landuses) the lower the visual absorption capacity of the site and the higher the visual impact of an additional type of infrastructure.
Page 154	Impact 2	Mitigation Measures: First Bullet	<ul style="list-style-type: none"> Due to the negative impacts WEFs have on the environment, particularly visual, it is imperative that environmental best practices are implemented and they are managed efficiently and effectively. 	Noted.
Page 154	Impact 2	Mitigation Measures: Second Bullet	Any form of advertising should be prohibited: it is a wind farm, is very visual, and thus advertises itself.	Noted and agreed. The bullet point reads as follows: <ul style="list-style-type: none"> <i>Signs near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards must be avoided</i>

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Page 159	Impact 4	Mitigation Measures: First Bullet	This department should be represented on this PSC.	This has been updated as follows: Noted. The sentence has been updated as follows: <ul style="list-style-type: none"> Establish a PSC or similar structure consisting of representatives of the NMBM, CDM and SRVM's and their relevant Directorates for Economic Development as well as DEDEAT
Page 159	Impact 5	Cause and Comment	This is an unsubstantiated statement as it is stated on Page 160 that "the potential impact on commercial land values would be more complex to determine."	This needs to be read in the context of the impact it refers to. The comment on page 160 refers to neighbouring farm portions while this specific comment refers to the land portions that will have turbines on them. This comment is based on an assumption as there is currently little to no literature on the impact that turbines will have on the value of property in South Africa. For this reason the statement says that " <i>in all likelihood</i> " it will add value to the land that is included in the project. It does not assume that it definitely will as there is no evidence to support this.
Page 163	Impact 9	Cause and Comment Second: Bullet	Using an example of a property owner who is involved in the project is biased. What about examples of those not involved.	This paragraph is based on information obtained from interviews with all the I&APs and presents the views of people who will be directly affected by the project. The first bullet gives an example of a neighbour who is concerned that the visual impact will have a negative impact on his hunting operation.
Page 164	Impact 10	Cause and Comment: Third Paragraph: Last Sentence	This Department does not agree with this statement as there is not enough information to substantiate it.	This sentence has been removed.

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Page 164	Impact 10	Mitigation Measures: First Bullet	This is a pro-development statement	This has been reworded as follows: <i>If authorised the facility could be promoted and regarded as an attraction and land mark for the region as it will be impossible to hide</i>
Page 165	Impact 12	Cause and Comment: First Paragraph	Commitment from the developer to best practice is required to ensure that there no negative issues resulting from the operational phase.	Noted and agreed.
Page 165	Impact 12	Cause and Comment: Second Paragraph: Last Sentence	What is implied by this?	This sentence was taken from the SIA as a standalone report. It does not fit into the EIR as the visual impacts have been dealt with in this report. As such, the sentence has been removed.
Page 165	Impact 12	Cause and Comment: Last Paragraph: Second Sentence	This opinion about the impact on the community's sense of place can only be validated once the WEF is operational for some time.	Noted but this could be true for most impacts. One doesn't know the actual severity of an impact until it occurs. In this case the specialist was attempting to predict the impact on "sense of place" based on available information.
Page 169	Impact 1	Cause and Comment: Last Sentence	This Department disagrees that noise impacts are not cumulative. Construction noises will contribute.	It appears that the reader has misunderstood the impact. Since there is very little noise currently, the noise generated from the construction and operation activities won't be adding to existing noise since there is none. Therefore, this is not a cumulative impact but a direct impact.
Page 170	Impact 4	Cause and Comment: First Sentence	Underground cables will not contribute to the visual impact.	Noted. The reference to underground cables has been removed.
Page 170	Impact 4	Cause and Comment	Certain people may not agree and find WEF structures intrusive in a rural landscape despite the presence of power lines.	Noted.
Page 171	Impact 1	Cause and Comment	Thus it is imperative that all mitigation measures	Noted and agreed.

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Page 171	Impact 2	Cause and Comment	must be implemented.	
Page 171	Impact 3	Cumulative Impacts		
Page 171	Impact 3	Cause and Comment: Third Line	"Chapter 4.3 of ?".	This is a typo and has been updated as follows: <i>Various factors are used to determine if a species is classified as a SCC and these include habitat destruction, habitat loss and the harvesting or poaching of species.</i>
Page 172	10.5.3 Avifaunal	Cause and Comment	It is imperative that this information on proposed WEFs is substantiated as the cumulative impacts will increase if more WEFs are constructed.	This information is not readily available publicly, so assumptions need to be made about the number and location of windfarms in the area. To avoid confusion, the last point has been removed.
Page 173	Step 3		Why is it not possible to obtain "relevant, detailed data on baseline conditions on all the other facilities in the general area at this stage"?	As stated in the text, this information is not readily available publicly, so assumptions need to be made about which species will be affected by these other facilities
Page 173	Step 5		This contradicts what is stated in Step 4. -	The sentence has been reworded to remove this contradiction.
Page 173	Step 6		All these recommendations are strongly supported. /	Noted.
Page 175	Cumulative Impacts	Second Paragraph: First Line	Why was the AIA not available?	This was not available in the public domain.
Page 186	Impact 16	Cumulative Impacts	This Department agrees to this in principle. Wind energy generation could thus be restricted to a PPC / Dassiesridge node in this area. Other nodes would be Oyster Bay / Humansdorp and Cookhouse in the Sarah Baartman District.	Noted
Page 189	Figure 11-1		The Turbines are not numbered.	The assessed layout was numbered (at random) in order to cross reference issues picked up by the various specialists. The sensitivity analysis

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				performed was then used to inform the new layout which has resulted in 70 potential turbine sites. The specialists assess the wind energy facility site as a whole rather than assessing the turbine footprints as turbine locations are likely to change due to sensitivities. These sensitivities result in “GO” areas rather than turbine footprints. A cumulative assessment of all specialist reports are used to identify these areas and the turbine numbering then becomes irrelevant to the final area which is solely based on the least environmentally sensitive areas on the site.
Page 195	11.4 Palaeontological Sensitivity	Last Paragraph: First Line	A palaeontologist should visit these areas.	John Almond, the Paleontologist who did the survey has visited these areas and provided the spatial data for these maps.
Page 200	Figure 11-13		This Department accepts this as the Final Layout for the Dassiesridge Wind Energy Facility as it considered a variety of ecological aspects: many of which were commented on in this document.	Noted
Page 202	12.1 Description of the Proposed Activity		This Department supports a maximum of 47 turbines. The numbers of the turbines that are included and excluded should be provided.	Noted. The final number of turbines to be excluded will be based on technical considerations. This will be circulated to the department if and when the project is selected as a preferred bidder during the REIPPPP at which stage the final layout will be determined based on the specialists findings in the EIA. DEA will again be provided opportunity to approve and DEDEAT will be given the opportunity to comment.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
Page 204	12.4 Consideration of Alternatives	Incremental Alternatives –	The recommendation of CES is supported if all the conditions in Chapter 10 are implemented. Specialist input is imperative during micro-siting.	Noted.
Comment on Final pre-construction bird monitoring report and avifaunal impact assessment : DEDEAT				Response:
Page 20	2.5 Relevant Legislation		The Nature and Environmental Conservation Ordinance (No 19 of 1974) is important as most indigenous birds are protected in terms of this legislation.	Noted.
Page 46	5.5 Collision and electrocution on overhead power lines	First Paragraph: Last Sentence	This Department agrees that the shortest possible route is the most optimal one.	Noted.
Page 47	5.5 Collision and electrocution on overhead power lines	First and Second Paragraphs	All these mitigation measures must be implemented.	Noted.
Page 47	5.6 Cumulative impacts of wind energy facilities	Second Bullet	It needs to be confirmed if an EIA is being undertaken for the so-called Bayview WEF.	No public information is available for the Bayview WEF at the time of publication of the Dassiesridge WEF EIR.
Page 47	5.6 Cumulative impacts of wind	Last Bullet	The number and details of WEFs in the Grassridge /Coega Area, must be determined due to potential cumulative impacts.	Noted. Cumulative impacts are included in the EIR.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
	energy facilities			
Page 51	6. Sensitivity Analysis	First Paragraph: First Sentence	This principle must be enforced.	Noted. This has been done.
Page 52	6.2 Local on-site level	Last two Sentences	These recommendations must be implemented.	Noted.
Page 55	6.3 Grid connection power line options	Paragraph: Third Line	Option 1 is the only acceptable route.	Option 1 is the preferred option but there are technical and feasibility studies that need to be done to determine if this route is feasible from a technical perspective. It is thus required by the developer to retain some flexibility at this stage of the development
Page 56	7 Post construction bird monitoring framework	Last Two Sentences	<ul style="list-style-type: none"> • Live bird monitoring and mortality estimates should be conducted for the duration of the project. • The best practice guidelines that were recently made available must be consulted. 	Noted. Post construction bird monitoring program will be implemented as per the best practice guidelines.
Pages 60 to 61	8 Conclusions and recommendations		<ul style="list-style-type: none"> • All the management Recommendations must be implemented. Live bird monitoring and mortality estimates should be conducted for the duration of the project. 	Noted
Comment on Fifth and Final Progress Report of a 12 month Long-term Bat Monitoring Programme Study				
Page 3	Applicable Legislation		The Nature and Environmental Conservation Ordinance (No 19 of 1974) is important as most indigenous bats are protected in terms of this legislation.	Noted, thank you.
Page 10	2.2 Bats and Wind Turbines	Last Paragraph: Fourth Last Line	Curtailement must be implemented if there are any bats being killed by turbines.	Noted. Operational monitoring will further determine and refine exact mitigation measures, applicable to certain turbines

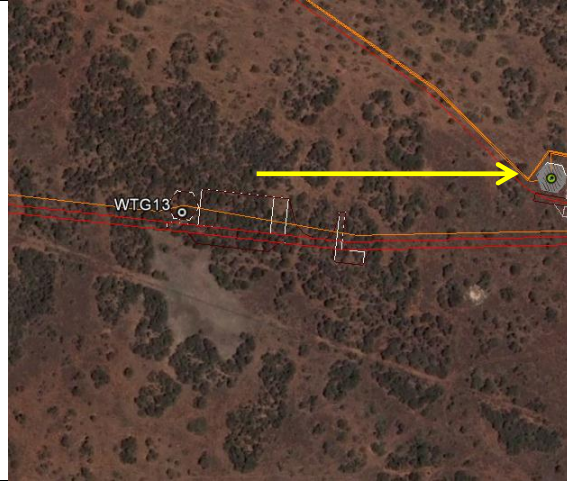
Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				as per best practice guidelines.
Page 14	3.2 Assumptions and Limitations	First paragraph	This why it is so important to initiate a monitoring project for the duration of the project.	Agreed
Page 36	4.6 Sensitivity Map	First Paragraph	This is vital information for micro-siting turbine positions.	Agreed, the sensitivity map is intended to inform turbine placements and micro-siting.
Page 37	4.6 Sensitivity Map	Paragraph below Table 9	<ul style="list-style-type: none"> It is accepted that turbines in High Sensitivity areas and buffers were relocated and are so depicted in the Final Layout. Turbines in Moderate Sensitivity Areas must receive mitigation. 	Noted. Operational monitoring will further determine and refine exact mitigation measures, applicable to certain turbines.
Page 70	5 Proposed Mitigation Measures and Details	First Paragraph	The preferred option is accepted as a basic principle: <u>correct placement of individual turbines.</u>	Noted, it is non-negotiable for a turbine layout to respect the sensitivity map.
Page 71	Increasing cut-in speed	Second Paragraph	This technique must be implemented as a mitigation measure.	Agreed. This can be implemented as an initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective than curtailment, and economically viable, it may replace curtailment.
Page 71	Increasing cut-in speed	Second Paragraph Last		Agreed. This can be implemented as an initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective


Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				than curtailment, and economically viable, it may replace curtailment.
Page 71	Increasing cut-in speed	Last Paragraph		Agreed. This can be implemented as an initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective than curtailment, and economically viable, it may replace curtailment.
Page 72	Increasing cut-in speed	Last Paragraph		Agreed. This can be implemented as an initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective than curtailment, and economically viable, it may replace curtailment.
Page 72	6 Mitigation Schedule		The schedule must be implemented during peak activity periods and times as described in Table 11 at the start of the Operational Phase.	Agreed. This can be implemented as an initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective than curtailment, and economically viable, it may replace curtailment.
Page 74	7 Conclusion	Third Paragraph : Last Line	It is accepted that these turbines were moved.	Noted.
Page 74	7	Fourth Paragraph	These mitigation measures should be implemented.	Agreed. This can be implemented as an


Comment on the Environmental Impact Assessment Report From DEDEAT				Response
	Conclusion			initial mitigation at the start of the operational monitoring, thereafter operational monitoring will further determine and refine exact mitigation measures. If future new technologies/methods of mitigation proves to be similarly or more effective than curtailment, and economically viable, it may replace curtailment.
Page 74	7 Conclusion	Last Paragraph	Monitoring should be implemented for the lifetime of the facility.	As per the bat specialist recommendation which is based on the best practice guideline post construction monitoring will occur for a 2 year period.
Comment on Ecological Impact Assessment: DEDEA				Response
Page vii	Executive Summary		It should have been included in the Draft as an independent summary of the entire EIA process and its findings.	Agreed. This has been added to the final report.
Page 5	2.2 NEMBA	Threatened or protected ecosystems and species: Second Paragraph	There is no Eastern Cape Environmental Conservation Bill. The applicable legislation for Endangered and Protected plants and animals in the Eastern Cape is the Nature and Environmental Conservation Ordinance (No 19 of 1974). The ToPS Regulations were published in terms of NEM: BA and are applicable on a national basis.	This has been amended as follows: <i>(Refer to the Eastern Cape Provincial Nature and Conservation Ordinance (No 19 of 1974) and the list of protected ToPS species which are applicable on a national level).</i>
Page 5	2.2 NEMBA	Alien and Invasive Species	Were the AIS Regulations promulgated in 2014 consulted? There are requirements in this legislation regarding the control of AIS.	They were consulted. A section specific to these regulations has been added to the report.
Page 7	2.4 National Forest Act	Implications for the WEF	A permit is required to destroy / move any species Gazetted in terms of this Act, such as <i>Sideroxylon inerme</i> (Page 28).	This has been added to the report to provide further clarification.
Page 7	2. Relevant Legislation		There is other relevant legislation, such as SPLUMA and NEM: PAA.	Details on NEM:PAA have been added to the report. Details relating to SPLUMA are incorporated in the EIR rather than this ecological report.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
Page 10	AT7: Coega Bontveld		Please refer to all comments on the EIR concerning Coega Bontveld.	Please refer to all responses on Coega Bontveld in the EIR section above.
Page 34	6.2.1 Coega Bontveld			
Page 28	4.3 Species of Conservation Concern	Second Paragraph: Last Line	Please refer to all comments on the EIR concerning <i>E horridus</i> .	Please refer to all responses concerning <i>E. horridus</i> in the EIR above.
Page 32	5. Faunal Species and Habitats	First Paragraph	Scientific names should be used for all animals	Scientific names have been added.
Page 32	5.1.1 Reptiles	Last Sentence	An expert who holds a Competency Certificate to handle Dangerous and Venomous Reptiles should be contracted to remove any animals.	This recommendation has been added to the report and will be applicable if any dangerous and venomous reptiles need to be removed from the site
Page 35	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbines 51 - 54	It is thus accepted that these turbines need not to be moved. The mitigation measures is to rehabilitate the area.	Correct.
Page 36	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbine 31	Cable trenches should be dug by hand in close proximity to bush clumps to prevent damage by machinery.	As previously mentioned by the I&AP bushclumps will be cordoned off with snow netting. As such this recommendation is not deemed necessary nor appropriate.
Page 38	6.2.3	Turbine 18		

Comment on the Environmental Impact Assessment Report From DEDEAT			Response
	Turbines and infrastructure located in sensitive areas.		
Page 42	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbine 23	
Page 43	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbine 36	
Page 39	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbine 13	<p>Even if this turbine is moved it will impact on bush clumps: it should rather be excluded from the development.</p> <p>The turbine has been moved to the east . Please see figure below. The arrow shows how the turbine has been moved to avoid this large bushclump.</p>

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				 <p>The image is an aerial photograph of a wind farm site. It shows a cluster of turbines and infrastructure. A yellow arrow points to a new proposed turbine position. A purple bush clump is visible, and the text indicates that the loss of this clump is avoided by the new placement. The label 'WTG13' is visible on the left side of the image.</p>
Page 40	6.2.3 Turbines and infrastructure located in sensitive areas.		Please explain what this is a photograph of.	<ul style="list-style-type: none"> Figure below shows the new proposed turbine position and turbine infrastructure, where the loss of the bush clump (in purple) is avoided.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				
Page 41	6.2.3 Turbines and infrastructure located in sensitive areas.	Turbine 56 and 57	It may be necessary relocate Turbine 57 during the micro-siting exercise	Please note that the developer has repositioned turbine 56 and 57 to reduce the impact on the bushclumps in this region. Turbine 56 has been moved north (refer to picture below) and turbine 57 has been moved to the far east, away from areas with a high sensitivity.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				
Page 44	6.2.4 Summary of site sensitive turbines	Table 6-1	These recommendations are supported. The Final Layout should be a condition of any authorization.	Noted.
Page 45	6.3 Drainage lines and Wetlands		These recommendations are supported. They should be a condition of any authorization.	Noted.
Page 45	6.3.1 Water courses affected by turbines and Infrastructure			
Page 48	Figures			

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
	6-4 and 6-5			
Page 48	Figure 6-3	Turbine WTG 55	This turbine must be moved outside the 50 m buffer.	This turbine has been removed from this area.
Page 50	Mitigation and management of the grassland / veld area	First Bullet	No-go areas to be barricaded with orange snow netting.	This recommendation has been added to the report.
Page 50	Mitigation and management of the grassland / veld area	Second Bullet	<ul style="list-style-type: none"> Why Aloe species in particular? All SSC should be avoided. No <i>E.horridus</i> should be disturbed. Infrastructure must be relocated to at least 10 m from plants. They must be barricaded during construction. Their locality must not be revealed off-site. 	<ul style="list-style-type: none"> This has been amended to read: <i>Areas with large populations of SCC must be avoided.</i> This recommendation has been added to the report under impact 1 and 3 under section 7.2.
Page 50	Mitigation and management of the grassland / veld area	Third Bullet	<ul style="list-style-type: none"> Permits from this Department and DAFF are a legal prerequisite to destroy / relocate any plants that have a legal status. The feasibility of moving plants directly from development areas to undeveloped areas should be investigated. 	<p>This detail has been added to the mitigation measures as follows:</p> <ul style="list-style-type: none"> <i>All species protected in terms of the PNCO and ToPS regulations will require permits from DEDEAT prior to their removal.</i> <i>Any protected trees that need to be removed will require a permit from DAFF.</i>
Page 52	Mitigation and Management	Fourth Bullet		<p>The mitigation measure has been amended to suggest that plants are moved to undeveloped areas rather than being placed in a nursery.</p>
Page 51	Mitigation	First Bullet	These should be included as a condition of any	Noted

Comment on the Environmental Impact Assessment Report From DEDEAT			Response
	n and management of the grassland / veld area		authorization.
Page 51	Mitigation and management of the grassland / veld area	Third Bullet	
Page 53	Mitigation and Management	First Bullet	
Page 53	Mitigation and Management	Prior to construction of the proposed WEF: three bullets	
Page 51	Mitigation and management of the grassland / veld area	Second Bullet	Bush clumps must be barricaded with orange snow netting. This suggestion has been added to the report as follows: <ul style="list-style-type: none"> • <i>Barricade bush clumps with snow netting to show construction crews they may not be disturbed;</i>

Comment on the Environmental Impact Assessment Report From DEDEAT			Response	
Page 53	Cause and Comment		<ul style="list-style-type: none"> • Please refer to all comments on <i>E. horridus</i> in the EIR • Ground-truthing and a search and rescue plan for SSC should be a condition of any authorisation. • Due to the high conservation status of qualified and experienced botanist should undertake the ground-truthing. 	<ul style="list-style-type: none"> • Please refer to previous comments on <i>E. horridus</i>. • Noted. • Noted. Due to the high conservation value of <i>E. horridus</i>, a qualified botanist will undertake the ground-truthing of the site.
Page 53	During the construction of the proposed WEF	First Bullet	The Compliance and Enforcement Section of this Department will investigate the contravention of any legislation it has the mandate to enforce.	Noted.
Page 54	Mitigation and Management	Second Bullet		
Page 55	Mitigation and Management		<ul style="list-style-type: none"> • All areas that will not be developed must be set aside for conservation and contribute towards this 'corridor area'. A management plan should be drafted and implemented. • This should be included as a condition of any authorization. 	<ul style="list-style-type: none"> • All of the land outside of the land zoned for the WEF is not under the control of the developer. It is thus not possible for the developer to take on the management of these areas as it is up to the private landowner as to what they want to do with the land. • Noted.
Page 56	Issue 3	Third Paragraph	An Alien Invasive Management Plan must be compiled to proactively manage and thus prevent these species colonising these areas.	The impact associated with the invasion of alien species has been dealt with under impact 9. One of the mitigation measures aligns with this suggestion and recommends that an Alien Invasive Management Plan is compiled and implemented.
Page 56	Mitigation and	Last Bullet	Recommendations in Chapter 6 should be included as conditions in any authorization.	Noted.

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
	Management			
Page 57	Mitigation and Management	Dust: First and Second Bullets	Please refer to all comments on dust mitigation in the EIR.	Please refer to previous comments on dust.
Page 57	Mitigation and Management	Dust: Last Bullet	Vehicles not to exceed 30 kph on site.	40km/h has been recommended as this is the accepted speed limit on construction sites.
Page 57	Mitigation and Management	Noise: Second Bullet	No construction activities after 13:00 on Saturdays, Sundays and public holidays.	<p>This impact relates to faunal species which cannot tell the difference between the days of the week. However this is a valid point with regard to people living in the immediate area and has been included in the EIR as follows:</p> <p><i>No construction activities after 13:00 on Saturdays, Sundays and public holidays unless previously agreed to between the developer and land owner.</i> It should be noted that in order to minimise the construction time and thus the disturbance to the environment, construction may need to take place during these times. Also, the erection of the wind turbines are only possible during periods of low wind and this may again occur during these times.</p>
Page 58	Mitigation and Management	First Bullet	It is preferable to use manual and mechanical methods to remove AIS: not herbicides.	Noted.
Page 60	Impact 12: Loss of SCC		Please refer to all comments made on <i>E. horridus</i> .	Please refer to previous responses with regards to <i>E. horridus</i> .

Comment on the Environmental Impact Assessment Report From DEDEAT			Response	
Page 62	8.1 Conclusions		<ul style="list-style-type: none"> This Department agrees that associated impacts are not 'deemed insurmountable' and 'can be effectively mitigated' but the developer must accept that the proposed buffers are critical and that turbines and infrastructure must be located where the EAP and specialists have decided are the most appropriate areas (recommendations in Chapter 6). All mitigation measures must be implemented effectively. Not all of the HIGH rated impacts will be 'easily mitigate". It will take commitment to best environmental practices by developer and contractors to achieve this. 	<ul style="list-style-type: none"> Noted. Noted.
Page 62	8.3 Comparison of impacts		<ul style="list-style-type: none"> This Department agrees with the contents of this Section and all the mitigation measures. They should be included as conditions of any authorisation so they are legally enforceable. 	<ul style="list-style-type: none"> Noted. Noted.
Page 63	8.4 Plant removal / rehabilitation			
Page 64	8.5 Invasion of alien species			
Page 64	8.6 Operational Phase recommendations			
Page 63	8.4 Plant removal / rehabilitation	Last Paragraph	This is of particular relevance to <i>E. horridus</i> . This is why they should not be moved. Infrastructure must be moved to accommodate them.	Noted
Pages	Table A-1		<ul style="list-style-type: none"> There seem to be a number of discrepancies with 	This table has been updated and

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
69 to 71			<p>the information in the Table.</p> <ul style="list-style-type: none"> • Are species, such as Agave and Opuntia Appendix II Cites listed? • The Schedule Numbers of a number of species are not included. • There should be a column to reflect species listed in the AIS Regulations. 	corrected.
Comment on Environmental Management Programme: DEDEAT				Response
Page 3	1.3 Legal requirements	Second Bullet	Only Section 25 on noise-control was not repealed.	The Environment Conservation Act No 73 of 1989 has been updated to specifically state this.
Page 3	1.3 Legal requirements	Fifth Bullet	The AIS and ToPS Regulations are applicable.	Reference to these two regulations has been added to the list in the report under section 1.3.
Page 3	1.3 Legal requirements	Last Bullet	Specifically mention the Nature and Environmental Conservation Ordinance as permits will be required in terms of this legislation to move plants and animals.	Reference to this act has been included in the last bullet point as follows: <ul style="list-style-type: none"> • <i>All relevant provincial legislation, Municipal by-laws and ordinances. Of specific importance is the Provincial Nature Conservation Ordinance Act (1974) as permits will be required prior to the removal of any indigenous species.</i>
Page 10	5.5 Environmental Control Officer	Second Paragraph	The ECO must hold a Competency Certificate to handle Dangerous and Venomous Reptiles if that person is contracted to remove any animals.	This recommendation has been added to the report under section 5.5.
Page 13	Site Establishment	Second Bullet	The Compliance and Enforcement Section of this Department will investigate the contravention of any legislation it has the mandate to enforce.	Noted.
Page 16	Biodiversity	Last Bullet		
Page 30	9.1 Non-	Second Last Bullet		

Comment on the Environmental Impact Assessment Report From DEDEAT			Response	
	compliance			
Page 13	Site Establishment	Third Bullet	<p>No fires should be allowed on the project site for any purposes whatsoever. Gas can be provided for cooking.</p> <p>Gas is just as dangerous as a fire. It is recommended that fires are permitted in designated areas and fire extinguishers are located in these areas. It is recommended that a formal “braai area” is constructed at the site camp. It is hoped that this will discourage the starting of informal cooking fires at other locations on the site.</p>	
Page 15	Emissions control	Last Bullet		
Page 15	Fire prevention	First Bullet		
Page 19	Fire management	Second Last Bullet		
Page 30	9.1 Non-compliance	Second Last Bullet		
Page 13	Site Establishment	Fourth Bullet	<ul style="list-style-type: none"> Lids of bins must be inaccessible to animals. What is implied by "Where a registered waste site is not available close to the construction site, the Contractor shall provide a Method Statement with regard to waste management?" 	<ul style="list-style-type: none"> This recommendation has been added to this bullet point. This means that the contractor will provide details of how and where he will dispose of the waste. This has been further clarified in the report.
Page 13	Site Clearing	Third Bullet	<p>Spoil should rather be used for rehabilitation on-site. It must only be removed if there is absolutely no use for it on site. Another option is to find out if it could be used for rehabilitation of any local borrow pits.</p>	<p>This bullet point has been updated as follows:</p> <ul style="list-style-type: none"> <i>Where feasible, spoil must be used for rehabilitation on-site. Where this is not possible spoil that is removed from the site must be removed to an approved spoil site or municipal licensed landfill site.</i>
Page 13	Topsoil	Last Bullet	<p>Waste manifests must be kept to prove legal disposal a hazardous landfill site.</p>	<p>Noted. These sections have been updated to include this recommendation.</p>
Page 14	Fuel Storage	Last Bullet		
Page 17	Construction rubble			

Comment on the Environmental Impact Assessment Report From DEDEAT			Response	
Page 17	Litter Management	Last Bullet		
Page 17	Hazardous waste	First Bullet		
Page 20	Associated infrastructure	Third, Fourth and Eight Bullets		
Page 25	Pollution	First Bullet		
Page 14	Stockpiles	Second Bullet	Stockpiles should not exceed 1.5 m in height.	This has been amended.
Page 21	Agriculture & Soils	Last Bullet		
Page 14	Concrete mixing	Last Bullet	<ul style="list-style-type: none"> • If it is impractical to dispose of water at a WWTW then a Method Statement should be compiled to make provision for a system that will not allow waste water to contaminate the surrounding area. • Drip trays should be used when off-loading concrete trucks to collect any concrete that spills. 	Noted. Both recommendations have been added to the report.
Page 15	Dust control	First Bullet	<ul style="list-style-type: none"> • Potable water must not be used. • Water only to be abstracted from sources approved by DWS in agreement with landowners. 	This recommendation has been added.
Page 15	Dust control	First Bullet	<ul style="list-style-type: none"> • Install an anemometer on site. Cease activities that create dust when the wind reaches a certain speed. • Display a notice at the junction of the R75 and access road to the WEF with an after-hours number for the public to lodge complaints. 	<ul style="list-style-type: none"> • High wind speeds coupled with dry conditions and limited vegetation cover all contribute towards dusty conditions. Although it is acknowledged that these three conditions are present within most construction sites one cannot stipulate that activities must cease simply because a certain wind

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				<p>speed has been reached. Activities should only cease if very high levels of dust are being created and the mitigation measures such as damping down areas is not working.</p> <ul style="list-style-type: none"> This requirement has been added to the report.
Page 15	Dust control	Second Last and Last Bullets	They are duplicates.	Thank you for picking this up. The duplicate has been removed.
Page 15	Hazardous materials	Last Bullet	<ul style="list-style-type: none"> Waste manifests must be kept to prove legal disposal at a hazardous landfill site. What is "waste water from general activities?" Does it include concrete wastewater? Please refer to comments on Concrete Mixing. 	<ul style="list-style-type: none"> This requirement has been added to this section. Wastewater refers to any water that is contaminated as a result of activities on site such as concrete wastewater and water collected in drip trays and bunded areas.
Page 16	Biodiversity	First Bullet	An expert who holds a Competency Certificate to handle Dangerous and Venomous Reptiles should be contracted to remove any animals.	This requirement has been added to the EMPr.
Page 17	Biodiversity	Second Bullet	This should be strictly enforced in the Design, Construction and Operational Phase of the project.	Noted
Page 17	Litter Management	First Bullet	Lids of bins must be inaccessible to animals.	This has been added to the EMPr.
Page 17	Sanitation	Fourth Bullet	Sanitary bins should be provided for women.	This has been added to the EMPr
Page 17	Remedial actions	First Bullet	Spill kits to be kept in construction vehicles to deal with small spills.	Noted and added to the EMPr as follows: <i>Spill kits must be provided at strategic points within the construction site and all construction vehicles must have a spill kit to deal with small spills.</i>
Page 18	Protective gear	Fourth Bullet	<ul style="list-style-type: none"> Trenches to be barricaded with orange snow netting. ECO to check excavations before work commences to see if any animals have fallen in. 	This point has been amended to read as follows: <i>Potentially hazardous areas such as trenches are to be demarcated and clearly marked with orange snow netting. The ESO must check the trenches before work commences to</i>

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				<i>ensure that no animal species have fallen in.</i>
Page 18	Protective gear	Last Bullet	The speed limit is 30 km/h (refer to Page 26).	This has been amended accordingly.
Page 19	Fire management	Last Bullet	It is preferable that smoking is not permitted on site. If it is designated areas must be equipped with fire extinguishers.	This point has been updated as follows: <i>Smoking may only be conducted in demarcated areas as agreed upon by the ECO and contractor. This area must be equipped with fire extinguishers.</i>
Page 19	Security	Third Bullet	All visitors to report to the Site Office, undergo induction training, sign indemnity and wear PPE.	This has been added as a recommendation to the EMPr.
Page 20	Cultural and Heritage Artefacts	First Bullet	The ECPHRA should also be notified.	This has been added to this bullet point in the EMPr.
Page 20	Cultural and Heritage Artefacts	Last Bullet	Permits must be obtained from SAHRA and / or ECPHRA: whichever is relevant.	This has been added to the bullet point in the EMPr.
Page 20	Removal of equipment	Last Bullet	"regressed?"	This should be "rehabilitated". This has been updated in the EMPr.
Page 21	Rehabilitation	First Bullet	Only seeds of indigenous plants to be used.	This requirement has been added to the EMPr.
Page 21 Page	Ecological	First Bullet	No-go areas to be barricaded with orange snow netting.	This requirement has been added to the EMPr.
Page 21	Ecological	Second Bullet	Why Aloe species in particular. All SSC should be avoided.	Agreed. This has been updated as follows: <ul style="list-style-type: none"> • <i>Areas with SCC, specifically E. horridus, should be avoided;</i>
Page 21	Ecological	Third Bullet	<ul style="list-style-type: none"> • Avoid all bush clumps. • Permits are required to move all plants protected by legislation. 	<ul style="list-style-type: none"> • A bullet point indicating that bushclumps must be avoided has been added to the EMPr;

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
			<ul style="list-style-type: none"> Please refer to all comments in the EIR 	<ul style="list-style-type: none"> This has been added to the EMPr and reads as follows: <i>A search and rescue plan must be implemented and species of conservation concern removed prior to construction and placed in an area that will not be developed. Permits will be required to move all plants protected by legislation;</i> Please refer to all responses in the EIR
Page 21	Ecological	Fourth Bullet	The feasibility of moving plants directly from development areas to undeveloped areas should be investigated.	Agreed. This bullet point has been updated to suggest that plants are moved to undeveloped areas rather than a nursery.
Page 21	Ecological	Fifth Bullet	Which vegetation type ("this vegetation type")?	This refers to Coega Bontveld. The report has been updated so that it now refers to Coega Bontveld rather than "This vegetation type".
Page 21	Ecological	Sixth and Last Bullets	These principles should be included in authorization as conditions.	Noted.
Page 23	Social	Eight Bullet	Trucks to be covered with tarpaulins whether loaded or unloaded	Vehicles carrying dusty or light materials should be securely covered with a tarpaulin before leaving the site.
Page 24	Waste Management	First Bullet	Include aspects of legal disposal in the plan.	This has been added to the EMPr.
Page 24	Agriculture & Soils	Last Bullet	A no fence policy will allow free movement of wild animals on site.	Noted.
Page 24	Avifauna	Last Bullet	Use monopoles.	This has been added as a recommendation, but will depend on the suitability of the pylon type for the purposes of integration into the Eskom grid.
Page 25	Social	Fourth and Fifth Bullets	This Department should be represented on this PSC.	This has been added to the report by updating this bullet point to read as follows:

Comment on the Environmental Impact Assessment Report From DEDEAT				Response
				<i>Establish a PSC or similar structure consist of representatives of DEDEAT and the NMBM, CDM and SRVM's and their relevant Directorates for Economic Development;</i>
Page 27	7.1 General environmental monitoring	Second and Third Bullets	The ECO should be on site daily during the construction Phase.	An Environmental Site Officer (ESO) will be on site daily and will report to the ECO. This has been further clarified in the text of the EMPr.
Page 27	7.2 Avifaunal monitoring		Bat monitoring should also take place over the duration of the project.	As recommended by the Bat specialists and the guidelines on best practice, the post construction monitoring will last for 2 years.
Page 31	9.4 Penalties		Penalties should be imposed if any permit conditions are contravened.	Noted. This has been added to the EMPr.

Table 8-3. Issues Raised by I&APs and Responses (Scoping Phase)

NAME	ISSUE	DATE	RESPONSE
GENERAL			
Kerneels Scholtz	It would be appreciated if you could indicate on a map where the exact location of the affected land (Dassiesridge) is.	16-05-2014	An additional map indicating the project area in relation to Uitenhage, the R75 and Kirkwood has been added to the FSR. Please refer to Figure 2.1. – <i>referring to FSR at the time of comment</i>
Dr Paul Martin <i>Local environmentalist & PE resident</i>	The outer guy wires of the wind measuring masts are a collision hazard for birds (I know of a Denham's Bustard killed in this manner). An essential mitigation is that the outer guy wires need some sort of collision avoiding mechanism on them (e.g. bird flappers - as used by at least one wind farm, coloured plastic sheaths, or something to make them more visible).	4-05-2014	Noted. Your suggestion has been forwarded to the bird specialist who will provide further guidance to the developer if required.

NAME	ISSUE	DATE	RESPONSE
<p>Dr Paul Martin <i>Local environmentalist & PE resident</i></p>	<p>I am concerned at the cumulative impact of wind farms in this area on avifauna, bats & visual impact on protected areas in the region. The area adjoins the Grassridge / Coega area where at least 4 other wind farms are planned & other wind farms are planned in the Kirkwood area. Please include a section in the EIA report + map that indicates all the planned & EIA approved wind farms in the area, proposed number of turbines, etc. If all of the proposed wind farms are eventually built, large areas of this part of the Eastern Cape will be blanketed in turbines.</p>	<p>4-05-2014</p>	<p>Cumulative impacts will be assessed by a number of specialists such as the bird and bat specialists, the ecological specialist, the noise specialist and the visual specialist during the EIA phase and these findings will be included in the draft and final EIR.</p>
<p>Dr Paul Martin <i>Local environmentalist & PE resident</i></p>	<p>With respect to cumulative impacts there needs to be an SEA type process at a fairly fine scale local / sub-regional level that determines</p> <p>a) The least sensitive areas where wind farms could possibly be placed & sensitive areas where they should not be placed.</p> <p>b) A determination needs to be made of the number of wind farms & turbines that are going to be allowed in each region to ensure that e.g. sufficient suitable habitat remains for avifauna species at risk, such as Denham's Bustards, Blue Cranes & Secretary birds & regional bat populations are safeguarded (at the rate that wind farms are being proposed there will be no suitable habitat remaining outside of Protected Areas in this part of the E Cape).</p>	<p>4-05-2014</p>	<p>SEA's are typically done by the governmental departments. The Department of Environmental affairs is currently doing a national scale SEA which is still a work in progress. It would be up to the provincial government to conduct a finer scale one for the Eastern Cape.</p>
<p>Dr Paul Martin <i>Local environmentalist & PE resident</i></p>	<p>The impact of SA wind farms on bats has not been given sufficient attention. There are definite substantial bat mortalities at turbines in this area. The cumulative impact of numerous turbines in the region has the potential to have a severe effect on bat populations due to their slow breeding (1-2 pups per year).</p>	<p>4-05-2014</p>	<p>It is now considered best practice for these types of developments to have a 12 month pre-authorisation program that investigates the issues you have raised. Additionally, in most cases the DEA requires post construction monitoring of birds and bats.</p> <p>As previously mentioned, the bat specialist will assess the cumulative impacts associated with a high number of turbines in the area.</p>

NAME	ISSUE	DATE	RESPONSE
<p>Rob Markham <i>Eden to Addo Corridor Initiative</i></p>	<p>A small but possibly important point, could be the use of the National Protected Areas Expansion Strategy(NPAES) , rather than or in conjunction with the finer scaled Eastern Cape Protected Areas Expansion Strategy (2012) document and maps.</p>	<p>23-05-2014</p>	<p>The National Protected Areas Expansion Strategy was used for the report. The EC PAES was consulted and the distribution of priority areas found to be vastly similar to that of the NPAES. The EC PAES will be discussed further in the EIR document.</p>
<p>John Vosloo Attorneys representing</p> <ul style="list-style-type: none"> • MR DS VAN DER WESTHUIZENKLEIN ROOIPOORT TRUST • REEL MAGIC CC • SUTHERLAND TRANSPORT (PTY) LTD 	<ol style="list-style-type: none"> 1. This objection is raised to the proposed Dassieridge Wind Energy project (Innowind (pty) ltd)). 2. Our client Mr. van der Westhuizen resides on his farm situated approximately halfway between Addo and Kirkwood. It is from this farm that he commutes on a daily basis to and from his business, Sutherland Transport situated in Perseverance (roughly midway between Despatch and Swartkops – Port Elizabeth). 3. He commutes to and from work with his helicopter. He has being doing this for some years. 4. The route he flies, and has historically flown, is naturally the shortest and most economical route from his farm to work (and visa versa) with this route topographically passing directly over the proposed wind farm and under generally airspace known as TMA (Terminal Controlled Area) space with B (depicting the three dimensional range of this specific air space block) – there are others, but this one is known and described as “B” and is saddled with its own specific legal rules and regulations. Each such TMA has its own set of rules and regulations relating to flight therein. 5. The problem which arises as to the proposed wind farm in respect of our client and his continued flying to work and back can best be summarized as follows:- <ol style="list-style-type: none"> 5.1 The proposed wind farm (and also our client’s flight path) falls squarely beneath an airspace known as TMA B (a controlled air space) 	<p>12-06-2014</p>	<p>Thank you for making us aware of your client's concerns which are duly noted. As indicated during the public meeting, a socio-economic impact assessment will be conducted during the Environmental Impact Assessment phase. EOH Coastal and Environmental Services will ensure that the specialist conducting this study meet with Mr van der Westhuizen to ensure that his issue is correctly documented in the specialist report.</p> <p>It is important to note that the proposed project is still in the early stages of development. At this point in the project life, there is still a great level of uncertainty around the likelihood of the project proceeding to construction, as it is, amongst other factors, conditional on the applicant being selected as a preferred bidder by the Department of Energy in their Renewable Energy Independent Power Producer Procurement Program (REIPPPP).</p> <p>Please refer to Appendix A for the response letter sent by CES to John Vosloo Attorneys.</p>

NAME	ISSUE	DATE	RESPONSE
	<p>which is monitored and directed by air traffic control and flight paths therein are subject to certain (legal) obligatory rules and regulations.</p> <p>5.2 One of the rules relating to passing underneath the aforementioned TMA B airspace is that if a pilot flies under 2000 feet above sea level within such airspace no flight plan needs to be filed. This is currently the situation our client finds himself in and has been following for some years. Any flight within TMA B space higher than 2000ft requires a flight plan to be lodged and seeking permission (from air traffic control) to approach and enter TMA B air space with the inherent real risk of the Approaching Authorities (the control tower) turning such a request down or requesting that the pilot stands down and / or holds clear of the area which yourselves will appreciate is not an acceptable situation for a pilot in a helicopter with nowhere to land in such a situation as it cannot hover on a never - never basis till approach authority is given and approved.</p> <p>5.3 It is also relevant to note that any pilot is obliged in law to fly no less than 500ft (151.5) meters above any ground object. In this case our client will in law be obliged to pass no less than 500ft above any wind tower, that is if he is satisfied that occasioned wind turbulence will not effect his ability to safely fly within this margin.</p> <p>5.4 Filing a flight plan is a significant task, hold financial implications and is simply not practical for our client to implement on a daily basis (in reality twice a day – one to work and once from work).</p> <p>5.5 Now if one considers that the area where the wind farm is proposed is at best no less than 500 – 600 meters above sea level, add the</p>		

NAME	ISSUE	DATE	RESPONSE
	<p>height of the tower and blades being a maximum of 200 meters and then add the minimum safety clearance level of 151 meters, client would be obliged and compelled to fly at a <u>minimum</u> height of 3138.3 feet above sea level thus placing him <u>way outside the prescribed minimum height of 2000</u> feet thus compelling a flight plan and the like.</p> <p>6. The other alternative is for our client to fly around the proposed wind farm which although may only add 15 minutes (7.5 minutes per trip in and out) extra flying time per day, one must calculate capital, insurance costs, maintenance and other associated running costs of his helicopter at R4700-00 per hour which equates to R78-33 per minute x 15 minutes to be multiplied no less than 320 times (days) per year, multiplied by many years, it is evident that the costs of flying around the wind farm is simply prohibitive. Why should our client be saddled with these extra costs for no value in return? 15 Minutes per day at R1174.99 per day becomes R360 000-00 per year and so forth. An extra expense of R31 500-00 per month.</p> <p>7. As such our client objects to the proposed wind farm as its erection will either make it no longer viable from a logistical perspective to file twice daily flight plans (together with occasioned aspects set out above) alternatively add massive costs to our client to maintain his daily flight routine if he is compelled to fly around the proposed wind farm.</p> <p>8. These objections not only goes to known flight paths but also goes to social impacts and begs the question as to what mitigation, if any, the developers propose to ensure that our clients current daily routine can be</p>		

NAME	ISSUE	DATE	RESPONSE
	<p>continued without added costs (for no return value) which our client will have to bear.</p> <p>9. Please also take note that our client expressly reserves the right to claim such damages as he may suffer from the owners / developers of the wind farm should its erection be completed and he is obliged to take steps as set out above.</p> <p>10. Please also take note that this objection is raised by Mr DS van der Westhuizen in his personal capacity as well as by Sutherland Transport (Pty) Ltd, the Doreen Sutherland Testamentary Trust, Reel Magic CC, Sutherland Property Trust and the Klein Rooipoort Trust, all of whom receive a direct benefit from the helicopter and its flight route described above.</p>		
<p>Kitchings Inc. on behalf of Gideon van Eck</p>	<p>Please refer to the full letter from the Mr van Ecks lawyer in Appendix E (DSR Correspondence)</p> <p>Key Concerns Key concerns from the letter have been extracted and reproduced below:</p> <ul style="list-style-type: none"> • It is the clients concern that after the erection of the wind turbines as proposed would the clients not be in a position to further successfully operate a hunting farm on the farm as wind turbines would be clearly visible from basically all vantage points on his farm which would take away/detract from the wild life experience for an overseas or local hunters. • Its further client's instructions that, according ti the best of their knowledge that the noise pollution levels as well as the visual pollution as referred to earlier would negatively impact on their hunting and farming operations as referred to herein, and do they await the necessary reports to possibly address these concerns, before commenting further thereon. 	<p>23-06-2014</p>	<p>We thank you for making us aware of your client's concerns which are duly noted. As indicated during the public meeting, a socio-economic impact assessment will be conducted during the Environmental Impact Assessment phase. EOH Coastal and Environmental Services will ensure that the specialist conducting this study meets with Mr van Eck to assess the impact further. In addition, the visual and noise impact assessments will address the impact the proposed wind turbines will have from Mr van Eck's property.</p> <p>It is important to note that the proposed project is still in the early stages of development. At this point in the project life, there is still a great level of uncertainty around the likelihood of the project proceeding to construction, as it is, amongst other factors, conditional on the applicant being selected as a preferred bidder by the Department of Energy in their Renewable Energy Independent Power Producer Procurement Program (REIPPPP).</p>

NAME	ISSUE	DATE	RESPONSE
	<ul style="list-style-type: none"> A further major concern of the clients is the commercial value of their farm. Its clients' submission that all farm owners included in the process will benefit from the project as the value of their farms would increase substantially after the project is completed, while the value of their farm would actually decline in value and would they not be able to sell their farm as a commercial hunting operation, or otherwise, and as such for the reasons as referred to herein. Possible disruptions during the construction phase. 		
Simon Gear <i>(Policy and Advocacy Manager)</i> Samantha Ralston <i>(Birds and Renewable Energy Manager)</i>	BirdLife South Africa would like to thank you for the opportunity to comment on the above report. We are pleased to note that a full year of avifaunal impact assessment / monitoring will be undertaken as part of this EIA process. We urge that this be done in accordance with the criteria outlined in the <i>BirdLife South Africa / Endangered Wildlife Trust best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa.</i>	27-05-2014	Jon Smallie from Wildskies has been appointed to conduct the bird monitoring and is using these guidelines. It should be noted that Jon was one of the co-authors who in fact wrote these guidelines and is therefore intimately familiar with them.
Simon Gear <i>(Policy and Advocacy Manager)</i> Samantha Ralston <i>(Birds and Renewable Energy Manager)</i>	In future we suggest that Scoping Reports for wind energy facilities should include an avifaunal scoping report, as well as the proposed monitoring methodology for avifauna. The avifaunal scoping report should be based on a desktop review of available information, as well as a short site visit. This serves as a preliminary assessment of potential impacts and should be used to guide the scope of the impact assessment.	27-05-2014	Please refer to section 5.6.2 with regard to the desktop review. This section describes and refers to specific IBA's as well as lists of potentially vulnerable birds specific to these areas. This section also includes a map indicating the proximity of the IBA's to the Dassiesridge Wind Energy Facility. This information was obtained from the information available on the BirdLife South Africa website. - <i>referring to FSR at time of comment</i> The preliminary findings based on the monitoring done to date (which has included two site visits) has been included in the report (Section 5.6.2). - <i>referring to FSR at time of comment</i>
Simon Gear <i>(Policy and Advocacy Manager)</i>	By outlining the proposed approach to monitoring, any concerns or omissions in the proposed approach to impact assessment can be highlighted at an early	27-05-2014	Please refer to section 8.2.5 which provides the Terms of Reference for the Avifaunal assessment making specific reference to "BirdLife South Africa /

NAME	ISSUE	DATE	RESPONSE
Samantha Ralston (Birds and Renewable Energy Manager)	stage of the process, rather than after a full year of study when it is much more challenging to address any shortcomings.		Endangered Wildlife Trust best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa”. As per the best practice guidelines, the specific avifaunal impacts can only be determined after a 12 month monitoring period. Please note that bird monitoring only commenced in December 2013. We have however, as previously stated, included the results of the first two bird monitoring reports (Section 5.6.2) - referring to FSR at time of comment
Simon Gear (Policy and Advocacy Manager) Samantha Ralston (Birds and Renewable Energy Manager)	We do urge you to discuss any proposed deviations from the Best Practice Guidelines with us, should any be contemplated.	27-05-2014	BirdLife South Africa’s comments have been forwarded to Mr Jon Smallie. However, as stipulated in his Terms of Reference, we do not anticipate any deviations from the BirdLife South Africa / Endangered Wildlife Trust’s best practice guidelines.
Simon Gear (Policy and Advocacy Manager) Samantha Ralston (Birds and Renewable Energy Manager)	We note that InnoWind’s Grassridge development is adjacent to Dassiesridge. InnoWind is therefore likely to be well aware of any challenges relating to birds and wind energy in the area. We suggest that the preconstruction monitoring of avifauna for Grassridge would be a valuable source of supporting information for the avifaunal impact assessment for Dassiesridge.	27-05-2014	Noted. The bird specialist conducting the Dassiesridge bird monitoring is aware of the Grassridge site next door and has been sent the bird monitoring reports.
Simon Gear (Policy and Advocacy Manager) Samantha Ralston (Birds and Renewable Energy Manager)	BirdLife South Africa would be grateful if InnoWind could confirm if this monitoring has been completed. We are eager to maximise the benefits of avifaunal monitoring and would also be grateful if the monitoring reports were made available to us.	27-05-2014	The monitoring reports for the Grassridge WEF were submitted to Mr Gear from BirdLife on the 28 May 2014.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	This department is concerned about the proposed large number (61) of turbines planned for this rural area.	23-06-2014	Please refer to page I and page 1 in the FSR. Although the EIA will assess 61 turbine sites, the final layout will be fine-tuned and reduced to between 42 and 47 turbines in total since the Department of Energy’s cap for renewable energy projects is 140MW. - referring to FSR at time of comment
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Larger capacity turbines should be used to reduce the number of towers required.	23-06-2014	The turbine capacities and number of towers is determined through a thorough assessment of the wind resources in the area. The developer will select the most suitable model to optimise power output while

NAME	ISSUE	DATE	RESPONSE
			having the least environmental impact.
<p>Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District</p>	<p>Why is a double 132kV line required?</p>	<p>23-06-2014</p>	<p>The report mentions that there are currently three substation options for this WEF. Two of these use a 400kV line and the third option uses a double 132kV line. These are currently only options and the most environmentally responsible option will be the preferred choice.</p> <p>If the 132kV option is selected there will be two lines since a “loop-in loop-out” configuration is required. These will be two (probably short) parallel lines that could possibly be strung on a single steel lattice structure or pylon. The twin conductor configuration is inherent to the “loop-in loop-out” connection solution.</p>
<p>Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District</p>	<ul style="list-style-type: none"> • The names of various landowners should be indicated on the map. • The R75 should be labelled • Existing and proposed powerlines should be indicated 	<p>23-06-2014</p>	<ul style="list-style-type: none"> • Reference to point 1: We feel that this information will clutter the maps. We have therefore included the property portion numbers on map Figure 2-1 which are cross referenced with Table 1-1 - <i>referring to FSR at time of comment</i> • Reference to point 2: An additional Figure (2-1) has been included in the FSR to illustrate more clearly where the project is in respect to Uitenhage, Kirkwood and the R75. This map includes the names of secondary roads as well. - <i>referring to FSR at time of comment</i> • Reference to point 3: These are currently not available at this stage but will be included in the EIR. - <i>referring to FSR at time of comment</i>
<p>Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District</p>	<p>Drainage lines and water courses should be avoided and any development should not be closer than 32m. If there will be any infringement on these areas then a Water Use Licence Application should be submitted to the Department of Water Affairs <u>as part of the EIA process.</u></p>	<p>23-06-2014</p>	<p>It is our experience that the Department of Water Affairs will only entertain water use licences for renewable energy facilities once they have successfully bid in the REIPPPP, i.e. once they are awarded preferred bidder status. At this stage DWA will be invited to provide preliminary comments on what information may be required when/if the water use licenses are applied for.</p> <p>It is important to note that existing crossings will be used where feasible and practical and that wetlands will</p>

NAME	ISSUE	DATE	RESPONSE
			be avoided.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	<i>Page 4: 1.2 Environmental Impact Assessment, Second Last paragraph:</i> Will the proximity of the project trigger a Listed Activity due to its proximity to any protected area?	23-06-2014	Although none of the turbines are within 10 kilometers of the nearest National Park (Addo) (distance calculated from the eastern boundary of the project area), the 400 kV power line is, and therefore activity 16 of GNR 546 is triggered. Additionally, the project area is approximately 7.5km from the Springs Local Authority Nature Reserve.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	<i>Page 7: 2. Environmental Impact Assessment, Last Paragraph:</i> The National Water Act is of particular relevance: refer to comment on page 3.	23-06-2014	Noted.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	<i>Page 7: 1.3.Motivation for activity, Electricity supply: First paragraph:</i> This is a very unconvincing argument to support the project.	23-06-2014	This section has been updated to include a more detailed discussion of the main motivating factors for the project based on international and national laws and guidelines. It also discusses the benefits to the environment (reduction in greenhouse gases which contribute towards climate change) as well as the benefits to the South African economy through a stable supply of electricity.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	<i>Page 7: Motivation for Activity and Page 29: A different location:</i> The environment did not even come into consideration when the site was selected!	23-06-2014	The initial selection of the site was based on the transformed nature of the project site (i.e. grazing), its proximity to the grid, amenable landowners, good wind resources and accessibility. It is now up to the EIA process to determine the environmental suitability of the site.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	These towers are very high and thus have a major visual impact. Consideration should be given to reducing their height.	23-06-2014	The model and height of the turbines will be selected based on data gathered from the wind monitoring programme in order to optimise wind energy production. Significantly shorter turbines may render the project non-feasible.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	<i>Geotechnical studies and foundation works:</i> Will the soil/spoil be used for rehabilitation or be disposed of?	23-06-2014	The topsoil will be used for rehabilitation purposes. The deeper soils will be taken off site and disposed of or used for backfill wherever possible.
Dayalan Govender Regional Manager:	<i>Page 21: (g) Undertake site remediation.</i>	23-06-2014	This has been removed.

NAME	ISSUE	DATE	RESPONSE
<i>Environmental Affairs: Cacadu District</i>	Delete “where practical and reasonable”		
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	<i>Electrical Connections:</i> Why would double 400 and 132kV overhead lines be required? Diagrams/maps of the various routes should be provided.	23-06-2014	If the 400kV options is chosen, the substation will be built close to or underneath the 400kV line. Bring overhead cables (132kV) to the 400kV sub. Double lines are for the loop in loop out option. A “loop-in loop-out” configuration is required. These will be two parallel lines that could possibly be strung on a single steel lattice structure or pylon. The twin conductor configuration is inherent to the “loop-in loop-out” connection solution.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Wind Measurement: A full year’s wind measurements (four seasons) should be recorded and interpreted before the EIR can be compiled.	23-06-2014	The proponent and EAP are aware of this requirement. A 34 m mast was erected at the site in November 2013 and a 60m mast was erected in June 2014.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Table 3-1: Define “large”. Is 7300 ha not considered as large?	23-06-2014	The 7300 ha refers to the entire project area. However, the actual footprint of the wind turbines, powerlines and access roads is estimated to only be 68 ha (please see calculations on page 1 – referring to FSR). Compared to other alternatives, such as solar voltaic facilities, this is not considered to be large.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Table 3-1: Provide data to substantiate the statement that there are “insufficient levels of solar irradiation to be competitive”	23-06-2014	Studies show that solar irradiation levels for South Africa are optimal in areas that experience a high number of clear days. In South Africa, areas near the coast are less optimal than areas further inland such as Kimberly which have higher irradiation levels. The project area is situated in an area that is not as optimal and therefore not as competitive as areas that experience higher levels of solar irradiation. The South African Solar Atlas has assessed suitable solar areas throughout the country, this section of land does not form part of this.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	3.1.2: <i>A different location:</i> It is of concern that the impact on the environment is not considered “the critical factor for the feasibility of the project”.	23-06-2014	As previously mentioned, the initial selection of the site was based on its proximity to the grid, amenable landowners, good wind resources and accessibility. The developers are primarily driven by economic factors. The EIA process which is underway will determine the environmental suitability of the site.

NAME	ISSUE	DATE	RESPONSE
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	How far is the site from Port Elizabeth Airport?	23-06-2014	The southernmost edge of the project boundary is approximately 40km from the Port Elizabeth airport.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	What sections of the ECA are still applicable as most of this Act was replaced by acts, such as NEMA?	23-06-2014	<ul style="list-style-type: none"> • “The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations,...” is still relevant. • “The Environmental Conservation Act 73 of 1989 provides for effective protection, control and utilisation of the environment”. This bullet point has been removed as NEMA has replaced this.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	4.2.12: Mention that Schedules 1 to 4 list Endangered and Protected Plants.	23-06-2014	This has been added and reads as follows: “Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974), which lists species of special concern which require permits for removal. Schedules 1 to 4 list protected and endangered species.”
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Have there been any bid windows since August 2013? When is the next one?	23-06-2014	No not since August 2013. The next one will be in August 2014.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	4.3.2 Water: Please refer to comments on Page 3. This Department is of the opinion that the water courses are so sensitive that a General Authorisation will not give them adequate protection and that the impacts on crossings will not be “collectively low”.	23-06-2014	It is our experience that the Department of Water Affairs will only entertain water use licences for renewable energy facilities once they have successfully bid in the REIPPPP, i.e. once they are awarded preferred bidder status. At this stage DWA will be invited to provide preliminary comments on what information may be required when/if the water use licenses are applied for. It is important to note that existing crossings will be used where feasible and practical and that wetlands will be avoided.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Agriculture: DAFF’s policy department on wind farms must be used as a guideline during the EIA process.	23-06-2014	Noted. The EAP and proponent are aware of this requirement.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Please check with DMR whether there are any quarries on the site. Will any applications to open quarries to provide material to the wind farm need to be submitted?	23-06-2014	This will be completed as part of the correspondence with DMR during the EIA process.

NAME	ISSUE	DATE	RESPONSE
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Description of the Affected Environment: The description should be relevant to this specific site and not a general regional description. The relevance of the various environmental parameters should be discussed.	23-06-2014	The descriptions of the environment provide a regional description to contextualise the area and then goes on to provide a detailed description that is specific to the project site. We feel that this has been adequately covered.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Climate: The climatic data of the Baviaanskloof Nature Reserve is not considered relevant to the project site as the topography has a major influence in this mountainous area. Data should be sourced from the Weather Bureau for the project site.	23-06-2014	This has been updated using data from the Uitenhage weather station which is the closest weather station to the project area.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Buckle, 1989 is not included in the References on Page 85.	23-06-2014	Since the section on climate has been removed, this reference is no longer valid and is therefore not required.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Coega Bontveld: This Department supports this opinion. The location of any wind turbines in Coega Bontveld is considered a Fatal Flaw.	23-06-2014	This vegetation type has been identified based on a desktop analysis using the national vegetation map (Mucina and Rutherford) and STEP. Both these maps have been compiled at a broad level which is why an ecologist will conduct a field survey of the area to determine the status of the vegetation (including the Coega Bontveld) for the project area.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Figure 5-1 (Mucina and Rutherford) and 5-2 (STEP): The proposed locality of the Wind turbines should be indicated on these maps.	23-06-2014	These maps have been updated accordingly.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Lubke <i>et al.</i> , 1998 is not included in the Reference on Page 85.	23-06-2014	This has been added to the reference list.
Dayalan Govender Regional Manager: Environmental Affairs: Cacadu District	Table 5-2 and Table 5-4: Mammals of conservation concern. A column listing the PNCO species and their status (Endangered/Protected) should be included. The status of the NEMBA (TOPs) species should be indicated. This information is required if any permits will have to be issued.	23-06-2014	Table 5-2: The PNCO status of the plant species has been added. - referring to FSR at time of comment Table 5-4: Please note that there is already a column indicating the status of the NEMBA (TOPs) species for mammals. A column indicating the PNCO status has been added and reference made in text to these species requiring permits. - referring to FSR at time of comment
Dayalan Govender Regional Manager:	Animal species. The PNCO and NEMBA status of the various taxa of animals should be provided. This	23-06-2014	As mentioned above, the PNCO status for the animals and plants has been added.

NAME	ISSUE	DATE	RESPONSE
<i>Environmental Affairs: Cacadu District</i>	information is required if any permits will have to be issued.		
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Stuart and Stuart, 2007 is not included in the References on Page 85.	23-06-2014	This has been added to the reference list.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	What is the legal status of these tools? Are they enforceable by law or are they guidelines with no legal status?	23-06-2014	Some of these conservation tools are enforceable by law (such as the National Environmental Management: Protected Areas Act (Act No. 57 of 2003)) while others are guidelines (such as the Sunday Rivers Valley Biodiversity Sector Plan). The status of the tools is included in table 5-5. - referring to FSR at time of comment
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	How far is the study area from Addo National Park?	23-06-2014	Addo National Park is 13 km from the eastern most boundary of the project area.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	PAES, National Freshwater Ecosystem Priority Areas, Nelson Mandela MOSS, SRVM Biodiversity Sector Plan: Please provide a reference to describe each tool.	23-06-2014	In text references have been added to the document and the full reference added to the reference list.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	National List of Ecosystems. Was the 2011 list consulted? The list is not “irrelevant”. None of the Listed Ecosystems occur in the study area.	23-06-2014	The 2011 list was consulted and the threatened ecosystems included on Figure 5-5. There are no threatened ecosystems in the project area which is why the table indicates that these are not relevant to the project area. The word irrelevant has been replaced with not relevant. - referring to FSR at time of comment
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	This Department supports the avifaunal specialist study, inclusive of long term monitoring.	23-06-2014	Noted.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Protected Areas: Is the distance calculated from the nearest turbine or the eastern boundary of the project area?	23-06-2014	The distance is calculated from the eastern boundary of the project area.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Existing and proposed power lines should be indicated.	23-06-2014	The connection options are still being assessed and as such the powerline routes are not available yet. These will however be included in the EIR.

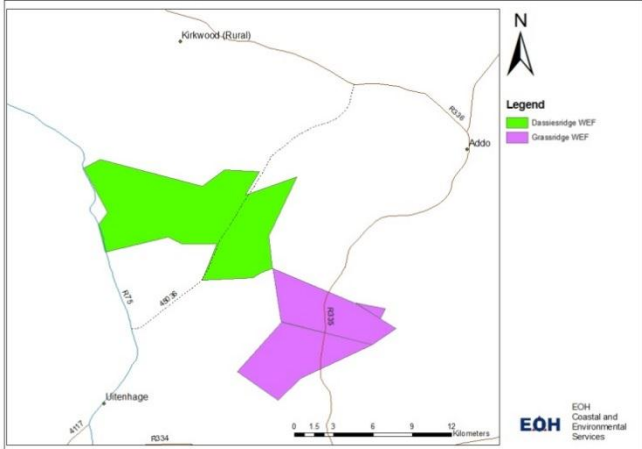
NAME	ISSUE	DATE	RESPONSE
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Indicate the dams on Figure 5-5.	23-06-2014	This have been added to figure 5-5. There are only 3 NFEPA dams/wetlands in the project area. - <i>referring to FSR at time of comment</i>
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	The NM MOSS <ul style="list-style-type: none"> • What is the implication for the Wind Energy Project that a part of the project area is located within a vulnerable ecosystem and four turbines are located within a Critical Biodiversity Area? • How are Figures 5-6 and 5-7 related to each other? 	23-06-2014	<ul style="list-style-type: none"> • Vulnerable Area: Vulnerable areas outside of CBAs must be managed for sustainable development. This means that some loss of natural habitat is allowed but this needs to be within the limits of cumulative impacts of the transformation threshold of the Ecosystem Status. Natural vegetation close to CBAs may provide important ecological processes and it is therefore encouraged that these areas are given to biodiversity friendly forms of management and where appropriate restored. Degraded or disturbed areas must be rehabilitated as part of development proposal or existing developments if these areas could connect natural patches of vegetation to adjacent patches e.g. drainage lines. • Critical Biodiversity Areas: the land-use guidelines within the NMBM's Bioregional Plan (2010) indicates the no further loss of the natural habitat can be allowed within these areas and that no infrastructure and/or developments should be allowed as it is not compatible with conservation efforts. Even if degraded, rehabilitation or restoration should be the first option to recreate and maintain natural ecological processes. <p>Both these descriptions have been added to the report. Refer to section 5.7.4. - <i>referring to FSR at time of comment</i></p> <ul style="list-style-type: none"> • Figure 5-6 shows the ecosystem status for the project area and figure 5-7 indicates where the CBAs are.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu</i>	SRVM Biodiversity Sector Plan: The references cited in the first two paragraphs are not included in the References on Page 85.	23-06-2014	These have been added to the reference list.

NAME	ISSUE	DATE	RESPONSE
<i>District</i>			
Dayalan Govender <i>Regional Manager:</i> <i>Environmental Affairs: Cacadu District</i>	The NM MOSS and SRV Biodiversity Sector Plan: All this information needs to be amalgamated in a tabular/spatial format to assess where/if Wind Turbines can be located in the project area.	23-06-2014	A summary table indicating the number of turbines in each ecosystem type and the associated implications has been added to the report. Please refer to Table 5-6.
Dayalan Govender <i>Regional Manager:</i> <i>Environmental Affairs: Cacadu District</i>	Table 5-8 income groups in the SRVLM: Is this monthly or annual income?	23-06-2014	This is annual income.
Dayalan Govender <i>Regional Manager:</i> <i>Environmental Affairs: Cacadu District</i>	6.1.2 Written Notices: This is not a very comprehensive list. Notices should have been sent to a broader range of I&APs. For example, also send letters to: Provincial Department of Development and Land Reform, Department of Water Works and Transport, Department of Mineral Resources, INDALO, organizations representing the hunting industry such as WRSA, ECGMA, SECSICOM, ECHRA, CREW, Botanical Society, EWT.	23-06-2014	All the relevant stakeholders have been notified as required by the National department.
Dayalan Govender <i>Regional Manager:</i> <i>Environmental Affairs: Cacadu District</i>	Advertisements: What does UD stand for? It is not in the List of Abbreviations on Page vii. Where is it distributed? It would have been appropriate to advertise in a local newspaper in Port Elizabeth, such as the Port Elizabeth Express.	23-06-2014	<p>The name of the Newspaper is “UD News”. UD stands for Uitenhage Despatch. This has been added to the list of abbreviations.</p> <p>This newspaper is delivered free of charge to households and businesses and serves the communities of Addo, Despatch, Kirkwood and Uitenhage. UD News/Nuus and is a bilingual (English/Afrikaans) newspaper.</p> <p>Since the project occurs between Uitenhage and Kirkwood this newspaper was a more appropriate place to advertise than the Port Elizabeth Express.</p> <p>It should be noted that advertisements were also placed in the EP Herald, a provincial newspaper that would have covered Port Elizabeth.</p>
Dayalan Govender <i>Regional Manager:</i> <i>Environmental Affairs: Cacadu District</i>	Impacts: Planning and Design Phase: Will there be any geomorphological investigations? If these are not strictly managed they can have unacceptable negative impacts.	23-06-2014	There will be a geotechnical investigation which will only take place post EIA phase and possibly only post preferred bidder approval.

NAME	ISSUE	DATE	RESPONSE
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Impacts from Construction Stage: How will spoil be disposed of as 500m ³ of substrate for each turbine is a large quantity?	23-06-2014	As stated previously, topsoil will be used for rehabilitation purposes. The rest of the spoil will be disposed of off-site or used to back fill.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	A Traffic Impact Assessment is essential. Up to 600 heavy vehicle trips are required to transport wind turbines to a wind turbine project. The R75 is not a national road standard.	23-06-2014	A traffic impact assessment will only be done post authorisation and possibly only post preferred bidder approval.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Impacts on vegetation: there will (not may) be impacts on the natural vegetation.	23-06-2014	This has been changed in the report accordingly.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	There will be a major, unacceptable visual impacts unless the turbines are reduced in numbers and height and strategically located.	23-06-2014	It is anticipated that the number of turbines will be reduced from 60 to between 42 and 47 in total. A visual impact assessment will be done to assess the visual impact of the WEF. Where feasible and practical, turbines will be moved to reduce impacts.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Noise: Turbines should be located far enough away from occupied buildings not to cause a disturbance.	23-06-2014	Turbines are required to be located at least 500m from any occupied residence. This will be adhered to during the design and planning phase. The suitability of the 500m buffer will also be further tested by the Noise Specialist, who will model the predicted noise from each turbine and determine if/where noise will be higher than the SANS threshold.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Faunal Impacts (birds and bats): <ul style="list-style-type: none"> Has a full year (all four seasons) of monitoring been undertaken? Refer to comment on page 24. The project should be designed with a cut-in speed of 6 m/s to try and reduce the impact on birds and bats. 	23-06-2014	<ul style="list-style-type: none"> The bird monitoring was started in December 2013 and the bat monitoring was started in February 2014. A full year of monitoring will have been completed by the time the EIR is submitted. This forms part of curtailment and would be addressed by the bird and bat specialists.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Impacts on Aviation: <ul style="list-style-type: none"> Mention that it is a legal civil aviation requirement to mount warning lights on top of the wind turbines. These will cause a visual impact in this rural area. Clearance from Civil Aviation is required to develop wind farms. 	23-06-2014	<ul style="list-style-type: none"> This note has been added to the potential visual impacts under section 7.1.3 Noted. The proponent has already been in contact with the Civil Aviation authority with regard to the Dassiesridge WEF. This correspondence is ongoing.
Dayalan Govender <i>Regional Manager:</i>	Issue 5: Traffic and Transport: The project area is adjacent to the R75 and not the N2	23-06-2014	The report clearly states that the project is adjacent the R75.

NAME	ISSUE	DATE	RESPONSE
<i>Environmental Affairs: Cacadu District</i>			
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Specialist Studies: <ul style="list-style-type: none"> • Include a Hydrological Assessment as a WULA should be made (refer to previous comments) – provision for Erosion and Storm Water Rehabilitation Plans, Traffic Impact Assessment. • The 1: 100 year flood line should be determined. 	23-06-2014	The erosion and storm water assessment will only happen post authorisation. For the water use license, the EAP will be guided by the Department of Water affairs.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Ecological Impact Assessment: The following aspects should be include: Providing adequate information on Species of Special Concern from a legal perspective as this information may be required for permitting purposes; the ECBCP buffers are a legal requirement; certain areas may have to be excluded from development once various planning tools have been interrogated (particularly the NM MOSS and the SRVM Biodiversity Sector Plan); No-go areas; provision for Rehabilitation; Fire Management and Alien Vegetation Plans, no abstraction of water from natural water bodies.	23-06-2014	Noted. These comments have been forwarded to the ecological specialist for inclusion in the ecological report.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Consideration of the impacts on tourism, hunting and game farming industries are essential.	23-06-2014	This will be covered in the Social Impact Assessment.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Page 84, 8.5: Consideration by Authority and Appeals: Delete :for authorisation” from the sentence.	23-06-2014	This has been removed.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Page 84, 8.5: Consideration by Authority and Appeals: The proponent is legally bound to adhere to any conditions stipulated.	23-06-2014	Noted.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	References: Branch, W.R.. Check the date (1998)?	23-06-2014	This has been amended to 1988 in the reference list.
Dayalan Govender <i>Regional Manager:</i>	Appendix B: DEA Acknowledgement of Receipt: All requirements of this letter must be met.	23-06-2014	Noted.

NAME	ISSUE	DATE	RESPONSE
<i>Environmental Affairs: Cacadu District</i>			
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Appendix C: Arthur Rudman Provide names of properties. Remove zeros in portion number column.	23-06-2014	Amended as required.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Page 162: DEDEAT is a Provincial Authority.	23-06-2014	Noted and amended.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	NMBM It is a Metropolitan Area. No I and A Ps are given	23-06-2014	This list has been updated and includes details of the Nelson Mandela Bay Municipality. Please refer to Appendix J. - <i>referring to FSR at time of comment</i>
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	Water Bay LM This is incorrect.	23-06-2014	This has been removed.
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	No I and APs for the Sundays River Valley Local Municipality are given.	23-06-2014	The list has been updated and includes the details of the Sundays River Valley Local Municipality. Please refer to Appendix J. - <i>referring to FSR at time of comment</i>
Dayalan Govender <i>Regional Manager: Environmental Affairs: Cacadu District</i>	What is Debbie's surname?	23-06-2014	Debbie has asked to be removed from the I&AP list.
John Vosloo Attorneys representing <ul style="list-style-type: none"> • Mr DS VAN DER WESTHUIZEN • KLEIN ROOIPOORT TRUST • REEL MAGIC CC • SUTHERLAND TRANSPORT (PTY) LTD 	Your letter dated 17 June 2014 headed EOH Coastal & Environmental Services signed by you <i>inter alia</i> states that ".....there is still a great level of uncertainty around the likelihood of the project proceeding to construction.....". Also at the public participation meeting I expressly and in clear language asked the question as to whether construction had started and was very clearly told that construction had NOT started as the project in principle was still in early stages.	25-06-2014	As discussed in the public meeting, construction has not yet begun for the Dassiesridge Wind Energy Facility. This project is still in the very early stages of the environmental impact assessment phase (scoping phase) and as such has not been granted authorisation from the authorities to proceed. It would be illegal for construction to start without the required authorisations.
John Vosloo Attorneys representing <ul style="list-style-type: none"> • Mr DS VAN DER 	The reason the above question was asked, was that our client had advised us that construction had started which is in direct conflict of what I was told at the	25-06-2014	The photographs you have provided us with are of the Grassridge Wind Energy Facility which has already been through the entire EIA process and was given

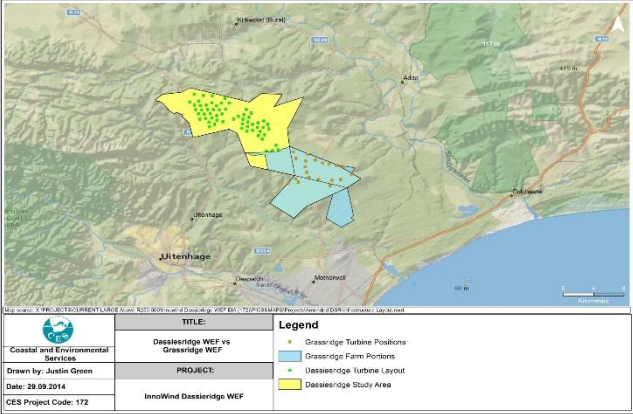
NAME	ISSUE	DATE	RESPONSE
<p>WESTHUIZEN</p> <ul style="list-style-type: none"> • KLEIN ROOIPOORT TRUST • REEL MAGIC CC • SUTHERLAND TRANSPORT (PTY) LTD <p>John Vosloo Attorneys representing</p> <ul style="list-style-type: none"> • Mr DS VAN DER WESTHUIZEN • KLEIN ROOIPOORT TRUST • REEL MAGIC CC • SUTHERLAND TRANSPORT (PTY) LTD 	<p>public participation meeting and your letter referred to above. To this end we flew over the site and took the attached photographs which clearly shows that construction had not only started but had started in a most significant manner. For all practical purposes, if regard is had to what is happening on site, the project is proceeding and is at an advanced stage.</p> <p>Your comments and clarification as to the above and the attached photos are required without delay.</p>		<p>authorisation by the authorities to proceed on the 28 August 2011. This is an entirely different project and is not part of the Dassiesridge Wind Energy Facility. Please refer to Figure 1 below, which indicates where this facility is in relation to the Dassiesridge Wind Energy Facility.</p>  <p>Figure 1: Map illustrating the position of the proposed Dassiesridge WEF (Green) in relation to the Grassridge WEF (Purple).</p>
<p>John Vosloo Attorneys representing</p> <ul style="list-style-type: none"> • Mr DS VAN DER WESTHUIZEN • KLEIN ROOIPOORT TRUST • REEL MAGIC CC • SUTHERLAND TRANSPORT (PTY) LTD 	<p>Also take note that if the photographs depict the situation as it clearly stands, the information yourselves have given out at the public participation meeting and by way of the various written documents handed out is wholly incorrect and misleading to the extreme, so much so that our clients are compelled, as they hereby do, to reserve all their rights in every respect including the right to set the entire process aside and require that it start again and / or interdicting the furtherance of the project / construction.</p>	<p>25-06-2014</p>	<p>As discussed above, the facility you refer to is not the Dassiesridge Wind Energy Facility but is an entirely different facility. In no way has CES or InnoWind provided any misleading information as suggested by your comment above.</p>
<p>Kelly Goliath <i>Environmental Management Nelson Mandela Bay Municipality</i></p>	<p>We have no substantial comments at this stage of the assessment.</p> <p>Four of the turbines occur within a CBA area (as indicated within the report), so we welcome ecological</p>	<p>25-06-2014</p>	<p>Noted. An ecological specialist will conduct an assessment during the EIA phase and this report will be made available to you for comment.</p> <p>The assessment will indicate the state of the vegetation</p>

NAME	ISSUE	DATE	RESPONSE
	<p>specialist studies across these areas to indicate the state of vegetation.</p> <p>Please note that the land-use guidelines within the NMBM's Bioregional Plan (2010) indicates the no further loss of the natural habitat can be allowed within these areas and that no infrastructure and/or developments should be allowed as it is not compatible with conservation efforts. Even if degraded, rehabilitation or restoration should be the first option to recreate and maintain natural ecological processes.</p>		<p>and make recommendations on the placement of the turbines based on the ecological sensitivity of the area.</p>

Table 8-4: Minutes taken at the public meeting (20 May 2014) held during the public review period of the Dassiesridge Wind Energy facility draft Scoping Report.

NAME	ISSUE	RESPONSE
Mr John Volsoo	<p>Has construction started on site?</p>	<p>No construction has begun on site. It would be illegal for construction to start without the relevant authorisations in place.</p>
	<p>In terms of aviation, there is a concern the airplanes would not be able to fly over the turbines, and that planes would have to fly around the turbines at a potential great cost. This would mean that pilots would have to amend their flight paths, which could potentially be a significant cost; and Appear that people who currently use the path to Port Elizabeth (PE) would have to use an alternative route. Even 6-7 minutes on a daily flight over time can be an enormous cost.</p> <p>This is mainly aimed at people using flight as a mode of transport to and from work. There are also private planes in the area and an air strip.</p>	<p>Your client's concerns are duly noted. A socio-economic impact assessment will be conducted during the Environmental Impact Assessment phase and the specialist conducting this study will meet with Mr van der Westhuizen to ensure that his issue is correctly documented in the specialist report.</p> <p>It is important to note that in order to participate in the Department Of Energy's REIPP procurement program the proposed project will need to secure approval from the Civil Aviation Authorities. Such approval will be secured once the Environmental Impact Assessment has been approved and the final turbine layout is readily available.</p>

NAME	ISSUE	RESPONSE
Mr John Volsoo	Does it ever get to the point where InnoWind will provide compensation because it is resulting in financial difficulty (livelihoods)?	When and if the EIA is approved by Department of Environmental Affairs it doesn't mean the turbines will actually be built rather it symbolises that construction is authorised from an environmental point of view. InnoWind will then have to be successful in the Department of Energy's REIPP procurement program in order to sell the electricity generated to the national grid operator. Given the early stages of the project development and the uncertainty around the likelihood of it being constructed it is difficult to say whether any compensation will be made and on which basis.
Deon Joubert	Where exactly will the 42-47 turbines be?	It is difficult to know exactly where the turbines will be positioned at this early stage. The findings of the specialist studies will guide the location of the turbines and project infrastructure.
	Where are the PPC wind turbines that are currently being built situated in relation to the project area?	<p>The Grassridge WEF is located on a property owned by PPC to the south east of the proposed Dassiesridge WEF. The locality of the PPC and Grassridge WEFs in relation to Dassiesridge have been illustrated in the map below. This map is reproduced at a larger scale in Appendix K</p> <p>Please note that to date, construction has only begun on the Grassridge WEF.</p>

NAME	ISSUE	RESPONSE
		 <p>The map displays the Dassiesridge Wind Energy Facility site. It features a yellow shaded area representing the 'Dassiesridge Study Area'. Within this area, there are several green dots indicating 'Grassridge Turbine Positions'. Light blue shaded regions represent 'Grassridge Farm Portions'. A legend in the bottom right corner identifies these symbols. The map also shows surrounding roads, rivers, and other geographical features. A title block at the bottom left of the map area provides project details: 'Dassiesridge WEF vs Grassridge WEF', 'PROJECT: InnoWind Dassiesridge WEF', 'Drawn by: Justin Green', 'Date: 29.09.2014', and 'CES Project Code: 172'. The title block also includes the logo for Coastal and Environmental Services.</p>
<p>Ginkel Venter</p>	<p>Will the turbines be relatively close together?</p>	<p>This depends on the predominate wind direction that is recorded on site and the final turbine model to be utilized . They are generally between 500-800m apart.</p>
	<p>So all the points on the map are where the turbines are going to go and that is finalised on which farms?</p>	<p>No, these points are a preliminary layout. The specialist studies will be used to inform the final layout to minimise the environmental impacts.</p>
	<p>Will there be an overhead power line to site? How will you get electricity from the site to the grid?</p>	<p>There are 5 connection options for the project.</p> <p>Option 1: One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site. Approximate length is 0.4km.</p> <p>Option 2: One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site. Approximate length is 1km. Approximate length is 1km.</p> <p>Option 3: One substation will be built on site and will connect at 132kV at Olifantskop substation. Approximate length is 16km</p> <p>Option 4: Two substations will be built; one on the eastern part</p>

NAME	ISSUE	RESPONSE
		<p>of the project site and one on Grassridge and a loop in-loop out line used to connect to the existing Nooitgedacht line. Approximate length is 19 km.</p> <p>Option 5: This option will be the same as option 4 but instead of connecting with the Nooitgedacht line it will connect with the 400 kV Cookhouse line. Approximate length is 19 km.</p>
	<p>The area identified is a prime hunting area with international clients wanting to come to remote areas. Our clients won't want to hunt in areas where there are wind farms which will have an impact on our income. What are your plans for aesthetic value deduction? (i.e. not wild Africa)</p>	<p>A visual impact assessment (VIA) will be undertaken to assess the visual impact of the area and a social impact assessment (SIA) will be done to identify the impacts on hunting and livelihoods in the area.</p>
	<p>How will the specialists determine the impact? Who is usually affected?</p>	<ul style="list-style-type: none"> • The SIA will interview landowners/farmers and valuers in the area. • The VIA will do the assessment using photographs and models.
<p>Rob Markham - Eden to Addo</p>	<p>Addo to Eden are trying to establish wildlife corridors and are in the process of talking to landowners in the Jansenville area. We want to link significant protected areas in order to prevent wildlife islands.</p> <p>Once a year, we conduct a hike across the pristine Springbok Vlakte to raise funds and we are concerned this will have a negative visual impact on the hike. When doing a hike in the wilderness one doesn't want to see the turbines. We are also looking at having a bicycle adventure route through the same area.</p>	<p>The map below indicates the project area in relation to the hike you mention. This is 30 km away. It is therefore unlikely that the Dassiesridge WEF will be seen or will have a significant visual impact from the hiking route. However, this will be assessed during the VIA as a potential sensitive visual receptor.</p> <p>It is also understood that the path of the Addo to eden route has not been finalized as yet.</p> <p>The map below has been reproduced at a larger scale in Appendix K.</p>

NAME	ISSUE	RESPONSE
	<p>Will the cumulative impacts of the windfarm be assessed for the next 20 years?</p>	<p>The cumulative impacts of the WEF will be assessed by various specialists, including but not limited to, the ecological specialist, the bird and bat specialists and the visual specialist.</p> <p>The cumulative impacts will be assessed based on the current situation as it is difficult to predict what will happen in 20 years time.</p>
	<p>Why has this particular area been selected by InnoWind?</p>	<p>This area was selected based on its proximity to good infrastructure (such as roads, Eskom substations and the Coega harbour), optimal wind resources, transformed agricultural land and amenable landowners.</p>
	<p>Are there any WEF near Coega? There is already a turbine there?</p>	<p>Yes there are several wind development within the IDZ , however none of these projects are going ahead as they appear to face challenges in securing clearance from the civil aviation authority due to a potential impact on the PE airport radar</p> <p>There is currently one turbine which was erected in 2010 ahead of the FIFA worldcup</p>

NAME	ISSUE	RESPONSE
Ginkel Venter	But why does SANParks or Addo Elephant park get listened to (as a conservation area) but the farms concerns which are identical don't get listened to?	The distance between the closet turbine position at Dassiesridge and the Addo elephant park boundary is about 17 km. Addo elephant park is an Interested and affected party in this EIA. The proposed Addo to Eden route is located 30km away from the closet turbine position.
	Have any studies on wind feasibility been done in the area?	2 wind measurement masts have been erected on the site and wind measurements/studies are currently being undertaken.
	What are the cumulative impacts?	The relevant specialists will address the cumulative impacts during the EIA phase.
	What is stopping others from coming and filling the whole area with turbines?	Each project is required to go through an Environmental Impact Assessment and if given environmental authorisation it then goes through the Department of Energy's competitive bidding process. Not all projects make it through these processes for various reasons.
	What is the life expectancy of a turbine?	Should the project be successful the proponent will sign a 20 year contract with the government for the off-take of the power. Turbines can last between 20 and 40 years depending on the model, make, the weather conditions and maintenance.
	If the government decides not to renew the contract after 20 years will the wind turbines be removed?	Yes, the turbines will be removed and area will be rehabilitated.
	What social responsibility are InnoWind planning for the area? In certain areas where people benefit they don't want to work anymore thus instead of helping it makes the situation worse.	Currently, the shareholding structure of the project is unknown. There will however be a small percentage (1,6-2,1%) of turnover that will be spent within the 50km radius of the project on Socio-Economic Development and Enterprise Development contributions. The aim of these contributions is to support small and micro enterprise as well as to fund social up-liftment projects. No money will be given directly to individuals as a hand out.
	Where will you employ people from and how much will you pay them? Farmers may lose labourers if the wind farm pays more?	They use the existing databases and structures that are in place. Employment will also be predominantly short-term for unskilled labour from the construction industry.

NAME	ISSUE	RESPONSE
Johan Swart	Noted that people should also see the benefit of the project in terms of generating green energy	Noted

9 KEY FINDINGS OF THE SPECIALIST STUDIES

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (j) **A summary of the findings and recommendations of any specialist report or report on a specialised process.**

The specialist studies identified as being necessary during the Dassiesridge WEF Scoping Phase, plus any additional studies that may be required by the authorities, have been undertaken during the initial phase of the EIA. Appropriately qualified and experienced specialists were appointed to undertake the various assessments. Specialists gathered baseline information relevant to the study and assessed impacts associated with the WEF. Specialists have also made recommendations to mitigate negative impacts and enhance benefits. The resulting information has been synthesised in the section below, whilst the full specialist reports have been attached to the EIR as a Specialist Report section in Appendix C, Section 14.4. The specialist studies were conducted based on the draft layout provided by Dassiesridge Wind Power, **the final layout has been amended based on the findings of each of the specialist reports.** The specialists were then provided with the opportunity to comment on the final layout, these specialist letters can be found in Appendix D, Section 14.4.

The following Specialist Studies have been completed for the EIA Phase–

- **Agriculture & Soil Impact Assessment:** Mr Roy de Kock from CES
- **Ecological Impact Assessment (Flora and Fauna):** Ms Tarryn Martin from CES
- **Avifauna Impact Assessment:** Mr Jon Smallie WildSkies Ecological Services (Pty) Ltd
- **Chiroptera (Bat) Impact Assessment:** Mr Werner Marais from Animalia
- **Paleontological Impact Assessment:** Dr John Almond from Natura Viva
- **Heritage Impact Assessment:** Ms Karen van Ryneveld from ArchaeoMaps
- **Socio-economic Impact Assessment:** Ms Marchelle Terblanche from INDEX (Pty) Ltd
- **Visual Impact Assessment:** Ms Rosalie Evans from CES
- **Noise Impact Assessment:** Dr Brett Williams from SafeTech

9.1 Agriculture & Soils Impact Assessment

An agricultural and soil impact assessment was commissioned in order to predict and assess the significance of identified impacts associated with the proposed activity on the agricultural potential of the affected land for the Dassiesridge Wind Energy Facility near Uitenhage, Eastern Cape.

9.1.1 Approach

A desktop analysis and a field survey were undertaken. The desktop analysis was based on existing published data on soil and agricultural potential for the site. The source of data was the AGIS online database, produced by the Institute of Soil, Climate and Water of the Agricultural Research Council of South Africa (AGIS, 2007). Satellite imagery of the site available on Google Earth™ was also used for evaluation.

A field survey was conducted from 11th – 12th of August 2014 in order to assess land-use, current soil conditions and agricultural use onsite. Soil samples were also collected and sent to Brookside

Laboratories Inc. for analysis. The Guidelines for Soil Description (FAO 4th Ed. 2006) were used to assess the soils data according to international guidelines as set out in the second edition of the World Reference Base for Soil Resources (Deckers *et al.*, 2006).

9.1.2 Impacts

Impacts on the agricultural potential of the affected land were identified during the Construction and Operation Phase of the proposed Dassiesridge WEF project and are described below. These included the consideration of direct, indirect and cumulative impacts that may occur.

Development Phase	Issue	Nature of Impact	Description of Impact
Construction	Management of hazardous chemicals	Direct Cumulative	Soil contamination and a loss of fertile soils as a result of hazardous chemical spills.
	Increased risk of fires from construction activities	Direct Cumulative	Potential loss grazing and game as a result of fires originating from the construction site.
	Soil stockpiling management	Direct Indirect Cumulative	Incorrect stockpiling of soil will result in a decrease of agricultural viability/potential.
	Soil profile disturbance and resultant decrease in soil agricultural capability	Direct Cumulative	Excavations for the construction of the turbines and associated infrastructure will disturb the soil profile. If topsoil becomes buried, or subsoil rock, that is less suitable for root growth, remains at the surface, the agricultural suitability of the soil, that will become available for agriculture again after decommissioning of the WEF, will be reduced
Operation	Increase in erosion potential	Direct Indirect Cumulative	An increase in hard surfaces (concrete foundations and roads) will increase run-off and potentially lead to soil erosion.
	Establishment of renewable energy infrastructure on agricultural land	Direct Cumulative	Loss of up to 35 ha of good to relatively low potential agricultural land as a result of new WEF infrastructure development.
		Direct Cumulative	Gradual reduction of available agricultural land as a consequence of an increase in renewable energy development in the local area.

9.1.3 Recommendations

Alternative A1 are considered as the preferred powerline alternative. This consideration is based on the fact that alternative A1 will have the smallest impact on soils and agricultural land. None of the other powerline alternatives (A2, A3, A4, A5) are considered as “fatally flawed”. All the mitigation measures provided in the Agriculture & Soils Impact Assessment Report are to be implemented in the Construction and Operation Phases of the proposed Dassiesridge WEF.

9.1.4 Conclusion & Specialist Opinion

The proposed development’s primary impact on agricultural activities will involve the construction of the wind turbines and associated infrastructure. The construction of these turbines and associated infrastructure (laydown areas, access roads and underground/aboveground power cables routes) will only influence a small area of the total local agricultural portion.

The No-go alternative would mean abandoning the proposed development and as such there will be no negative impact on the environment. Furthermore it may also result in none of the positive impacts of renewable energy in terms of climate change mitigation being realised from this area.

The construction entails the clearing of vegetation underneath the footprint of the wind turbine laydown areas and construction camps, as well as creating permanent service roads. Grazing (the dominant agricultural activity) may be permitted around and underneath the wind turbines. The impact of the proposed Dassiesridge WEF development on the study area's agricultural potential will be low, with the loss of agricultural land mostly being attributed to the creation of the service roads and wind turbine foundations and laydown area. The total loss of grazing land will be less than 1 % of the total agricultural area.

Agriculture & Soils Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Agriculture & Soils Specialist Comment on Final Layout: **“The proposed new layout for the Dassiesridge WEF will not alter my recommendations made in my original Agricultural & Soils Assessment”**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.1

9.2 Ecological Impact Assessment

An ecological impact assessment was conducted by an in-house CES specialist in order to predict the significance of identified ecological impacts associated with the proposed activity.

9.2.1 Approach

The study site and surrounding areas were described using a two-phased approach. Firstly, a desktop assessment of the site was conducted in terms of current vegetation classifications and biodiversity programmes and plans. This included the consideration of:

- The South African Vegetation Map (Mucina and Rutherford, 2006)
- Subtropical Thicket Ecosystem Programme (STEP)
- Eastern Cape Biodiversity Conservation Plan (ECBCP)
- Nelson Mandela Bay Metropolitan Open Space System (NMB MOSS)
- Sundays River Valley Municipality (SRVM) Biodiversity Sector Plan

Further to the above, one site visit was conducted (7 August 2014 and 8 August 2014) in order to assess the actual ecological state, current land-use, identify potential sensitive ecosystems and identify plant species associated with the proposed project activities. The site visit served to inform potential impacts of the proposed project and how significantly it would impact on the surrounding ecological environment.

9.2.2 Impacts

Impacts on the ecological state of the affected land were identified during the Construction and Operation Phase of the proposed Dassiesridge WEF project and are described below. These included the consideration of direct, indirect and cumulative impacts that may occur.

ISSUE	IMPACT
<p>Issue 1 - Loss of vegetation communities: this includes the loss of each of the vegetation community types identified on the site, as a result of the clearing of the land for construction. This issue describes only the direct loss of the vegetation communities and no associated loss of animal or plant species of special concern, nor the effect on ecosystem functioning or the loss of habitats.</p>	<p>Impact 1: Loss of Coega Bontveld Most of the turbines (34) are located within the Coega Bontveld. The construction of the project infrastructure and access roads and laying down of cables will result in the clearance and subsequent loss of this vegetation within the project area. This vegetation type is comprised of bush clumps and succulent patches (which have a high sensitivity) and grassland (which has a moderate sensitivity). As such, effective measures must be taken to ensure that the impacts in these areas are reduced where feasible and that project infrastructure is realigned to avoid large bushclumps and succulent patches. Due to the Bush clumps found within the Coega Bontveld being more sensitive than the grassland, the impacts are assessed separately (below).</p> <p>Turbines WTG51, WTG52, WTG3 and WTG54 occur in an area classified as a “Critical Biodiversity Area” according to NMB MOSS Critical Biodiversity Areas. These turbines occur in an area which is already degraded. The impact of turbines in this area would be a positive impact if the proponent commits to rehabilitating this area and an area of the size equivalent to what will be lost to the turbine and roads, leaving the area in a better condition than it currently is.</p> <p>Impact 2: Loss of Thicket vegetation 27 turbines occur within the thicket. The construction of these turbines and access roads and lay down of cables will result in the clearance and subsequent loss of this vegetation type. This vegetation type has been impacted on by the current land use and has therefore been assigned a moderate sensitivity.</p>
<p>Issue 2 - Loss of species of conservation concern and biodiversity: this includes loss of both animal and plant species of conservation concern over the entire site, including all vegetation community types. It also encompasses the loss of biodiversity as a whole, which includes all species that occur on site taking into account their contribution to the biodiversity of the surrounding area and within the site.</p>	<p>Impact 3: Loss of plant species of conservation concern Species of Conservation concern (SCC) were found to occur in the Coega Bontveld as well as the Thicket. Species such as <i>Encarphalartos horridus</i> and <i>Euryops cf ericifolius</i> were found within the site. There may be many additional species of special concern that will be found on site during construction that were not observed during this study. It is therefore important that prior to construction each turbine site is groundtruthed and infrastructure repositioned to avoid populations of SCC and a search and rescue for SCC is conducted in instances where a few individuals may need to be relocated.</p> <p>Impact 4: Loss of animal species of conservation concern There are a few species of conservation concern (SCC) that may occur within the study site. This may include important reptile and amphibian species as well as mammals such as the honey badger.</p>

	<p>Disturbance during the construction phase may result in the displacement of various animal species due to loss of habitat, an increase in traffic in the area resulting in road fatalities and an increase in noise which may impact the breeding behaviour of some species.</p>
	<p>Impact 5: Loss of Biodiversity Loss of biodiversity will occur as a result of the clearing and loss of vegetation on site during the construction phase. Both floral and faunal species, other than species of conservation concern will be affected.</p>
	<p>Impact 6: Loss of <i>Bitis albanica</i> (Albany adder) The reptile species (<i>Bitis albanica</i>) is listed as Critically Endangered on the Atlas and Red List of the Reptiles (2014) and the only currently known population occurs in the Grass Ridge Bontveld. It is therefore possible that this species may occur in the project area although it was last seen at the PPC mine next door eight to nine years ago (Branch, pers. comm). This species is typically a cryptic species and difficult to find. This species is likely to be impacted by the loss of habitat, habitat fragmentation and direct mortality such as road kills.</p>
	<p>Impact 7: Loss of <i>Aloeides clarki</i> (Coega Copper Butterfly). This butterfly is listed as Endangered and is endemic to the lower Coega and Sundays River valleys and is associated with dry, sandy and limestone ridges at an altitude of 30 to 150m in Coega Bontveld. It is possible that it may occur within the project area however, it has only been recorded within the Coega IDZ and at an isolated location at the Sundays River Mouth both of which are not near the study area.</p> <p>This species has an obligate relationship with host ants, reported to be a species of <i>Monomorium</i>. It is possible that the construction activities associated with wind farms could cause changes to the ant communities on the site either by introducing invasive species or via increasing availability of dead insect remains due to impacts of the turbines themselves. If this species is present at the site, impact on this species is likely to be an indirect impact as a result of changes to the host species it is dependent on. There is of course the possibility that the host ants will be among the species that increase in number as a result of development and this could benefit the butterflies.</p>
<p>ISSUE 3: Disruption of ecosystem function and process The habitats that exist in the project area, together with those of the surrounding area that are linked, form part of a functional ecosystem. Destruction or modification of</p>	<p>Impact 8: Fragmentation of communities and edge effects The placement of turbines in areas of high sensitivity and the construction of roads could result in the landscape becoming fragmented, thus there is a possibility that viable animal and plant populations</p>

<p>habitats causes disruption of ecosystem function, and threatens the interplay of processes that ensure environmental health and the survival of individual species. This issue deals with a collection of complex ecological impacts that are almost impossible to predict with certainty, but which are nonetheless important.</p>	<p>may be split or cut off from one another. In areas where there is already evidence of fragmentation, the construction of these turbines could result in the conditions becoming exacerbated.</p>
<p>Fragmentation is one of the most important impacts on vegetation, especially when this creates barriers in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. In terms of current land use, this impact occurs when large areas of vegetation are overgrazed.</p>	<p>Impact 9: Disturbance to wildlife in the surrounding area</p>
<p>The removal of existing vegetation creates ‘open’ habitats that will inevitably be colonised by pioneer plant and animal species. While this is part of a natural process of regeneration, which would ultimately lead to the re-establishment of a secondary vegetation cover, it also favours the establishment of undesirable species in the area. Once established, these species are typically very difficult to eradicate and may then pose a threat to the neighbouring ecosystem. This impact is likely to be exacerbated by careless management of the site and its facilities, e.g. inadequate monitoring. Many such species are, however, remarkably tenacious once they have become established.</p>	<p>Construction phase activities are associated with an increase in noise levels, vehicular movements and dust levels. Noise pollution can depress local populations of sensitive faunal groups. Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups. For example, large breeding birds are sensitive to noise and increased noise and motor vibrations in the nearby streams may impact amphibian breeding choruses, but these impacts will be localised and many amphibian species are surprisingly tolerant of noise (Branch, pers. comm.). Noise pollution will occur during construction and mitigation measures will need to be applied.</p>
	<p>Some dust may be generated as a result of construction activities and, in particular, where there is exposed ground. Specific activities that may contribute to release of fugitive dust include offloading and stockpiling of building materials such as sand, excavation, storage of excavated materials and movement of heavy vehicles. The generation of dust may be higher during windy, dry periods. Dust may also be deposited on the surface of the water within the adjacent riparian areas, potentially resulting in an increased turbidity of water. In certain contexts, this may reduce light penetration and, subsequently have negative impacts on aquatic plants, fish and amphibians.</p>
	<p>Impact 10: Invasion of alien species As with all building operations, the introduction of alien and invader species is inevitable; with environmental disturbance comes the influx of aliens. Alien invasive species such as prickly pear, which is already prevalent in some areas of the thicket vegetation found within this project area is likely to increase if mitigation measures are not implemented. Alien invasive species have negative impacts on the biodiversity as they compete with natural vegetation and reduce water availability. Studies show that almost all seven terrestrial biomes in South Africa have alien invasive species. Due to the disturbance of the proposed Dassieridge WEF, it is important that eradication of these species and proper management strategies are put in place to ensure the control of these species.</p>

9.2.3 Recommendations

All the mitigation measures provided in the Ecological Impact Assessment are to be implemented

in the Construction and Operation Phases of the proposed Dassiesridge WEF.

9.2.4 Conclusion & Specialist Opinion

Associated impacts identified with the proposed Dassiesridge WEF were not deemed insurmountable. A number of HIGH rated impacts (pre-mitigation) are easily mitigated. Ecologically sensitive areas have been mapped for the project area, and appropriate buffers around these imposed. Recommendations in Chapter 6 of the Ecological Impact Assessment provide alternative turbine locations and infrastructure alignment, in order to avoid unnecessary loss or disturbance of important habitats. Overall, it was determined that the identified ecological impacts associated with the Dassiesridge WEF, can be affectively mitigated.

Ecological Impact Assessment Overall Significance (Post-Mitigation): **MODERATE**

Ecological Specialist Comment on Final Layout: **“The proposed new layout for the Dassiesridge WEF will not alter my recommendations made in my original Ecological Impact Assessment”**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.2

9.3 Avifaunal Impact Assessment

An Avifauna Impact Assessment was conducted by WildSkies Ecological Services (Pty) Ltd. This assessment included a 12 month monitoring process during which data was collected and analysed.

9.3.1 Approach

Four seasons of pre-construction bird monitoring have been conducted on site in order to collect data on bird abundance, behaviour and movement on site, and inform this impact assessment. Key findings of this monitoring programme include the following:

- A total of 22 target (most important) bird species were identified at the outset of this programme on the basis of their conservation status and/or likely susceptibility to impacts of the proposed facility. These species have all been recorded on site during this programme, although a sub set of species has been identified as most important. This subset includes: Blue Crane; Denham’s Bustard; Secretarybird; Black Harrier; and Jackal Buzzard. These are the species believed to be at most risk at this site if the facility is built. A total of 141 bird species were recorded on site, with a summer peak of 124 species, and a spring low of 80 species.
- A total of 67 small passerine bird species was recorded on site by walked transects. A peak in species richness was recorded in summer (5 species) followed by spring (44), autumn (39) and winter (26). None of these species were Red Listed. The only target bird species amongst them was the Grey-winged Francolin.
- Eight target bird species were recorded on driven transects on site, with a summer peak of species. The most abundant species were all non-Red List species such as Steppe Buzzard, Southern Pale Chanting Goshawk and Jackal Buzzard.
- The only focal site on the site was the stay wires of the met mast, which were surveyed for possible collision mortalities. No such mortalities were detected during this programme.
- Eleven target bird species were recorded by incidental observations, with the majority of these records being made in the open grassland areas of the site.
- Overall, recorded target bird species flight activity on site was low. Fourteen bird species were recorded flying in total. The most frequently recorded species was Southern Pale Chanting

Goshawk (20 records), followed by Jackal Buzzard (17 records), Rock Kestrel (13 records) and Black-shouldered Kite (12 records). Of these four species, only the Jackal Buzzard had a mean flight height (54.71m) within the approximate rotor zone, and spent the majority of its recorded flight duration (65.79%) at rotor height. Key Red List large terrestrial species such as Denham's Bustard (6 records), Blue Crane (5 records) and Secretarybird (5 records) were recorded flying infrequently on site. In addition, these three species had a mean flight height above ground well below rotor height, indicating a possible low collision risk once turbines are built. Black Harrier was recorded flying 6 times on site, with a mean flight height of 8.5 metres, and 100% of its flight duration below rotor height. Species which flew predominantly at rotor height included Booted Eagle, Common Buzzard and White Stork, although these species were each only recorded flying once.

- A spatial 'collision risk index' for the site was created from the above flight data. Collision risk appears higher in the open areas, and in the drainage lines/valleys. Risk is not high enough to warrant any turbine re-siting.

9.3.2 Impacts

Avifauna could be impacted on at this site in five ways, each of which has been assessed below according to standard criteria:

- Destruction and alteration of bird habitat during construction is anticipated to be of medium significance, and can be mitigated to low significance.
- Disturbance of birds is judged to be of low significance.
- Displacement of birds from the site will be of low significance.
- Collision of birds with turbine blades will be of low significance.
- Collision and electrocution of birds on overhead power lines will be of high significance, but can be mitigated to low significance if the recommendations of this report are implemented.

The cumulative impacts of multiple wind energy facilities on avifauna in this area are believed to be of low-medium significance, and it is recommended that a strategic assessment of this aspect be undertaken as soon as possible.

9.3.3 Recommendations

In a national context, this site is believed to be in a position of relatively low sensitivity for avifauna. On site, three sensitivity classes have been identified: low, low-medium, and medium. Only the medium sensitivity areas are constrained for the development of wind turbines or other associated infrastructure. Very few current turbine positions are within these zones, and only by a few metres. The preferred option for connecting this facility to the grid is Option 1, which requires the shortest length of new overhead 132kV power line to be built. All four of the grid connection options are however acceptable.

9.3.4 Conclusion & Specialist Opinion

This report makes a number of recommendations for the management of risk to avifauna at this site. If these recommendations are implemented, this facility can be allowed to proceed.

Avifaunal Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Avifaunal Specialist Comment on Final Layout: **"We have examined this information using Google Earth and Quantum GIS. We conclude that these amendments will not alter our original findings in any way. The avifaunal sensitive areas identified previously have been avoided by the amendments."**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.3

9.4 Bat Impact Assessment

Animalia Zoological & Ecological Consultation CC was contracted by CES to investigate the potential impacts that the Dassiesridge WEF could have on bats. This assessment included a 12 month monitoring process during which data was collected and analysed.

9.4.1 Approach

The terms of reference for the bat impact assessment and monitoring programme included assessing the following points.

- Study bat species assemblage and abundance on the site.
- Study temporal distribution of bat activity across the night as well as the four seasons of the year in order to detect peaks and troughs in activity.
- Determine whether weather variables (wind, temperature, humidity and barometric pressure) influence bat activity.
- Determine the weather range in which bats are mostly active.
- Develop long-term baseline data for use during operational monitoring.
- Identify which turbines need to have special attention with regards to bat monitoring during the operational phase and identify if any turbines occur in sensitive areas and need to be shifted into less sensitive areas or removed from the layout.
- Detail the types of mitigation measures that are possible if bat mortality rates are found to be unacceptable, including the potential times/ circumstances which may result in high mortality rates.

Bat activity was monitored using active and passive bat monitoring techniques. Active monitoring was done through site visits with transects made throughout the site with a vehicle mounted bat detector. Passive detection was carried out through the mounting of passive bat monitoring systems placed on two monitoring masts on site, specifically one short 10m mast and one meteorological mast.

The monitoring systems consisted of SM2BAT+ time expansion type bat detectors that were powered by 12V 18Ah sealed lead acid batteries and 20W solar panels that provided recharging power to the batteries. Each system also had an 8 amp low voltage protection regulator and SM2PWR step down transformer. Four SD memory cards, class 10 speed, with a capacity of 32GB each were utilized within each SM2BAT+ detector; this was to ensure substantial memory space with high quality recordings even under conditions of multiple false wind triggers.

One weatherproof ultrasound microphone was mounted at a height of 10 meters on the short mast, while two microphones were mounted at 10m and 50m heights on the meteorological mast. These microphones were then connected to the SM2BAT+ bat detectors.

Each detector was set to operate in continuous trigger mode from dusk each evening until dawn (times were correlated with latitude and longitude). Trigger mode is the setting for a bat detector in which any frequency which exceeds 16 KHz and 18 dB will trigger the detector to record for the duration of the sound and 500 ms after the sound has ceased, this latter period is known as a trigger window. All signals were recorded in WAC0 lossless compression format.

9.4.2 Impacts

Although most bats are highly capable of advanced navigation through the use of echolocation and excellent sight, they are still at risk of physical impact with the blades of wind turbines. The corpses

of bats have been found in close proximity to wind turbines and, in a case study conducted by Johnson *et al.* (2003), were found to be directly related to collisions. The incident of bat fatalities for migrating species has been found to be directly related to turbine height, increasing exponentially with altitude, as this disrupts the migratory flight paths (Howe *et al.* 2002; Barclay *et al.* 2007). Although the number of fatalities of migrating species increased with turbine height, this correlation was not found for increased rotor sweep (Howe *et al.* 2002; Barclay *et al.* 2007). In the USA it was hypothesized that migrating bats may navigate without the use of echolocation, rather using vision as their main sense for long distance orientation (Johnson *et al.* 2003, Barclay *et al.* 2007). Bat mortalities due to turbines have been attributed to be caused by direct impact with the blades and by barotrauma (Baerwald *et al.* 2008). Barotrauma is a condition where low air pressure found around the moving blades of wind turbines, causes the lungs of a bat to collapse, resulting in fatal internal haemorrhaging (Kunz *et al.* 2007). Rollins *et al.* (2012) carried out a histopathological study to assess whether direct collision or barotrauma was the major cause of mortality. They found an increased incidence of fractures, external lacerations and features of traumatic injury (diaphragmatic hernia, subcutaneous hemorrhage, and bone marrow emboli) in bats killed at wind farms. 73% of bats had lesions consistent with traumatic injury whereas there was a 20% incidence of ruptured tympana, a sensitive marker of barotrauma in humans. Thus the data of this study strongly suggests that traumatic injury from direct collision with turbine blades was the major cause of bat mortality at wind farms and barotrauma is a minor etiology. Additionally, it has been hypothesized that barotrauma causes mortality only if the bat is within a very short distance of the turbine blade tip such that collision with the blades is a much more likely cause of death.

Mitigation measures are being researched and experimented with globally, but are still only effective on a small scale. An exception is the implementation of curtailment processes, where the turbine cut-in speed is raised to a higher wind speed. This relies on the principle that the prey of bats will not be found in areas of strong winds and more energy is required for the bats to fly under these conditions. It is thought, that by the implementation of such a measure, that bats in the area are not likely to experience as great an impact as when the turbine blades move slowly in low wind speeds. However, this measure is currently not effective enough to translate the impact of wind turbines on bats to a category of low concern.

The following table indicates the various turbines (as per Version 1 of the turbine layout) which are located in sensitive areas. Please note that the purpose of the EIR report is to report back on how the layout has changed as per the recommendations made by the various specialists.

Bat sensitive area	Turbine number
High Sensitivity	WTG19 and 36
High Sensitivity: Buffer	WTG05, 10, 13, 14, 16, 18, 20, 22, 23, 25, 26, 28, 33, 37, 39, 41, 44, 46, 50, 55. 57 and 60
Moderate Sensitivity	None
Moderate Sensitivity: Buffer	WTG02 is on the border

9.4.3 Recommendations

The bat monitoring study was carried out over February 2014 to February 2015. This long-term monitoring study has identified bat species at risk of fatality to wind turbines and patterns in their activity. An assessment of the proposed turbine layout has been provided and an initial mitigation scheduled has been outlined in the Bat Impact Assessment Report. The turbines outlined in the impacts section should be moved out of highly sensitive areas.

9.4.4 Conclusion & Specialist Opinion

A sensitivity map was drawn up indicating potential roosting and foraging areas. The High Bat Sensitivity areas are expected to have elevated levels of bat activity and support greater bat diversity. High Bat Sensitivity areas and their respective buffers are 'no – go' areas due to expected elevated rates of bat fatalities due to wind turbines. Turbines within Moderate Bat Sensitivity areas must acquire priority (not excluding all other turbines) during pre/post-construction studies and mitigation measures, if any are found to be needed on conclusion of this study. **A number of turbines were located within sensitive areas and have been moved to comply with recommendations made in this study.**

Bat Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Bat Specialist Comment on Final Layout: **“The turbine layout has since been revised in July 2015 taking the bat sensitivity map into consideration and the Bat Specialist recommendations into account. The revised turbine layout has greatly improved and is now respective of the bat sensitive areas and buffers. All turbine locations are now respective of the bat sensitive areas and do not encroach on them.”**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.4

9.5 Palaeontological Impact Assessment

John Almond (Natura Viva cc) conducted a palaeontological impact assessment on the Dassiesridge WEF site. The purpose of the PIA (forming part of a Heritage Impact Assessment), is to identify and assess exposed palaeontological heritage, as well as potential heritage that may be impacted by the development, and to make recommendations as to how these impacts could be mitigated.

9.5.1 Approach

A paleontological impact assessment was conducted, the primary objective of which was to determine whether there were any indications that the proposed site is of paleontological significance. This usually involves a two phase assessment. Phase 1 consisted of a desktop assessment of the site, while phase 2 involved a site visit to groundtruth the desktop findings.

9.5.2 Impacts

The Dassiesridge WEF study area is underlain by approximately twelve sedimentary rocks units ranging in age from Early Devonian through Early Cretaceous and Neogene to Recent. On the basis of desktop analysis (including several previous palaeontological field assessments in the Uitenhage region) combined with field assessment of numerous representative rock exposures within and close to the WEF study area, only four of these units – namely the Voorstehoek Formation (Lower Bokkeveld Group), the Kirkwood and Sundays River Formations (Uitenhage Group), as well as the basal part of the Alexandria Formation in the southeast (Algoa Group) - are considered to be palaeontologically sensitive.

The great majority of infrastructure for the proposed WEF will be located in flatter-lying upland areas and ridges that are underlain by rock units of low palaeontological sensitivity – viz. limestones and aeolian sands of the Algoa Group on the plateaux and Bokkeveld sandstones forming the ridges in the northwest. Construction of the wind turbines, overhead power lines, access roads and associated infrastructure here is therefore unlikely to entail significant impacts on local fossil heritage resources. Direct impacts on fossiliferous beds of the Uitenhage Group in lower-lying areas will be very limited, especially because these sediments are generally overlain by thick unfossiliferous superficial deposits (soil, alluvium etc). Significant impacts on fossil heritage are not anticipated for any of the substation and transmission line route options, none of which is preferred on palaeontological grounds.

Significant impacts on fossil heritage for this project are only anticipated in two small portions of the Dassiesridge WEF study area (as per Palaeontological Impact Assessment Report):

- A sector of the access road from the R75 that runs in a low-lying area underlain by the Voorstehoek Formation (Grassridge 187);
- Wind turbine positions and associated access roads in the eastern portion of Farm 3/190 that may impact fossil oyster beds in the basal Alexandria Formation, as well as fossil wood and marine shells in the Kirkwood and Sundays River Formations respectively.

Due to (1) the general scarcity of fossil remains within most of the development footprint, (2) the high levels of bedrock weathering and tectonic deformation as well as (3) the extensive superficial sediment cover overlying most potentially fossiliferous bedrocks within the Dassiesridge WEF study area, the overall impact significance of the construction phase of the proposed wind energy project is assessed as only MODERATE (negative). This applies to the wind turbines and associated infrastructure, access roads, substations as well as to the 132 kV transmission line connection to the Eskom grid. No significant further impacts on fossil heritage are anticipated during the operational and decommissioning phases of the WEF. There are no fatal flaws in the Dassiesridge WEF development proposal as far as fossil heritage is concerned. Cumulative impacts on fossil heritage of the adjacent Dassiesridge and Grassridge WEFs near Uitenhage are assessed as LOW, given the low palaeontological sensitivity and extensive outcrop area of the main rock units concerned.

9.5.3 Recommendations

During the construction phase all deeper (> 1m) bedrock excavations should be monitored for fossil remains by the responsible Environmental Control Officer (ECO). Should substantial fossil remains - such as vertebrate bones and teeth, fossil shell beds or petrified logs of fossil wood - be exposed during construction, the responsible Environmental Control Officer should safeguard these, preferably in situ, and alert ECPHRA (i.e. The Eastern Cape Provincial Heritage Resources Authority. Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) as soon as possible so that appropriate action can be taken by a professional palaeontologist at the developer's expense. These mitigation recommendations should be incorporated into the Environmental Management Plan (EMP) for the Dassiesridge WEF.

9.5.4 Conclusion & Specialist Opinion

Given the low palaeontological sensitivity of the majority of the Dassiesridge WEF study area, specialist palaeontological mitigation is only recommended within the two small areas, pending the discovery elsewhere of substantial new fossil remains during construction. Once excavations for infrastructure such as access roads and wind turbine footings within these two sensitive areas are opened, they should be inspected for fossil remains by a professional palaeontologist.

Paleontological Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Palaeontological Specialist Comment on Final Layout: “**The first two changes listed, referring to access roads to wind turbines, will probably reduce the potential negative impacts on fossiliferous bedrocks in the two palaeontologically sensitive areas outlined in Figure 62 of my original palaeontological heritage assessment report for the Dassiesridge WEF (Almond 2014). Since the number of wind turbine positions in the final layout will not be increased, and these are for the most part located in areas of low palaeontological sensitivity, the addition of 10 potential turbine points is not regarded as significant in palaeontological heritage terms.**

It is concluded that the recommendations made in my original palaeontological heritage assessment report for the Dassiesridge WEF still stand”

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.5

9.6 Heritage (Archaeological) Impact Assessment

Ms Karen van Ryneveld from ArchaeoMaps was appointed to undertake a Phase 1 Archaeological and Cultural Heritage Impact Assessment for the Dassiesridge WEF.

9.6.1 Approach

The Phase 1 Archaeological and Cultural Heritage Impact Assessment (AIA) for the proposed Dassiesridge Wind Energy Facility (WEF), between Kirkwood and Uitenhage, Cacadu District, Eastern Cape, was requested by the Eastern Cape Provincial Heritage Resources Authority (EC PHRA) as specialist component to the development’s Heritage Impact Assessment (HIA), in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Section 38.

The Phase 1 AIA aimed to locate, identify and assess the significance of cultural heritage resources, inclusive of archaeological deposits / sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and basic cultural landscapes or viewscapes as defined and protected by the NHRA 1999, that may be affected by the development.

9.6.2 Impacts

The Stone Age Cultural Landscape

The primarily Middle (MSA), but including Later Stone Age (LSA) cultural landscape of the Dassiesridge WEF can be described as an organically evolved fossil landscape least evidently shaped by humans, with little to no visual or physical impact altering the landscape itself. Extremely low recorded surface artefact ratios, vast undefined occurrence size and uncertainty thereof as a result of vegetation cover all prohibit further interpretation, but most probably pointing towards a variety of landscape use: Quarrying, or raw material sourcing, and preliminary knapping – more directly associated with surface raw material outcrops across hilly terrain, to process knapping and general landscape use across flats and in proximity to drainage lines and other paleo-water sources. Despite the Low Significance rating ascribed to surface observed Stone Age deposits, continued surface and subsurface monitoring during the course of construction can be reasonably inferred to contribute to our understanding of the Stone Age in the area; either

confirming its current ascribed Low Significance or shedding light on more distinctive surface or subsurface deposits.

The Colonial Period Cultural Landscape

The Colonial Period cultural landscape of the Dassiesridge WEF can be described as an organically evolved continuing landscape least evidently shaped by humans, again with limited impact on the visual and physical landscape. Sparsely scattered Colonial Period farmstead sites, and probable associated farming infrastructure, directly linked with continuing cultural tradition date back to the rough mid 1800’s. The Dassiesridge WEF study site comprises a landscape where continuing cultural tradition remains key in the evaluation of the Colonial Period resources and associated landscape as the prime cultural layer characterizing the land. This association in turn necessitates comment on ‘cultural evolution’ with the specific aim of addressing Bourguignon (1979) question of ‘What changes are (were) necessary to make culture, as we know it, possible?’ Two highly visual impacts were necessary to allow the Colonial Period farming culture to be established: Firstly, large scale vegetation clearing, being also an integral requirement in Kirkwood’s early vision of the area becoming key in the agricultural arena of the country and secondly, Colonial Period farming infrastructure, with specific reference to wind pumps (circa, 1820-1840), having at the time been the most visual farming infrastructural impact on the landscape and marking a technological feat that opened up large parts of South Africa for economically viable farming.

9.6.3 Recommendations

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed Dassiesridge WEF, between Kirkwood and Uitenhage, Cacadu District, Eastern Cape, proceeds provided the developer comply with the below listed recommendations, together with any additional requirements, constraints or particulars that may be imposed on the development by the EC PHRA.

Map Code	Site	Co-ordinates	Recommendations
<i>Dassiesridge WEF study site</i>			
N/A	Low density Stone Age occurrence(s)	N/A	Monitoring after vegetation clearing AND Monitoring of open trench sections of internal power lines
N/A	Colonial Period / Contemporary farming infrastructure	N/A	(In event of impact, list to be kept by developer for inclusion in ECO / heritage monitoring report)
DR-S1	Colonial Period – Farmstead remains	S33°36’09.1”; E25°26’38.0”	Temporary conservation measures AND Permanent sign posting
DR-S2	Colonial Period – Farmstead	S33°35’37.7”; E25°29’45.6”	Permanent conservation measures AND Permanent sign posting (EC PHRA Built Environment Permit – In event of alteration / amendments to structure for purposes of development)
<i>Substations and Power Lines</i>			
N/A	Low density Stone Age occurrence(s)	N/A	Monitoring after vegetation clearing

9.6.4 Conclusion & Specialist Opinion

Considering the above impacts, and on condition that the recommendations are implemented, the overall sensitivity of the Dassiesridge WEF on the Heritage resources is of low significance.

Heritage Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Heritage Specialist Comment on Final Layout: **“The proposed new layout for the Dassiesridge WEF will not alter recommendations made in the original report: It is recommended that development proceed provided the developer complies with recommendations of the original report.”**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.6

9.7 Social Impact Assessment

9.7.1 Approach

The following points explain the process of the Social Impact Assessment.

a) Desktop studies and Literature Review

Various secondary data sources were used to extrapolate information and to determine and analyse the social and economic characteristics of the study area. Such data included maps, census data, internet searches and municipal documents. Where relevant, reference is made to the various sources in the report.

b) Primary data

Primary data assists the consultant in establishing the baseline environment, social fabric, as well as the key economic activities of the core communities. As part of the primary data gathering a site visit was undertaken and interviews conducted with relevant stakeholders and interested and affected parties. Information obtained through the public participation process done for the EIA phase of the project is integrated and used in the SIA analysis and Report.

c) Consultation and fieldwork

Consultation and fieldwork for the SIA included interviews (personal and telephonic) with key stakeholders and questionnaires for the purpose of generating data. In addition, information gathered and social issues identified and verified during the EIA public participation process usually serves as key input to the social assessment.

d) Analysis of data compiled by parallel studies

Similar studies that were done in the NMBM, Cacadu District and the broader region were investigated and the information and results compared with data obtained for this SIA. These included studies and articles written for the Cookhouse WEF, Spitskop East WEF, Grassridge WEF and the proposed Jachtvlakte Precinct Human Settlement Plan. Many of the socio-economic impacts that manifest during construction and operation of renewable energy projects in SA are unique to the local experience. Lessons learnt at similar projects could thus be applied to the Dassiesridge WEF.

9.7.2 Impacts

The following socio-economic conclusion can be drawn:

- The site is well located with access from the R75 and R335, which are the primary linkages to the Coega IDZ, industrial areas in Port Elizabeth and Uitenhage.
- The beneficiary community would in all likelihood comprise the towns of Uitenhage, Addo and possibly Kirkwood. Motherwell is the beneficiary community for the Grassridge WEF and benefits of Dassiesridge WEF should therefore be distributed to another group.
- Unemployment is high and there is a large available labour force in the affected Municipalities. Unskilled and semi-skilled labour should be available locally and higher skilled employees would in all likelihood be sourced from the broader NMBM area where the population is better educated. Foreigners would also comprise a portion of the labour force as renewable energy technology is new technology in South Africa. However, as a result of skills transfer the number of foreigners would decrease with the implementation of more projects.
- Impacts associated with the construction phase are generally short-term, although residual long-term / permanent impacts on the local Municipality and local economy could be experienced. Potential negative impacts can easily mitigated and managed.
- A positive impact of the construction phase is large-scale employment creation, limited skills development opportunities and economic spin-offs for the local economy.
- Negative impacts for the Municipality as a result of an influx of people are the added pressure on infrastructure and services.
- The Coega Development Corporation (CDC) and SRVM have existing skills databases of available workers and SMME's.
- An indirect objective and positive spin-off of the Dassiesridge WEF through ED and SED contributions would be the establishment and support for local small businesses, and thus contributing to economic growth within the local Municipality. However, SMME development is a challenge in most rural and peri-urban areas as exposure to an economic growth climate has usually been absent.
- Even though skills development and training for SMMEs is not directly the responsibility of the project proponent, there are a number of measures that could be implemented in advance to enhance the development and growth of PDIs and local small service providers. The timely involvement of the Municipalities and their Economic Development Directorates are crucial.
- There is an impact on civil and private aviation, with a moderate overall significance due to the limited number of people that are impacted (one I&AP).
- There is a possibility that this infrastructure project could impact on incomes (hunting industry and eco-tourism), although sufficient evidence to substantiate this claim could not be obtained and different stakeholders hold different views and opinions.
- It is improbable that the project would impact on surrounding agricultural property values, although the possible impact on commercial land values is possible.
- The facility holds long-term advantages for the environment as national dependence on coal-fire energy sources are reduced and energy generation in the Eastern Cape is increased to reduce the Province's dependence on the power generation in Mpumalanga
- Through discussions with landowners and I&APs it became clear that people in the district in general have become accustomed to wind turbines and would "tolerate" visual impacts associated with these structures as they recognize the advantages of renewable clean energy for the country as a whole.

9.7.3 Recommendations

It is recommended that the mitigation and management measures as contained in this SIA report be actively pursued and incorporated in the EMP where applicable. This would enhance the positive impacts and minimise any negative impacts that could manifest during the construction, operational and decommissioning phases of the Dassiesridge WEF facility.

In addition to this, the following recommendations with regards to the social and economic environment are made and emphasised:

- Establishment of a labour desk and Community Liaison Office (CLO) with the following purposes:

- The CLO office is the interface between the project and local communities and should be staffed by employees who constantly engage with local government, residents, businesses and other stakeholders.
- The office should host the database in which local job seekers, PDI's and service providers can register.
- The local Municipalities and CLO work in collaboration to prepare the communities for economic and enterprise development initiatives.
- The CLO transfer issues and matters with regards to the BBBEE Trust to the communities.
- Disseminate information to the local communities with regards to progress and other interesting project facts through the community structures, media online forums, public notice boards, etc.
- Manage small goodwill projects and short-term community projects that would educate the communities on renewable energy and greening projects, such as the planting of trees, organizing lectures by an engineer, etc.
- During the operational phase the CLO would assist and support the SED projects, such as assist and accompany consultants when LED projects are planned with local people and organizations in the area.
- The CLO would thus also serve as project manager to implement SED initiatives and monitor their effectiveness.
- The office would deal with local contention and issues when it arises.

Once the project is awarded and implementation is guaranteed involve the local community structures. A forum should be formed consisting of representatives of the Economic Development Directives of the NMBM, SRVM and Cacadu DM. The purpose of the forum would be to co-ordinate the ED and SED component of the various WEF's in the various "renewable energy development nodes" and to identify, prioritise and co-ordinate the most important Economic Development projects that could be implemented for the long-term benefit of the regional economy.

A lack in communication, unrealistic expectations and other employment issues resulted in labour tension and riots during the initial construction phases of the Cookhouse WEF. The Cookhouse WEF project affects two local and two district Municipalities and animosity amongst locals developed as some of the locals were, in their opinion, "excluded" from the benefits of the project. As the Dassiesridge WEF affects three Municipalities, i.e. NMBM, Cacadu DM and the SRVLM, implementation of pro-active mitigation and management measures would be essential to ensure that labour unrests do not also occur.

9.7.4 Conclusion & Specialist Opinion

With proper management of the impacts through the recommended mitigation measures the overall socio-economic impact will be positive.

Social Impact Assessment Overall Significance (Post-Mitigation): **MODERATE (+)**

Social Specialist Comment on Final Layout: **"From looking at the Google map it is our belief that these changes will not have any additional impacts on the socio-economic environment or that the significance of the impacts, as rated in the SIA Report, will**

change.”

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.7

9.8 Visual Impact Assessment

One of the significant environmental issues identified during the scoping phase of the Dassiesridge WEF EIA process was the visual impact of the proposed development on the landscape. For the purposes of conducting the Visual Assessment, guidance has been taken from the Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for Involving Visual and Aesthetic Specialists in the EIA Process (Oberholzer, 2005).

9.8.1 Approach

The approach adopted for the Dassiesridge WEF VIA is that prescribed for a development or activity where a high visual impact is expected.

According to the DEA&DP guideline, this will require a Level 4 Visual Assessment. A Level 4 Visual Assessment consists of the following main elements:

- Identification of issues raised in scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Description of alternatives, mitigation measures and monitoring programmes; and
- 3D modelling and simulations.

9.8.2 Impacts

The main issues relating to visual and aesthetic impacts can be summarised as follows:

- Impacts of design and built-form (e.g. use of building materials, height of structures, and incongruence with surrounding buildings) on aesthetic character of the area: The establishment of wind turbines introduces very large structures of unprecedented height and form;
- Impacts of the overall development on sense of place and sense of privacy of the area;
- Impacts on road users due to distraction. The cumulative impact due to the existing WEFs in the area reduce this impact significantly; and
- Impacts of lighting: The proposed facility may be a (cumulative) source of light pollution. Sources include security lighting at substations and other important infrastructural elements, after hour operational lighting, and aircraft warning lights mounted on the hub of the turbines.

9.8.3 Recommendations

The following mitigation measures are recommended:

- Lighting:
 - Sub-stations and other facilities should, where practical, be situated off the ridgelines so as to minimise the view catchment of the lighting;
 - All lighting should be fitted with deflectors to avoid light spillage and minimise visual impact of lights at night. The developer should specifically plan the type, placement and direction of lighting to ensure that light pollution is minimised.
- Visual Intrusion in the Landscape:
 - Increase the visual absorption capacity of the landscape around residences and small towns in closest proximity to the development by supporting tree-planting programmes.

9.8.4 Conclusion & Specialist Opinion

The development will undoubtedly be imposing and dominate the visual landscape for those in close proximity. However, based on the assessment of significance in this report;

- Given that the superstructures are technically removable on decommissioning;
- Given certain mitigation recommendations in this report;
- Given an understanding that although there are local losses, there are also other local, regional and national environmental, social and economic gains; and
- Given the financial benefits associated with the project namely, landowner lease rental payments, local socio-economic development contributions made by the Project (as required by the Department of Energy’s REIPPPP under which this projects aims to be contracted) and job creation to individuals situated in close proximity to the WEF. (Please refer to the Social Impact Assessment report for details on each of the positive financial impacts)
- And given that turbine structures are not a new feature to this particular landscape.

It is concluded that potential losses of scenic resources are not sufficiently significant to present a fatal flaw to the proposed project.

Visual Impact Assessment Overall Significance (Post-Mitigation): **HIGH**

Visual Specialist Comment on Final Layout: **“The proposed final layout for the Dassiesridge WEF will not alter the recommendations made in my original Visual Impact Assessment”**

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.8

9.9 Noise Impact Assessment

Safetech were appointed to conduct a specialist noise study for an environmental impact assessment for construction of the Dassiesridge WEF. The executive summary of the final report is reproduced below.

9.9.1 Approach

The study considered the site location as described in the Scoping Report. A literature review and desktop modelling was conducted. Baseline monitoring was conducted of the ambient noise levels at and adjacent to the site. The studies assumed worst case scenario’s to determine the impact.

9.9.2 Impacts

The results of the study indicate that the following conclusions can be drawn:

The impacts from the operational phase are summarised as follows:

- a) The day/night time noise limit of 45dBA will be not be exceeded at any of the noise sensitive areas.
- b) The night time guideline noise limit of 35dBA will be exceeded at NSA 10, however the impact will be mitigated (expanded upon in the Noise Impact Assessment Report).
- c) If a complaint is received it will be evaluated against the actual ambient noise at the complainants’ location. If the increase is more than 7dB (A) above the ambient noise, a noise disturbance will be present in terms of the Environment Conservation Act – Noise

Control Regulations. This is however unlikely due to the masking effect of the wind.

9.9.3 Recommendations

Construction Activities

- a) Construction operations should only occur during daylight hours wherever possible (specific exclusions are listed in the EMPr).
- b) No construction piling should occur at night. Piling should only occur during the day to take advantage of unstable atmospheric conditions.
- c) Construction staff should receive “noise sensitivity” training.
- d) An ambient noise survey should be conducted during the construction phase.

Operational Activities

- a) The turbine layout will need to be re-adjusted once the final turbine manufacturer is selected and the specific model is chosen.
- b) Re-modelling of the noise impacts will need to be conducted on the absolute final layout which is submitted to DEA prior to construction.
- c) The noise impact from the wind turbine generators should be measured during the operational phase, to ensure that the impact is within the required legal limits.

9.9.4 Conclusion & Specialist Opinion

The day/night time noise limit of 45dBA will be not be exceeded at any of the noise sensitive areas and the receptors which could be affected by the night time guideline noise limit of 35dBA can be mitigated. The overall noise impact for the Dassiesridge is therefore low.

Noise Impact Assessment Overall Significance (Post-Mitigation): **LOW**

Noise Specialist Comment on Final Layout: “**noise re-modelling will have to be redone when the final layout and micro-siting have been completed. This is due to the uncertainty regarding the placement of the final number of turbines for this project**”

FOR THE FULL SPECIALIST LETTER PLEASE REFER TO APPENDIX D, SECTION 14.4.9

10 IMPACT ASSESSMENT

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (i) A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- (k) A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issues could be addressed by the adoption of mitigation measures;
- (l) An assessment of each identified potentially significant impact, including-
 - (i) Cumulative impacts;
 - (ii) The nature of the impact;
 - (iii) The extent and duration of the impact;
 - (iv) The probability of the impact occurring;
 - (v) The degree to which the impact can be reversed;
 - (vi) The degree to which the impact may cause irreplaceable loss of resources; and
 - (vii) The degree to which the impact can be mitigated.

The impact assessment for the proposed Dassiesridge WEF was conducted in two parts; a general impact assessment, and various specialist impact assessments. The general impact assessment identified and assessed impacts across four phases of development:

- Planning & Design Phase
- Construction Phase
- Operational Phase
- Decommissioning Phase

The general impact assessment covered issues such as:

- Drainage line impacts
- General construction impacts
- Access roads
- Underground electrical connections
- Stormwater
- Electromagnetic Interference

10.1 Planning and Design Phase Impacts

10.1.1 General

ISSUE 1: TRAFFIC AND TRANSPORT

Impact 1.1: Inadequate planning for the transportation of turbine parts could lead to traffic congestion

Cause and Comment

Inadequate planning for the transportation of turbine parts and specialists construction equipment

to the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required.

Mitigation Measures

- Project planning must include a plan for transport management plan that will be implemented especially during the construction phase of the development.
- The necessary road traffic permits must be obtained for transporting parts, containers, materials and construction equipment to the site.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Short Term	Regional	Severe	May Occur	MODERATE -
With mitigation	Short Term	Regional	Moderate	Unlikely	LOW -

Impact 1.2: Degradation of existing road infrastructure due to heavy vehicle traffic

Cause and Comment

The integrity of existing highway infrastructure such as bridges and barriers may be compromised by the burden of heavy vehicle traffic delivering components to site.

Mitigation Measures

- Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified these areas must be upgraded if necessary.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Short Term	Regional	Moderate	Probable	MODERATE -
With mitigation	Short Term	Regional	Moderate	Unlikely	LOW -

ISSUE 2: STORAGE OF HAZARDOUS SUBSTANCES

Impact 2.1: Inappropriate planning for the storage of hazardous substances could lead to surface and ground water pollution

Cause and Comment

Inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc. could lead to surface and ground water pollution due to, for example, oil leaks, spillage of diesel, etc.

Mitigation Measures

- All hazardous substances must be stored in a bunded area with an impermeable surface beneath them. Ensure that such areas are designed into the layout plan for the site camp.
- A Spill Response Contingency Plan must be drafted and implemented.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Long Term	Localised	Severe	May Occur	MODERATE -
With mitigation	Long Term	Localised	Moderate	Unlikely	LOW -

Impact 2.2: Ground water contamination due to mixing of cement in inappropriate areas on site

Cause and Comment

The mixing of cement on site could result in ground water and surface water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas of hard standing which could in turn increase rates of runoff thereby increasing the risk of localised flooding, soil erosion, siltation, sedimentation and the formation of gullies.

Mitigation Measures

- Cement mixing must be conducted at a single location which should be centrally located, where practical. Ensure that this site is chosen and agreed to by the ECO prior to construction.
- Wash water from cleaning vehicles and implements must be managed: stored on site and disposed off-site at a licenced WWTW; waste manifests to prove legal disposal.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Short Term	Localised	Moderate	May Occur	LOW -
With mitigation	Short Term	Localised	Moderate	Unlikely	LOW -

ISSUE 3: STORMWATER MANAGEMENT AND EROSION

Impact 3.1: An increase in impermeable surfaces could lead to increased localised flooding and erosion

Cause and Comment

The construction of roads and impermeable areas of hard standing could increase rates of run-off and lead to an increase in localised flooding and erosion. An inappropriate stormwater management plan could result in a higher severity of flooding and erosion.

Mitigation Measures

- All structures must be located at least 32m away from identified drainage lines unless authorised by the Department of Water and Sanitation.
- All structures must be located at least 500m from the delineated edge of wetlands unless authorised by the Department of Water and Sanitation. No non-linear structures will be allowed within 50m of the delineated edge unless authorised by the DWS. A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of

the water flow

- The Stormwater Management Plan must also include management mitigation measures for water pollution, waste water management and the management of surface erosion.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Long Term	Localised	Moderate	Probable	MODERATE -
With mitigation	Long Term	Localised	Moderate	May Occur	LOW -

ISSUE 4: ELECTROMAGNETIC INTERFERENCE (EMI)

Impact 4.1: The blocking or delaying of signal to electronic devices caused by wind turbines

Cause and Comment

WEFs can cause television, radio and microwave interference by blocking and/or causing part of the signal to be delayed.

Mitigation Measures

- Accurate siting of wind turbines in the planning and design phase will reduce the possibility of these impacts
- If complaints are received by neighbouring landowners regarding the issue, then the developer must investigate and mitigate these issues to the best of their abilities.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Long Term	Study Area	Moderate	May Occur	MODERATE -
With mitigation	Long Term	Study Area	Moderate	Unlikely	LOW -

ISSUE 5: SHADOW FLICKER

Impact 5.1: The movement of turbines could cause a phenomenon called shadow flicker, which could result in health impacts to individuals exposed for extended periods of time

Cause and Comment

Rotating wind turbine blades interrupt the sunlight producing unavoidable flicker bright enough to pass through closed eyelids, and moving shadows cast by the blades on windows can affect illumination inside buildings. This effect is commonly known as shadow flicker. Wind turbine shadow flicker has the potential to induce photosensitive epilepsy seizures however the risk is low with large modern models and if proper planning is adhered to. It is possible to model the potential shadow flicker and determine potential negative impacts.

Mitigation Measures

- Planning should ensure the flash frequency does not exceed three per second, and the shadows cast by one turbine on another should not have a cumulative flash rate exceeding

three per second.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Long Term	Study Area	Moderate	May Occur	MODERATE -
With mitigation	Long Term	Study Area	Moderate	Unlikely	LOW -

10.2 Construction Phase Impacts

10.2.1 General

ISSUE 1: CONSTRUCTION MOVEMENT ON SITE

Impact 1.1: Dust associated with an increase in vehicles on site could result in health impacts

Cause and Comment

Dust is likely to be a potential nuisance during the construction due to an increase in vehicles transporting supplies during this period. Also as a result of vegetation clearing. This is the main cause. Dust can have detrimental effects on human health for individuals within a close proximity to the site.

Mitigation Measures

- Nuisance dust can be reduced by implementing the following:
 - Damping down of un-surfaced and un-vegetated areas using water from a licensed source;
 - Retention of vegetation where possible;
 - Only clear what is strictly necessary at any one time, i.e. do not clear the entire site at the beginning of construction;
 - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of dust to surrounding areas
 - Surface all access roads with a gravel layer before commencing any construction activities; and
 - A speed limit of 40km/h must not be exceeded on dirt roads.
- Any complaints or claims emanating from the lack of dust control should be attended to immediately by the Contractor.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Short Term	Study Area	Severe	Probable	MODERATE -
With mitigation	Short Term	Study Area	Moderate	May Occur	LOW -

Impact 1.2: Adverse noise impacts due to inappropriate construction times

Cause and Comment

Adverse noise effects will occur during the construction period due to movement and use of heavy machinery. Activities such as excavation of foundations, road construction and vegetation stripping could lead to adverse noise for individuals located within close proximity of the construction site.

Mitigation Measures

- Machinery that causes noise must only be operated at appropriate times.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Short Term	Study Area	Moderate	Probable	LOW -
With mitigation	Short Term	Study Area	Moderate	Unlikely	LOW -

ISSUE 2: CONSTRUCTION WORKERS AND CAMP

Impact 2.1: Unnecessary disturbance of vegetation due to sprawl of campsite could cause a loss of biodiversity.

Cause and Comment

An unnecessary sprawl of the construction camp site beyond the demarcated area could result in an increase in the loss of vegetation and biodiversity surrounding the campsite.

Mitigation Measures

- The ECO must assist in the siting of all construction camp related structures (including any concrete batching plants or centralised concrete mixing areas) and supervise any bush clearing for the construction camp.
- The construction camp should be clearing demarcated and fenced to avoid sprawl.
- The construction area must be located in a degraded area where very little to no bush clearing is required to the extent possible. Where permits are required to remove plants, these will be applied for by the developer prior to the start of construction; and
- If there is a concrete batching site, it should be fenced. Shade cloth should be attached to the fence to stop sand blowing around.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Short Term	Localised	Moderate	May Occur	LOW -
With mitigation	Short Term	Localised	Moderate	Unlikely	LOW -

Impact 2.2: Loss of biodiversity caused by uncontrolled fires in the construction camp

Cause and Comment

The risk of runaway fires from cooking on the construction camp may lead to the burning of surrounding vegetation.

Mitigation Measures

- There should be no burning of construction waste or debris onsite;
- Cooking fires should be prohibited;
- A Fire Management Plan must be drafted; and
- Preferably no smoking on site. If it is allowed then it should take place in a designated area with easy access to firefighting equipment.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Short Term	Localised	Severe	Probable	MODERATE -
With mitigation	Short Term	Localised	Moderate	Unlikely	LOW -

Impact 2.3: Littering by construction workers could cause surface and ground water pollution

Cause and Comment

The littering of general waste by construction workers could lead to pollution in the surrounding water sources and the general vegetation which could have a detrimental impact on plant and animal species in the surrounding areas.

Mitigation Measures

- Littering must be avoided and litter bins must be made available at various strategic points onsite.
- Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill site.
- The bins should be animal proof i.e. the lids must not allow animals to get in and scavenge.
- There must be sufficient litter bins on site and they should be emptied regularly and as necessary. Waste manifests to be provided by the municipality to prove legal disposal.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localised	Moderate	May Occur	LOW -
With Mitigation	Short Term	Localised	Moderate	Unlikely	LOW -

10.2.2 Ecological

ISSUE 1 - LOSS OF VEGETATION COMMUNITIES

This includes the loss of each of the vegetation community types identified on the site, as a result of the clearing of the land for construction. This issue describes only the direct loss of the vegetation communities and no associated loss of animal or plant species of special concern, nor the effect on ecosystem functioning or the loss of habitats.

Impact 1.1: Loss of Coega Bontveld

Cause and Comment

Most of the turbines (34) are located within the Coega Bontveld. The construction of the project infrastructure and access roads and laying down of cables will result in the clearance and subsequent loss of this vegetation within the project area. This vegetation type is comprised of bush clumps and succulent patches (which have a high sensitivity) and grassland (which has a moderate sensitivity). As such, effective measures must be taken to ensure that the impacts in these areas are reduced where feasible and that project infrastructure is realigned to avoid large bushclumps and succulent patches. Due to the Bush clumps found within the Coega Bontveld being more sensitive than the grassland, the impacts are assessed separately (below).

Mitigation Measures

Mitigation measures include the following:

- Vegetation clearing and trampling must be kept to a minimum and must remain in the demarcated areas;
- No-go areas to be barricaded with orange snow netting;
- Existing roads must be used where feasible;
- Areas with large populations of SCC must be avoided;
- No *E. horridus* should be disturbed. Infrastructure must be relocated to at least 10 m from plants. They must be barricaded during construction. Their locality must not be revealed off-site.
- A search and rescue plan must be implemented and species of conservation concern removed prior to construction and placed in a nursery for rehabilitation;
- Rehabilitation plan should be implemented in the areas which are affected during the construction phase and areas which are not affected but are currently disturbed by other land use practices; this will curb the impact of the proposed development and conserve this vegetation type;
- Turbines occurring on bush clumps should be moved to less sensitive areas;
- Barricade bush clumps with snow netting to show construction crews they may not be disturbed;
- Vegetation clearing and trampling within bush clumps should be avoided and laydown areas required during construction must avoid these areas; and
- Areas which are already disturbed should be utilised, such as areas with a low number of SCC, have invasive species and those that are disturbed due to grazing and poor land management practices
- All species protected in terms of the PNCO and ToPS regulations will require permits from DEDEAT prior to their removal.
- Any protected trees that need to be removed will require a permit from DAFF..

Significance Statement

Grassland

The loss of Coega Bontveld (Grassland/veld area) will definitely occur and will have a **MODERATE**, Permanent impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. Even with mitigation measures it will remain MODERATE NEGATIVE.

Bush clumps and Succulent Patches

The loss of Coega Bontveld (Bushclumps and succulent patches) will definitely occur and will have a **severe**, permanent impact. The environmental significance of this unmitigated impact will be HIGH NEGATIVE. This will be reduced to MODERATE NEGATIVE with mitigation measures.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW- due to the current land use (grazing and poor land management use).

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Coega Bontveld: Grassland					
Without Mitigation	Permanent	Study Area	Moderate	Definite	MODERATE -
With Mitigation	Permanent	Study Area	Moderate	Definite	MODERATE -
Coega Bontveld: Bushclumps and Succulent Patches					
Without Mitigation	Permanent	Study Area	Severe	Definite	HIGH -
With Mitigation	Permanent	Study Area	Moderate	Definite	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Moderate	Probable	LOW -

Impact 1.2: Loss of Thicket vegetation

Cause and Comment

27 turbines occur within the vegetation. The construction of these turbines and access roads and lay down of cables will result in the clearance and subsequent loss of this vegetation type. This vegetation type has been impacted on by the current land use and has therefore been assigned a moderate sensitivity.

Mitigation Measures

Mitigation measures include the following:

- Vegetation clearing and trampling must be kept to a minimum and remain within the demarcated areas;
- Barricade no-go areas with snow netting to show construction crews they may not be disturbed;
- Existing roads must be used where feasible;
- Areas which are already disturbed should be utilised, such as areas with a low number of SCC and areas that are infested with alien invasive species.
- A search and rescue plan must be implemented and species of conservation concern removed prior to construction and moved to undeveloped areas.
- All species protected in terms of the PNCO and ToPS regulations will require permits from DEDEAT prior to their removal.
- Any protected trees that need to be removed will require a permit from DAFF.

Significance Statement

The loss of Thicket will definitely occur and will have a **MODERATE**, permanent impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. Even with mitigation measures this will remain MODERATE NEGATIVE.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW NEGATIVE. The vegetation will continue to be impacted on by the current landuse.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Permanent	Study Area	Moderate	Definite	MODERATE -
With Mitigation	Permanent	Localised	Slight	Definite	MODERATE -

No-Go					
Without Mitigation	Long Term	Study Area	Moderate	Probable	LOW -

ISSUE 2 - LOSS OF SPECIES OF CONSERVATION CONCERN AND BIODIVERSITY

This includes loss of both animal and plant species of conservation concern over the entire site, including all vegetation community types. It also encompasses the loss of biodiversity as a whole, which includes all species that occur on site taking into account their contribution to the biodiversity of the surrounding area and within the site.

Impact 2.1: Loss of plant species of conservation concern

Cause and Comment

Species of Conservation concern (SCC) were found to occur in the Coega Bontveld as well as the Thicket. Species such as *Encarphalartos horridus* and *Euryops cf ericifolius* were found within the site. There may be many additional species of special concern that will be found on site during construction that were not observed during this study. It is therefore important that prior to construction each turbine site is groundtruthed and a search and rescue for SCC is conducted.

Mitigation Measures

Mitigation measures include the following:

- No development should occur in the bush clumps and succulent patches associated with the Coega Bontveld as it has been identified as an area of high sensitivity
- Prior to the construction of the proposed WEF:
 - Each turbine site must be groundtruthed and SCC identified and the correct permits (PNCO, TOPS, National Forest Acts Permit) acquired for their removal.
 - A search and rescue plan must be developed in order to identify and transplant SCC. Where there are large, viable populations of these species, these areas should be avoided as far as possible and be left undisturbed. Populations of *E. horridus* should be marked and these areas avoided. It is imperative that the position of these individuals is kept from the public domain.
 - Species of special concern must be marked prior to construction.
- During Construction of the proposed WEF:

- Employees must be prohibited from harvesting wild plants;
- Fires must be prohibited in areas other than those demarcated in the construction site camp;
- Laydown areas must be rehabilitated once they are no longer required and an alien invasive management program implemented to ensure alien species do not invade these areas;
- Construction activities must remain within the demarcated area; and
- An ECO must be employed to ensure that the construction activities remain within the designated area and that no unauthorised activities occur.

Significance Statement

The loss of Species of Conservation Concern will definitely occur and will have a **Severe**, Permanent impact. The environmental significance of this unmitigated impact will be HIGH NEGATIVE. This will be reduced to MODERATE NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the current landuse would continue to occur resulting in the probable loss of SCC. The overall impact would be LOW negative.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Permanent	Study Area	Severe	Definite	HIGH -
With Mitigation	Permanent	Localised	Moderate	Probable	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Probable	LOW -

Impact 2.2: Loss of animal species of conservation concern

Cause and Comment

There are a few species of conservation concern (SCC) that may occur within the study site. This may include important reptile and amphibian species as well as mammals such as the honey badger. Disturbance during the construction phase may result in the displacement of various animal species due to loss of habitat, an increase in traffic in the area resulting in road fatalities and an increase in noise which may impact the breeding behaviour of some species.

Mitigation Measures

- Clearing or damaging of intact areas of vegetation (i.e. areas that have little to no disturbance) should be avoided;
- A search and rescue operation must be undertaken of all areas where construction will take place. Since the main SCC in the area are likely to be reptiles it is recommended that a qualified herpetologist focuses on the reptile SCC in the area.
- Workers must also be educated on conservation and must not be allowed to trap or poach animals on site;
- The construction site must be monitored for animal traps and evidence of poaching;

- Curtail unnecessary night driving on roads and implement a speed limit so that accidents are prevented;
- Protect abiotic habitats, such as termite mounds which play an important ecological role such as providing shelter for reptiles; and
- Activities that generate noise must only occur during daylight hours to avoid disturbance.
- Where feasible, the number of vehicles driving on site must be limited after sunset to only those necessary (should driving at night be required) for specified construction activities..

Significance Statement

The loss of faunal Species of Conservation Concern will probably occur and will have a **Moderate**, long term impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. This will remain MODERATE NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW negative, as the area would continue in its current state.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Moderate	Probable	MODERATE -
With Mitigation	Short Term	Study Area	Moderate	Probable	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Probable	LOW -

Impact 2.3: Loss of *Bitis albanica* (Albany adder)

Cause and Comment

The reptile species (*Bitis albanica*) is listed as Critically Endangered on the Atlas and Red List of the Reptiles (2014) and the only currently known population occurs in the Grass Ridge Bontveld. It is therefore possible that this species may occur in the project area. This species is typically a cryptic species and difficult to find. This species is likely to be impacted by the loss of habitat and direct mortality such as road kills.

Mitigation Measures

- Implement a reptile search and rescue plan prior to construction. If any individuals of this species are found, they should be relocated to areas that will not be affected during the construction phase;
- To minimise the incidence of road mortality during construction phase a low fence (like a drift fence) can be erected alongside areas found to be sensitive until construction is completed. These areas will be determined by the reptile search and rescue plan;
- Clearing or damaging of intact areas should be avoided;
- Workers must also be educated on conservation and must not be allowed to trap kills any snakes on site;
- The construction site must be monitored for animal traps and evidence of poaching;
- Where feasible, the number of vehicles driving on site must be limited after sunset to only those necessary (should driving at night be required) for specified construction activities.

- Protect abiotic habitats, such as termite mounds which play an important ecological role such as providing shelter for reptiles; and
- Activities that generate noise must not occur during daylight hours to avoid disturbance.

Significance Statement

The loss of *Bitis albanica* will probably occur and will have a **Severe**, short term impact. The environmental significance of this unmitigated impact will be HIGH NEGATIVE. This will be reduced to MODERATE NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW negative, as the area would continue in its current state.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Severe	Probable	HIGH -
With Mitigation	Short Term	Study Area	Moderate	Probable	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Probable	LOW -

Impact 2.4: Loss of *Aloeides clarki*

Cause and Comment

This butterfly is listed as Endangered and is endemic to the lower Coega and Sundays River valleys and is associated with dry, sandy and limestone ridges at an altitude of 30 to 150m in Coega Bontveld. It is possible that it may occur within the project area however, it has only been recorded within the Coega IDZ and at an isolated location at the Sundays River Mouth both of which are not near the study area.

This species has an obligate relationship with host ants, reported to be a species of *Monomorium*. It is possible that the construction activities associated with wind farms could cause changes to the ant communities on the site either by introducing invasive species or via increasing availability of dead insect remains due to impacts of the turbines themselves. If this species is present at the site, impact on this species is likely to be an indirect impact as a result of changes to the host species it is dependent on. There is of course the possibility that the host ants will be among the species that increase in number as a result of development and this could benefit the butterflies.

Mitigation Measures

- It is recommended that an entomological ground truthing survey is conducted prior to construction to identify areas that are sensitive. The entomologist should have the skills to be able to positively identify the host ant species as well as the butterfly.
- Protect abiotic habitats, such as termite mounds which play an important ecological role such as providing shelter.
- All limestone outcrops within the area of the proposed development must be checked as part of the proposed micro siting exercise prior to construction, to ascertain whether this species occurs there. Because of their specialised behaviour they are restricted to very small areas, which are relatively easy to conserve.

- Should it be found that project infrastructure is located in close proximity to a population, mitigation measures such as amending the infrastructure’s layout so as to stay away from this sensitive area must be implemented

Significance Statement

The loss of faunal *Aloeides clarki* will possibly occur and will have a **MODERATE**, short term impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. This will remain MODERATE NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW negative, as the area would continue in its current state.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Moderate	Possible	MODERATE -
With Mitigation	Short Term	Study Area	Moderate	Possible	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Possible	LOW -

Impact 2.5: Loss of Biodiversity

Cause and Comment

Loss of biodiversity will occur as a result of the clearing and loss of vegetation on site during the construction phase. Both floral and faunal species, other than species of conservation concern will be affected.

Mitigation Measures

Mitigation measures include the following:

- An area within the site that can be set aside for conservation and actively managed as a corridor area would be ideal to mitigate loss of biodiversity.
- It is recommended that as much as possible of the high sensitivity areas be set aside as conservation areas and be managed as such by the land owners and developers.

Significance Statement

The loss of Biodiversity will definitely occur and will have a **Moderate**, Permanent impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. Even with the implementation of mitigation measures this will be remain LOW NEGATIVE.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW negative, due to factors such as grazing and alien infestation which are potentially affecting the biodiversity on the site.

Impact	Effect			Risk or Likelihood	Total Score
	Temporal Scale	Spatial Scale	Severity of Impact		

Construction phase					
Without Mitigation	Permanent	Study Area	Moderate	Definite	MODERATE -
With Mitigation	Permanent	Study Area	Slight	Definite	MODERATE -
No-Go					
Without Mitigation	Long Term	Regional	Slight	Probable	LOW -

ISSUE 3: DISRUPTION OF ECOSYSTEM FUNCTION AND PROCESS

The habitats that exist in the project area, together with those of the surrounding area that are linked, form part of a functional ecosystem. Destruction or modification of habitats causes disruption of ecosystem function, and threatens the interplay of processes that ensure environmental health and the survival of individual species. This issue deals with a collection of complex ecological impacts that are almost impossible to predict with certainty, but which are nonetheless important.

Fragmentation is one of the most important impacts on vegetation, especially when this creates barriers in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. In terms of current land use, this impact occurs when large areas of vegetation are overgrazed.

The removal of existing vegetation creates ‘open’ habitats that will inevitably be colonised by pioneer plant and animal species. While this is part of a natural process of regeneration, which would ultimately lead to the re-establishment of a secondary vegetation cover, it also favours the establishment of undesirable species in the area. Once established, these species are typically very difficult to eradicate and may then pose a threat to the neighbouring ecosystem. This impact is likely to be exacerbated by careless management of the site and its facilities, e.g. inadequate monitoring. Many such species are, however, remarkably tenacious once they have become established.

Impact 3.1: Fragmentation of communities and edge effects

Cause and Comment

The placement of turbines in areas of high sensitivity and the construction of roads could result in the landscape becoming fragmented, thus there is a possibility that viable animal and plant populations may be split or cut off from one another. In areas where there is already evidence of fragmentation, the construction of these turbines could result in the conditions becoming exacerbated.

Mitigation Measures

Mitigation measures include the following:

- Vegetation clearing for infrastructure such as turbine hardstands, cables and access roads should be kept to a minimum. No development must be permitted in areas with high sensitivity;
- Existing access roads should be used where feasible;
- Turbines should not be located in areas of high sensitivity (e.g. bush clumps);
- Roads and cables must be aligned within a single corridor where feasible to reduce the impact;
- Areas marked as high sensitivity should also be conserved as part of an ecological corridor and no clearing should be conducted in these areas; and
- The recommendations made in chapter 6 (of the Ecological Specialist Report) for certain turbines, access roads and cable layouts should be followed.

Significance Statement

Fragmentation of communities and edge effects will definitely occur and will have a **Moderate**, Long Term impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. This will be reduced to LOW NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the overall impact would be positive.

Impact	Effect			Risk or Likelihood	Total Score
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Long Term	Study Area	Moderate	Definite	MODERATE -
With Mitigation	Long Term	Study Area	Slight	Definite	LOW -
No-Go					
Without Mitigation	Long Term	Study Area	Slightly Beneficial	Probable	LOW +

Impact 3.2: Disturbance to wildlife in the surrounding area

Cause and Comment

Construction phase activities are associated with an increase in noise levels, vehicular movements and dust levels. Noise pollution can depress local populations of sensitive faunal groups. Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups. For example, large breeding birds are sensitive to noise and increased noise and motor vibrations in the nearby streams may impact amphibian breeding choruses, but these impacts will be localised and many amphibian species are surprisingly tolerant of noise (Branch, pers. comm.). Noise pollution will occur during construction and mitigation measures will need to be applied.

Some dust may be generated as a result of construction activities and, in particular, where there is exposed ground. Specific activities that may contribute to release of fugitive dust include offloading and stockpiling of building materials such as sand, excavation, storage of excavated materials and movement of heavy vehicles. The generation of dust may be higher during windy, dry periods. Dust may also be deposited on the surface of the water within the adjacent riparian areas, potentially resulting in an increased turbidity of water. In certain contexts, this may reduce light penetration and, subsequently have negative impacts on aquatic plants, fish and amphibians.

Mitigation Measures

Mitigation measures include the following:

Dust

- Employ dust suppression measures such as wetting of the project area during dry, windy periods. Water must not be potable and must be obtained from a licensed source;
- Limit the height of stockpiles to 1.5m and actively manage them for alien vegetation and erosion;
- Do not leave cleared areas exposed for longer than necessary;
- The area of disturbance must be kept to a minimum at all times and no unnecessary clearing of vegetation, digging or scraping should occur;
- Road speeds in sensitive regions e.g. near wetlands, across drainage lines, and during extreme dry climatic conditions, should be limited to curtail dust production; and
- Vehicle speed should be limited to the lowest possible, and should not exceed 40km/h.

Noise

- Machinery that generates noise must be regularly maintained in order to ensure that no unnecessary additional noise is produced.

Significance Statement

Dust and noise will definitely be generated and will have a **Moderate**, Short Term impact. The environmental significance of this unmitigated impact will be MODERATE NEGATIVE. This will be reduced to LOW NEGATIVE if mitigation measures are implemented.

No-Go Option:

If no development was to occur on the site the overall impact would be positive since no increase in dust and noise generation will occur.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Moderate	Definite	MODERATE-
With Mitigation	Short Term	Study Area	Slight	May occur	LOW-
No-Go					
Without Mitigation	Long Term	Study Area	Mod. Beneficial	Probable	LOW +

10.2.3 Agricultural

Impact 1: Management of hazardous chemicals

Cause and Comment

Soil contamination may occur as a result of hazardous chemical spills that will further result in a loss of fertile soils.

Mitigation Measures

- Machinery must be properly maintained to keep oil leaks in check. Particular attention must be given to hydraulic hoses;
- No servicing of construction machinery on site. This must only be done at a service provider.
- Parked machinery must be placed in a bunded area or on a drip tray. Drip trays must be emptied daily (and more frequently if it rains) into a leak-proof container.
- Wastewater must be disposed of at a licensed Waste Water Treatment Works and waste manifests obtained from the local municipality to prove they have been disposed of legally.
- If a spill occurs on a permeable surface (e.g. Soil), a spill kit must be used to immediately reduce the potential spread of the spill.
- If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials.
- Spill kits will be available at every site where work is taking place as well as at the site office.
- Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of hazardous chemicals to the environment, and stored in adequate containers until appropriate disposal in a licenced landfill site.

Significance Statement

Impacts associated with soil contamination from spill during the construction phase are probable. Without mitigation the impacts will probably occur and should be regarded as moderate. The overall significance of the impact will be reduced through mitigation.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Long Term	Localised	Severe	Probable	LOW -
With Mitigation	Long Term	Localised	Slight	May occur	LOW -

Impact 2: Increased risk of fires from construction activities.

Cause and Comment

An increase in construction activity onsite (especially activities like welding and grinding) will result in the potential increase of fire risk in the area. Bush fires are a big contributor to the loss of grazing land and game livestock.

Mitigation Measures

- Ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal, in appropriate waste disposal containers.
- Smoking will only be allowed in demarcated areas with easy access to firefighting equipment.
- Welding and other construction activities requiring open flames shall be done in a designated area containing firefighting equipment.
- The risk of fire is highest in the late summer and autumn months, during high wind velocities and dry periods. To avoid and manage fire risk the following steps should be implemented:
 - Have on site fire-fighting equipment and ensure that all personnel are educated how to use it and procedures to be followed in the event of a fire.
 - Identify the relevant authorities and structures responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire commence.
 - Ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency.
 - The WEF should be a member of the local Fire Protection Association.
- The contractor shall take all reasonable steps to prevent the accidental occurrence or spread of fire.
- The contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire.
- The contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire. The appointed fire officer shall notify the Fire and Emergency Services in the event of a fire and shall not delay doing so until such time as the fire is beyond his / her control.
- The contractor shall ensure that there is basic fire-fighting equipment on site at all times. This equipment shall include fire extinguishers and beaters.
- Any work that requires the use of fire may only take place within designated areas. Fire-fighting equipment shall be available in these areas.

- The contractor shall ensure that the correct emergency call numbers for the nearest fire department and the local Farmers Association Fire Marshall are easily accessible at all times, and that in the event that a fire becomes unmanageable, these people are notified as a matter of urgency.

Significance Statement

Impacts associated with fire risk during the construction phase are probable if not mitigated and should be regarded as high. The extent of the impacts is likely to spread to the entire study area. The overall significance of the impact will be reduced through mitigation.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Very severe	Probable	HIGH -
With Mitigation	Short Term	Localised	Slight	Unlikely	LOW -

Impact 3: Soil stockpiling management

Cause and Comment

Incorrect soil stockpiling methods will result in a decrease in agricultural viability/potential of these soils and may even cause sterilization of these soils due to the destruction of a viable seedbank.

Mitigation Measures

- Develop and implement a Rehabilitation and Monitoring Plan to monitor stockpiles.
- Ensure that topsoil does not get buried by subsoil during stockpiling. Failure to comply will result in topsoil sterilisation.
- Implement measures such as wind-breaks, swales and watering as required to ensure no wind or stormwater erosion occurs.
- Fertile topsoil must not be stockpiled for periods exceeding 12 months or exceeding 2m in height.
- Stockpiles should be limited to 1.5m in height and actively managed for alien vegetation and erosion.

Significance Statement

Impacts associated with soil stockpiles during construction are considered as short term impacts taking place on a small localised area. The overall significance of the impact without mitigation would be LOW NEGATIVE even without mitigation measures.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localized	Moderate	Probable	LOW -
With Mitigation	Short Term	Localized	Slight	Unlikely	LOW -

Impact 4: Soil profile disturbance and resultant decrease in soil agricultural capability

Cause and Comment

Excavations for the construction of the turbines and associated infrastructure will disturb the soil profile. If topsoil becomes buried, or subsoil and rock that is less suitable for root growth, remains at the surface, the agricultural suitability of the soil, that will become available for agriculture again after decommissioning of the WEF, will be reduced

Mitigation Measures

- The upper 30cm of top soil must be stripped and stockpiled as topsoil. It should be retained for re-spreading over disturbed surfaces during rehabilitation.
- All other soil excavated will be stockpiled separately from topsoil as subsoil.
- Ensure that topsoil does not get buried by subsoil during backfilling. Failure to comply will result in topsoil sterilisation.
- An ECO must monitor all excavations to ensure backfilling with subsoil first and then topsoil afterwards takes place.
- An ECO must monitor depth and cover of topsoil spreading during rehabilitation to ensure a 30cm depth.
- Topsoil allocated for rehabilitation must not be mixed with other materials, such as building rubble, rock, subsoil, etc.
- Topsoil stockpiles are to be handled only twice – once during clearing and stockpiling and once during rehabilitation/backfilling.
- Subsoil should be compacted before backfilling with topsoil.

Significance Statement

Impacts associated with the disruption of fauna from increased noise during the construction phase is probable. The extent of the impacts are likely to be limited to the study area in the short term. Without mitigation the impacts will definitely occur and should probably be regarded as moderate. The overall significance of the impact without mitigation would be LOW NEGATIVE even without mitigation measures.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Very Severe	Definite	MODERATE -
With Mitigation	Short Term	Localised	Slight	Unlikely	LOW -

10.2.4 Avifauna

Impact 1: Destruction or alteration of bird habitat

Cause and Comment

A certain amount of habitat destruction is inevitable for the construction of roads and turbines, this will have an impact on the bird population due to loss of habitat.

Mitigation Measures

- Existing roads should be used as much as possible, as well as avoiding sensitive areas identified by this study.
- Hardstand areas and turbine footprints should also avoid sensitive areas.

Significance Statement

This impact is anticipated to be of MODERATE significance pre mitigation. A certain amount of habitat destruction is inevitable for the construction of roads and turbines. However by adhering to the sensitivity map developed in the Avifaunal Impact Report, it is possible to reduce the significance of this impact to LOW.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Long Term	Localised	Moderate	Probable	MODERATE -
With Mitigation	Long Term	Localised	Slight	Probable	LOW -

Impact 2: Disturbance of birds during construction

Cause and comment

Disturbance of birds during the construction of roads and turbines will cause temporary displacement.

Mitigation measures

Since we are not aware of any breeding sites at this stage, and mitigation measures for such situations are species and situation specific, we cannot specify mitigation in more detail at this stage. If nests of sensitive species are found mitigation is likely to consist of either spatial, temporal or both spatial and temporal limitations to construction during breeding season of that species.

Significance Statement

This is rated as LOW significance on account of there being no known sensitive or Red Listed bird species breeding on or near the site. No specific mitigation is required for this impact, unless breeding sites are found prior to construction. If such sites are found, case specific mitigation measures will need to be designed by the specialist as part of the EMP.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localised	Slight	Probable	LOW -
With Mitigation	Short Term	Localised	Slight	Probable	LOW -

Impact 3: Displacement of birds from area as result of wind turbines and other infrastructure

Cause and Comment

During the operational phase of the WEF, the displacement of birds from the area as a result of wind turbines and other infrastructure is possible.

Mitigation Measures

- It is very difficult to mitigate for this. Disturbance can be reduced to some extent by following general environmental best practice in terms of managing people, machines and equipment during operations and maintenance. A commitment by the developer, contractors and ECO to implement good housekeeping rules could assist in reducing these impacts.

- 12 months of pre-construction monitoring has established the baseline data against which this impact has been evaluated.

Significance Statement

Displacement of birds is judged to be of LOW significance both pre and post construction, once again on account of the lack of breeding sensitive bird species on site.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Long Term	Localised	Moderate	Probable	LOW -
With Mitigation	Long Term	Localised	Slight	Probable	LOW -

10.2.5 Bats

Impact 1: Destruction of bat foraging habitat

Cause and Comment

Bat foraging habitat will definitely be destroyed during the construction phase and this impact will be present to a lesser extent during the lifetime of the WEF. When turbines are constructed in areas designated as sensitive for bat foraging habitat, larger trees and riparian/dense valley vegetation will be destroyed. Such areas are higher in moisture and will therefore support more insects, which in turn will attract more insectivorous bats.

Mitigation Measures

Correct turbine placement is imperative to avoid destruction of bat foraging habitat. The aerial footprint of the wind farm should be kept to a minimum, and areas designated as high sensitivity should be avoided.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Long Term	Localised	Slight	Probable	MODERATE -
With mitigation	Long Term	Localised	Slight	Unlikely	LOW -

Impact 2: Destruction of bat roosts

Cause and Comment

Sensitive bat roosting habitats include the hollows and crevices associated with large trees and riparian/dense valley vegetation. This habitat may be destroyed during the construction phase of the WEF if turbines and associated infrastructure are constructed in these sensitive habitats.

Mitigation and Management

Correct turbine placement is imperative to avoid destruction of bat roosting habitat. The areal footprint of the wind farm should be kept to a minimum, and areas designated as high sensitivity should be avoided.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Long Term	Localised	Slight	Probable	MODERATE -
With mitigation	Long Term	Localised	Slight	Unlikely	LOW -

10.2.6 Heritage

Impact 1: Loss or damage of low density Stone Age occurrences

Cause and Comment

The primarily Middle (MSA), but including Later Stone Age (LSA) cultural landscape of the Dassiesridge WEF can be described as an organically evolved fossil landscape least evidently shaped by humans, with little to no visual or physical impact altering the landscape itself. Extremely low recorded surface artefact ratios, vast undefined occurrence size and uncertainty thereof as a result of vegetation cover all prohibit further interpretation, but most probably pointing towards a variety of landscape use: Quarrying, or raw material sourcing, and preliminary knapping – more directly associated with surface raw material outcrops across hilly terrain, to process knapping and general landscape use across flats and in proximity to drainage lines and other paleo-water sources. Despite the Low Significance rating ascribed to surface observed Stone Age deposits, continued surface and subsurface monitoring during the course of construction can be reasonably inferred to contribute to our understanding of the Stone Age in the area; either confirming its current ascribed Low Significance or shedding light on more distinctive surface or subsurface deposits.

Mitigation Measures

- Archaeological monitoring at the time of vegetation clearing at (further recommendations to be made based on monitoring results): Turbine line WTG01-WTG02-WTG03-WTG04; Turbine line WTG08-WTG06-WTG07-(WTG40)-WTG05; Turbine line WTG03/04-WTG07/39; Turbine line WTG16-WTG17; Turbine line WTG20-WTG21; Turbine WTG44; Turbine WTG46; Turbine WTG51; and Turbine WTG50.
- Subsurface monitoring, at the time when trench sections for underground cables are open at: Turbine Line WTG15-WTG19-WTG23.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					

Without Mitigation	Permanent	Localised	Moderate	Probable	MODERATE -
With Mitigation	Short Term	Localised	Mod. Beneficial	Definite	LOW +

Impact 2: Loss or damage of Colonial Period / Contemporary farming infrastructure

Cause and Comment

Currently no colonial period/contemporary farming infrastructure is likely to be impacted, but if this changes, an architect historian must be appointed to do an impact assessment and apply for relevant destruction permits if required.

Mitigation Measures

No further mitigation is required as this site should not be impacted by the development. In the event of a possible future impact, a list must be kept by the developer for inclusion in the ECO / heritage monitoring report.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localised	Slight	Unlikely	LOW -
With Mitigation	Short Term	Localised	Slightly Beneficial	Unlikely	LOW +

Impact 3: Loss or damage of Colonial Period Farmsteads

Cause and Comment

The Dassiesridge WEF study site comprises a landscape where continuing cultural tradition remains key in the evaluation of the Colonial Period resources and associated landscape as the prime cultural layer characterising the land.

Mitigation Measures

- Site DR-S1: Temporary conservation measures and permanent sign-posting
- Site DR-S2: Permanent conservation measures and permanent sign-posting (Alterations to site will require EC PHRA Built Environment Unit permit)

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Permanent	Study Area	Moderate	May Occur	MODERATE -
With Mitigation	Long Term	Regional	Mod. Beneficial	Probable	MODERATE +

10.2.7 Palaeontological

Impact 1: Disturbance, damage or destruction of fossil heritage during the construction phase of the WEF

Cause and Comment

Four of the twelve sedimentary bedrock formations represented within the Dassiesridge WEF study area are moderately to highly fossiliferous, notably the Voorstehoek, Kirkwood and Sundays River Formations as well as the base of the Alexandria Formation in some areas. Most of the development footprint is located on higher-lying plateaux and rocky ridges underlain by rocks of low palaeontological sensitivity, however.

The construction phase of the proposed Dassiesridge Wind Energy Facility will entail substantial excavations into the superficial sediment cover (soils, surface gravels, etc.) and in most cases also into the underlying bedrock. These notably include excavations for the wind turbine foundations and transmission line pylon footings, underground cables, new internal access roads and foundations for associated infrastructure such as on-site substations and the control / storeroom building. In addition, sizeable areas of potentially fossiliferous bedrock may be sealed-in or sterilized by infrastructure such as hard standing areas for each wind turbine, lay down areas and access roads. All these developments may adversely affect potential fossil heritage exposed at the surface or preserved below the surface within the study area by damaging, destroying, disturbing or permanently sealing-in fossils that are then no longer available for scientific research or other public good.

Once constructed, the operational and decommissioning phases of the wind energy facility will not involve further adverse impacts on palaeontological heritage, however.

Mitigation Measures

- Monitoring of all deeper (> 1m) excavations for newly exposed fossil material (bones, teeth, shells, petrified wood, etc.) by the ECO during the construction phase. Significant finds to be reported to ECPHRA for possible recording and sampling by a professional palaeontologist
- Inspection of two small, potentially sensitive areas for fossil remains by a professional palaeontologist, once bedrock excavations for infrastructure are opened, with recording and sampling of any significant fossil remains.

Significance Statement

Impacts associated with the disturbance, damage or destruction of fossil heritage during the construction phase of the WEF are probable and permanent in effect but significant impacts are likely to be limited to small portions of the development footprint. The overall significance of the impact without mitigation would be MODERATE NEGATIVE. Impact significance can be meaningfully reduced through mitigation but will still remain moderate negative. Improved understanding of local fossil heritage through professional palaeontological mitigation can be viewed as a positive impact, however.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Permanent	Localised	Slight	Probable	MODERATE -
With Mitigation	Permanent	Localised	Slight	Probable	MODERATE -

10.2.8 Visual

Impact 1: Intrusion of large and highly visible construction activity on sensitive viewers (turbine specific construction)

Cause and comment

The height of the features being built and the siting on the flat landscape is likely to expose construction activities against the skyline. Large, abnormal freight vehicles and equipment will be visible. Traffic may be disrupted while large turbine components are moved along public roads. Activity at night is also probable since transport of large turbine components and turbine construction may occur after work hours to minimise disruption of traffic on main roads.

Mitigation measures

The most obvious causes of impact cannot be mitigated for since the turbines are so tall and they are to be installed in an area that is relatively elevated compared to the surroundings. The duration of the impact is short, though, and there are a number of mitigation measures that will curtail the intensity to some extent:

- Construction of new roads should be minimised and existing roads should be used where possible.
- The contractor should maintain good housekeeping on site to avoid litter and minimise waste.
- Clearance of indigenous vegetation should be minimised and rehabilitation of cleared areas should start as soon as possible.
- Laydown areas and stockyards should be located in low visibility areas (e.g. valleys between ridges) and existing vegetation should be used to screen them from views where possible.
- Night lighting of the construction sites should be minimised within requirements of safety and efficiency.
- Fires and fire hazards need to be managed appropriately.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localised	Severe	Definite	HIGH -
With Mitigation	Short Term	Regional	Severe	Definite	HIGH -

10.2.9 Noise

Impact 1: Potential Construction Noise Sources (General Equipment and Vehicles)

Cause and comment

Noise pollution will be generated during the construction phase as well as the operational phase.

The construction phase could generate noise during different activities such as:

- Site preparation and earthworks to gain access using bulldozers, trucks etc.
- Foundation construction using mobile equipment, cranes, concrete mixing and pile driving equipment (if needed).
- Heavy vehicle use to deliver construction material and the turbines.

Mitigation measures

- The noise impact should be remodelled when the micro-siting of the turbines take place.
- No construction piling should occur at night. Piling should only occur during the day to take advantage of unstable atmospheric conditions.
- Construction staff should receive “noise sensitivity” training.
- An ambient noise survey should be conducted during the construction phase.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Localised	Slight	May Occur	LOW -
With Mitigation	Short Term	Localised	Slight	Unlikely	LOW -

10.2.10 Social

Impact 1: Influx of jobseekers and the impact of temporary construction workers

Cause and Comment

A 20-month construction period is foreseen and approximately 100 to 300 workers would intermittently be on site per month. An estimated 80 - 90% of these jobs would be allocated to unskilled and semi-skilled positions. Large-scale unemployment levels in the Metro (37%), District (25%) and local Municipality (15%) could result in high numbers of people seeking employment if the project is a successful bidder and becomes public knowledge. It could further be anticipated that ‘outsiders’ from the wider area and other Provinces would also attempt to find employment at the construction site and mitigation measures would be required in this regard, as the Department of Energy (DoE) sets high standards in terms of local content, which includes local employment.

Negative impacts resulting from an inflow of temporary workers and jobseekers could include:

- Conflict between locals and ‘outsiders’ if an outside labour force receives preference;
- Conflict due to cultural differences and impacts on social networks;
- Provision of accommodation for temporary workers could become an economic and social burden for the developer and the Municipalities;
- Workers that remain in the area after the construction period ends could place additional pressure on local government for housing and associated infrastructure and services. Currently housing needs in the SRVM are already being aggravated by an influx of seasonal workers and people seeking temporary employment in the fishing and tourism industries (refer Section 4.13: Housing of the Social Impact Assessment Report);
- ‘Outsiders’ that have short-term relationships with local women resulting in unwanted pregnancies and an increase in HIV/AIDS and other STD’s, thereby placing more pressure on health care facilities;
- An increase of single-headed households without a main income provider and pressure on health care, social grants and infrastructure;
- Poor control and management of the area where jobseekers gather could result in environmental issues and pollution (littering, inadequate sanitation facilities, etc.); and

- Safety and security issues for the surrounding communities due to an influx of ‘jobless’ people.

Mitigation Measures

- Co-operate with the NMBM and SRVM and their relevant structures to compile / update a database of an available labour force, skills requirements, etc. This process should start well in advance of the construction period commencing.
- Liaise with NMBM and SRVM regarding their methods used to advertise for employment. Take care not to create unrealistic expectations and communicate the time frames, skills requirements and commencement of the activities clearly to the communities.
- Set up a central labour desk where workers register. Only workers registered on this database should be considered for employment.
- Recruitment of temporary workers at the access to the construction site should not be allowed. The Community Liaison Officer (CLO) should work in consultation with the Ward Councillors and community representatives to establish labour desks at the most suitable localities within the communities where workers are sourced.
- The area where workers are recruited should not be near schools or other sensitive receptors where a large influx of people could cause safety and security impacts for the residents and other parties. Provide sufficient sanitation and refuse facilities to curb littering and pollution.
- Identify a CLO for the various areas/regions well in advance of the construction period commencing. Set up criteria for the CLO’s to ensure that the correct people are appointed. The CLO should have knowledge of the local community members and area, be educated, committed to the cause, accessible for community members as well as for the developer, etc.
- Give preference to workers from the local and metropolitan municipal area, followed by people from the district municipality.
- Contractually oblige Sub-contractors to only employ workers through the labour desk and make this fact known to the communities. This would address and limit the uncoordinated influx of people to the site and to the surrounding towns, as they would be unable to secure work if not through the labour desk.
- Issues such as accommodation for workers, transport, catering and any other needs for employees, whether locals or outsiders, must be discussed with the local and Metropolitan Municipalities in good time. Once construction starts structures must already be in place to address SMME needs and requirements and implement management measures.

No-go option:

- The influx of jobseekers would not be affected. However, seasonal workers would still move into the area seeking employment at packing sheds and farms.
- Impacts on health services due to HIV and the spreading of other STD’s, conflict between locals and outsiders, impacts on infrastructure and housing would not be affected and pressure on the Municipality for service delivery would not be impacted.

Significance Statement

It is thus possible that an influx of jobseekers and temporary construction workers during the construction phase (short-term) could have a moderate negative impact on the affected Municipalities over the short and (possibly) medium-term. With **pro-active** mitigation and management the significance of the impact of the inflow of temporary workers and jobseekers could be addressed.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					

Without Mitigation	Short Term	Regional	Moderate	Probable	MODERATE -
With Mitigation	Short Term	Regional	Slight	May Occur	LOW -

Impact 2: Population changes

Cause and Comment

Population impacts refer to the degree to which the construction period could impact on the population size, gender, racial and age compositions of the local Municipal area and would thus be affected by the magnitude of ‘outsiders’ moving into the area and the length of the period that they remain.

Limited construction related jobs would become available and the profile of the expected work force would be predominantly unskilled males aged between 15 and 65 years, as heavy and strenuous work would be performed. The workforce would be locally available (unskilled and some of the semi-skilled positions) as the three Municipalities have a relatively youthful population (refer Section 4.5 of the Social Impact Assessment Report) and approximately 70% of the SRVM’s local Municipality’s available labour force is unemployed (SRVM IDP).

Mitigation Measures

- Contractually oblige Sub-contractors to only employ construction workers through the labour desk.

Significance Statement

Impacts on population changes are expected to be low / negligible as locals will be used and even though a component of the semi- and skilled workforce would consist of expatriates and/or ‘outsiders’ who are employed for short intermittent periods, they would in all likelihood return to their places of residence with no impact on population structures.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Regional	Slight	Unlikely	LOW -
No-Go					
Without Mitigation	Short Term	Regional	Slightly Beneficial	Unlikely	LOW +

Impact 3: Employment opportunities and employment equity

Cause and Comment

The construction period of the wind energy facility is labour intensive with positive socio-economic consequences. Although not certain at this stage, approximately 800 employment opportunities would become available over the short-term (20-month construction period). At the peak of construction an estimated 300 people would be on site. Employment is not constant and will start slow, reach a peak and then slow down again towards the end of the construction period.

Unskilled workers do not necessarily require previous work experience and would be employed to do basic labour such as site clearing, digging of trenches, erecting fences, laying foundations, etc. Unskilled workers will be sourced from the nearby towns of Uitenhage, Addo and possibly Kirkwood and socio-economic benefits during the construction phase would thus relay to the local area. Unskilled workers would amount to approximately 560 to 640 of the total labour force.

Semi-skilled workers include machine operators, drivers, rehabilitation workers, etc. It is also expected that most of these positions be filled by residents of the NMBM, SRVM or the wider Cacadu district. Community members with skills obtained from similar construction projects such as Grassridge and Cookhouse WEF’s could also be sourced. The Contractor and Sub-contractors’ tender documents would need to reflect the worker requirements and should be enforced through the CLOs and Compliance Officer. Eighty to 120 positions would be filled by semi-skilled workers. Skilled professionals would include Land Surveyors, Project Managers, Assistant Project Managers, Engineers, an Environmental Control Officer and so forth. Wind energy facilities are new technology in South Africa and require specialised skills, which are not always readily available in South Africa. A portion of the skilled labour force would thus consist of foreigners and/or expatriates (80 to 120 skilled employment opportunities).

However, the number of foreigners employed would in all likelihood decrease as skills are being transferred to South Africans through completed renewable energy projects in the country. Recruitment of a ‘local’ skilled workforce would in all likelihood be done in the NMBM area where higher tertiary education levels (30.5%) occur. DoE requires a minimum of 30% skilled Black people during the construction phase, which could increase at a later stage.

Although policies with regards to the employment of disabled people, the youth and women have not been formulated at this stage, it is recommended that the recruitment policy takes employment equity of minority groups into consideration (wherever possible) to increase the potential employment advantages of the proposed project. This would not always be possible, as the construction phase comprises strenuous physical labour.

Mitigation Measures

- Do a skills audit of the available workforce to minimize the numbers of workers (skilled, semi- and unskilled) to be brought in from other areas.
- Enhance on a capacity building and skills development strategy to lessen any possible skills disparities between the local skills available and the requirements of the project.
- A policy regarding employment equity of minority groups (women, youth and the disabled) should be formulated and implemented wherever possible.

No-go option

- Should the project not be implemented the “beneficiary communities” of Kirkwood, Addo and Uitenhage would not benefit in terms of employment and skills development over the short term.

Significance Statement

A limited number of employment opportunities are available over the short term and the overall significance is thus moderate, albeit positive. The severity and overall significance of employment creation would thus be enhanced through the maximum use of local labour (skilled, semi- and unskilled).

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Regional	Moderate	Definite	MODERATE +
With Mitigation	Short Term	Regional	Beneficial	Definite	MODERATE +
No-Go					

Without Mitigation	Short term	Regional	Slight	Unlikely	LOW -
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Impact 4: Skills development and capacity building

Cause and Comment

Skills development and capacity building for workers, whether through training or hands-on experience would be a positive outcome of the construction phase. However, due to the relative short length of the construction phase it is doubtful that comprehensive skills training programmes could be undertaken.

The majority of the workforce would be unskilled labour that does manual labour and activities which requires minimal previous work experience or training (digging of trenches, site clearing, etc.). However, experience gained at the construction site could, to a certain extent, be advantages for these workers once they seek employment at other construction sites.

Semi-skilled labour would require previous work experience and/or a certain level of training as pre-requisite of employment. Skills development and capacity building for the anticipated 10 - 15% of the workforce would thus be valuable and significant and in addition to technical training, could include Fire Marshall training, First Aid Training, etc.

Skilled workers would fill specialist positions and a higher / tertiary education would be essential. Even as such, renewable energy technology is new technology in South Africa and on-site training and skills transfer, especially for South Africans, is likely.

Mitigation Measures

- Suitable semi and skilled employees have to be identified. Tap into existing skills databases of the affected Municipalities and Coega IDZ and do a skills audit of the available workforce.
- Compile a training programme and train workers where possible in advance to maximize skills development and minimize the number of people that are brought in from other areas.

No-go option

- Should the project not be implemented no skills development would manifest.

Significance Statement

Skills development, training and capacity building would enable the individuals to improve their quality of life and secure future employment at similar developments. The impact is rated with a low overall significance as the number of employees that would receive skills training is small.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Regional	Slight	May occur	LOW +
With Mitigation	Short Term	Regional	Moderate	Probable	MODERATE +
No-Go					
Without Mitigation	Short Term	Regional	Slight	Unlikely	LOW -

Impact 5: Local procurement

Cause and Comment

Local procurement would be more focused on the procurement of general construction materials and goods, infrastructure elements and the wind farm components by the Coega Development Corporation (CDC) and other industries in Port Elizabeth and the broader South Africa, as many of the high-technology components (complex turbine parts) would be imported. The DoE prescribes a minimum of 40% local content (labour, material and goods), aiming for 65%. This would have positive impacts on the local economy.

Currently it is not known how the local content of this project would be calculated, as procurement and local labour figures cannot accurately be determined at this stage.

Mitigation Measures

- Developer to implement local procurement policies that would enhance local and regional economic benefits.

No-go option

- The local economy would not benefit if the project does not proceed.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short term	Regional	Slight	Probable	LOW +
With Mitigation	Short term	Regional	Moderate	Probable	MODERATE +
No-Go					
Without Mitigation	Short term	Regional	Slight	Unlikely	LOW -

Impact 6: Skills development of supporting industries / local SMMEs

Cause and Comment

Supporting industries refer to small business enterprises and services that would be required to fulfil needs or requirements that develop as a result of the construction activities and would thus fall under the ‘Enterprise Development’ (ED) and ‘Socio-economic Development’ (SED) component of the project. This could include catering, laundry services, suppliers of protective clothing, transport and so forth.

An indirect objective and positive spin-off of the Dassiesridge WEF construction period would therefore be the establishment and support for local small businesses, and thus contributing to economic growth within the Municipalities. However, SMME development is a challenge in most peri-urban and rural areas as exposure to an economic growth climate has usually been absent. Even though skills development and training for SMMEs is not directly the responsibility of the project proponent, there are a number of measures that could be implemented in advance to enhance the development and growth of PDIs and local small service providers. This would include:

- Identify the needs, services and small business requirements necessary for all stages of the construction period;
- Draw up a strategy and policy to ensure the involvement / shareholding of upcoming local businesses or PDIs that tender;

- Meet with the affected Municipalities, Councillors, the local business forums, community representatives and other relevant structures to provide a list of the required services and convey the tender policies to them;
- Appoint a Compliance Officer (CO) and establish a Community Liaison Office (CLO) to ensure compliance of SMMEs, PDIs and other individuals that tender; and
- Award the tenders well in advance to ensure that the SMMEs are prepared, trained, registered and well-equipped once construction commences.

The above strategy would thus aim to give preference to small upcoming businesses or PDIs. Where the necessary skills, expertise or capital lack, established local businesses could be contracted, but would be required to involve and train upcoming businesses or PDIs (thus forming a partnership), thereby contributing to skills development of small business.

It would be the responsibility of the Municipalities to ensure that SMME's are prepared and registered in order to tender and emphasis is placed on their role in this regard in the mitigation measures proposed below.

Mitigation Measures

- Involve the NMBM, Cacadu DM and SRVM in the ED's and SED's from the onset of the project through open engagement. The Developer should thus identify the needs and service requirements and convey this to the local Municipal structures and appoint service providers well in advance to ensure that they are prepared and trained once construction starts.
- The Municipal structures, Ward Councilors and Ward Committees are responsible to transfer information to their constituencies, create task teams and/or PSC's that would ensure compliance with tender procedures.
- Municipal structures, such as the Cacadu District Development Agency (CDA), could train SMMEs and PDIs and assist them in registering and preparing for tender.
- Appoint a Compliance Officer (CO) that monitors the processes and ensures compliance with the recruitment policies.

No-go option

- Less economic development and SMME opportunities for locals.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short term	Regional	Slight	May occur	LOW +
With Mitigation	Short term	Regional	Moderate	Probable	MODERATE +
No-Go					
Without Mitigation	Short term	Regional	Slight	Unlikely	LOW -

Impact 7: Impacts on the Local Economy

Cause and Comment

Positive impacts for the local economy associated with the construction phase would include:

- Employment of locals and an increase in salary earners;
- Contracts with SMME's and local service providers (catering, transport, etc.) where possible;
- Local procurement of material and goods, if possible;

- Increase in spending power and expenditure on groceries, goods and services, which would be advantages for local merchants, food suppliers and informal traders; and
- Accommodation of foreigners in local establishments and other spin-offs.

Local procurement would be more focused on the procurement of general construction materials and goods as the majority of technology requirements would be imported. The site is located in relative close proximity to a number of industrial zones in the NMBM where manufacturing of components, material and goods could be produced to the benefit of the local economy.

Mitigation Measures

- It is required from the developer to formulate a local procurement strategy to increase the local content of the project to its maximum.

No-go option

- No positive impacts on the local economy would be experienced as a result of the WEF development (employment and SMME development, etc. would thus not be influenced).

Significance Statement

Although the exact impact on the local and regional economies and its associated spin-offs cannot be calculated at this stage, a local content between 40 and 65% is assured and an impact of overall moderate significance on the local economy could be expected.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Regional	Slight	Definite	MODERATE +
With Mitigation	Short Term	Regional	Moderate	Definite	MODERATE +
No-Go					
Without Mitigation	Short Term	Regional	Slight	Unlikely	LOW -

Impact 8: Disruption in daily living and movement patterns

Cause and Comment

The proposed site is well located in terms of access to major roads. It is connected by gravel road with two north-south linkages, i.e. the R75 west of the site; and the R335 east of the site. Both these linkages provide adequate access to the Coega IDZ and greater Port Elizabeth areas, where components and parts would in all likelihood be transported from.

The majority of the traffic impacts would take place during the laying of foundations and the erection phases. Temporary road closures are definite once components and abnormal loads are being transported from the Coega harbour to the site. The Developer would co-operate with the Metro and Provincial Government services to patrol abnormal trucks and oversee road closures.

It is anticipated that:

- Approximately sixty (60) cement trucks would access the site on a daily basis during the pouring of foundations;
- Approximately ten (10) abnormal trucks would access the site per day during the erection phase (three (3) convoys per week);

- Six to eight normal trucks would access the site per day during the erection phase when large components are being delivered; and
- On-site construction vehicles and equipment would amongst others include excavators, trucks, graders, compaction equipment and cement trucks.

Disruptions in living and moving patterns usually manifest through road safety issues and intrusion impacts for surrounding residents/landowners and road users, causing short-term disruptions and safety hazards, such as:

- Construction vehicles that are not road worthy;
- Damage to the road infrastructure resulting in an increase in accidents, frustrations for motorists and financial implications for local government;
- Negligent drivers that disobey traffic rules, disregard speed limits and cause obstructions;
- Temporary road closures. Road closures could take 45 minutes or longer, approximately three (3) times per week;
- Workers that gather at the entrance to the proposed development and obstruct motorist's vision and movement along the roads (depending on locality of accesses and access roads); and
- Noise, dust, visual and air pollution. Land owners located along the gravel road that lead to the site could experience severe negative impacts on their daily living environment during the 20 month construction period due to dust and noise pollution brought about by movement of construction vehicles and related construction activities.

Mitigation Measures

- Announce disruptions, road closures, etc. by using the local media, road sign boards and other Municipal structures.
- Erect signboards along surrounding routes indicating accesses to the construction site.
- Impose penalties for reckless drivers as a way to enforce compliance to traffic rules.
- Inspect trucks and other heavy vehicles on a regular basis to avoid oil spillages and unroadworthy vehicles that could lead to accidents.
- Display a contact number on the construction vehicles where motorists can report reckless driving.
- No informal traders to be allowed on or near the construction site.
- Set up the labour desk in a secure and suitable area, preferably in the communities where workers are being sourced, to discourage the gathering of temporary workers at the entrance and access roads to the construction site where it could affect road users and surrounding land owners.
- Mitigation measures for intrusion impacts (noise, visual, air and dust pollution) are addressed in greater detail in Section 5.14 of the SIA report.

No-go option

- Likelihood of accidents, damage to road surfaces and road obstructions are reduced.
- No “nuisance” impacts on I&APs such as dust, air, noise, traffic and visual impacts.

Significance Statement

Impacts of moderate overall significance could be expected on daily living and movement patterns, albeit over the short term (peaking during the peak of the construction period).

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without	Short Term	Regional	Severe	Definite	MODERATE -

Mitigation					
With Mitigation	Short Term	Regional	Moderate	Definite	MODERATE -

Impact 9: Attitude formation, interest group activity, community mobilisation

Cause and Comment

No interest group activity or community mobilisation for, or against, the proposed project has been observed. However, the following should be noted:

- Two distressed I&AP’s have obtained legal representation and legal action could be implemented should their grievances not be addressed. These relate to aviation issues and potential economic impacts in the operational phase.
- A lack in communication, unrealistic expectations and other employment issues resulted in labour tension and riots during the initial construction phases of the Cookhouse WEF. The Cookhouse project affected two local and two district Municipalities and animosity amongst locals developed as some of the locals were, in their opinion, “excluded” from the benefits of the project. As the Dassiesridge WEF affects two Municipalities, i.e. NMBM and the SRVM, implementation of pro-active mitigation and management measures would be essential to ensure that labour unrests do not also occur. Involve the Municipalities from the onset of the project in decision making processes.
- The DoE defines the beneficiary community as those communities located within a 50 km radius of the project. As experience from the construction of the Cookhouse WEF has illustrated, this requirement has the potential to create conflict, as portions of the affected Municipalities would be excluded from receiving socio-economic benefits.
- Although not a regular occurrence, some violent incidents between local and foreign seasonal workers have in the past occurred in the SRVM and Cacadu district and again emphasise the importance of a local workforce.

Mitigation Measures

- During the planning phases meet with the grieved IA&Ps in open and direct communication and seek amicable solutions.
- Involve the NMBM, Cacadu DM and SRVM from the onset of the project through open engagement. Set up a PSC represented by the various role-players and define the “beneficiary community” in clear terms.
- The affected Municipalities to set up appropriate structures (task teams, PSC, etc.) that would deal with the ED and SED components of the project (employment, community projects, etc.) in conjunction with the developer.
- Municipal structures communicate with the various Municipal/ ward constituencies to ensure transparency and avoid that unrealistic expectations are created.
- Emphasis is once again placed on employment of locals, as locals may perceive that foreigners are “stealing” jobs.

No-go option

- No conflict in terms of labour practices and employment.
- No economic benefits would transpire to the local communities.
- Current aviation routes would not be impacted on severely, although construction of the Grassridge WEF has already impacted on a flight route.

Significance Statement

An inability to resolve and address potential issues in advance, negative attitude formation and community mobilization against the project has the potential to result in conflict and cause temporary/permanent disruptions of the construction process of low significance.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Short Term	Study Area	Moderate	May occur	LOW -
With Mitigation	Short Term	Study Area	Slight	May Occur	LOW -

Impact 10: Impacts on the Nelson Mandela Bay Metropolitan Municipality, Cacadu District and Sundays River Valley Local Municipality

Cause and Comment

The proposed construction project would hold economic advantages for the affected Municipalities in terms of employment, skills development, small business development and so forth.

However, a project of this nature also poses various challenges for Municipalities. This includes possible shortfalls in capacity and management experience, bureaucratic procedures that hamper progress, financial constraints, possible exploitation and even corruption opportunities.

Specific impacts on the NMBM, Cacadu DM and SRVM as a result of the construction phase of the Dassiesridge WEF would include:

- Challenges between the three Municipal entities to co-operate, identify the beneficiary communities and ensure that the socio-economic benefits of the project reaches the target communities;
- An increase in responsibility to do a skills analysis, compile a database of an available local workforce, identify local service providers and provide relevant training;
- Issuing of zoning permits timeously;
- Representation on the Environmental Monitoring Committee (EMC) to do environmental monitoring of the construction site, representation on a Project Steering Committee (PSC) and any other structures, which requires extra time and capacity; and
- Legal responsibilities in terms of actions against land owners, the developer or any other parties that contravene Municipal bylaws.

Council should, on a regular basis, be informed about expected timelines and any issues arising. It is advisable for the developer to establish a Project Steering Committee (PSC) for the duration of the construction period. Members of the PSC (developer, Contractor, Municipalities, community representatives, etc.) would meet on a quarterly basis to discuss issues that may arise during the course of the construction period. Contact details of the PSC could also be made available to the general public if community members or landowners want to lodge complaints.

The significance of negative impacts on the LM could thus be addressed through proper communication, but should commence well in advance of the actual construction period starting.

Mitigation Measures

- The developer should clearly identify roles and responsibilities of the various Municipalities, the EMC and PSC and communicate timeframes, etc. with the role-players.

- Set up a Steering Committee for the duration of the construction period to serve as a platform where progress can be monitored and conduct quarterly Steering committee meetings where any complaints and grievances can be addressed. DEDEAT should be represented on the EMC and PSC.
- Apply timeously for the relevant zonings and permits.

No-go option

- No impacts on job descriptions and/or responsibilities of Government Officials.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Regional	Moderate	Definite	MODERATE -
With Mitigation	Short Term	Regional	Slight	Definite	MODERATE -
No-Go					
Without Mitigation	Short Term	Regional	Slight	Unlikely	LOW +

Impact 11: Accommodation for workers

Cause and Comment

Temporary accommodation would not be provided for construction workers, as they would be sourced locally and transported on a daily basis with shuttle services. Security guards will be accommodated at the security offices at the entrance to the construction site. Expatriates and other Skilled Employees are usually set up in Guesthouses and B&B's and other accommodation facilities in the project vicinity. Adequate provision of accommodation facilities is not foreseen to be problematic as the NMBM and SRVM is a popular holiday destination and well-prepared for holiday makers and tourists. This will have a positive impact on the local economy.

Significance Statement

As no construction camp to house construction workers will be erected, this impact deemed to be of low overall significance.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Local	Slight	Unlikely	LOW -

Impact 12: Impacts on infrastructure and services

Cause and Comment

It is not anticipated that any major water and electricity services would be disrupted during the construction phase. However, electricity might be disrupted for a short period in time should the existing Eskom power lines be rerouted and when the WEF / switching station is connected into the grid. The Municipality would be notified in time should this take place.

Significance Statement

This impact is rated as negligible.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Local	Slight	Unlikely	LOW -

Impact 13: Health risks

Cause and Comment

Inadequate management of the construction process could result in health issues for workers and surrounding landowners/community members. Although the site is not located in close proximity to a residential area or farm houses and there are no open water bodies that could be subject to contamination, health issues could impact on workers on site and appropriate mitigation and management is thus required. Health issues could manifest through:

- Dust generation and air pollution resulting in respiratory diseases.
- Poor management of the construction process resulting in pollution problems (e.g. insufficient sanitation facilities, littering and refuse), flies rodents and pests and possible contamination of water sources.
- Unsafe and insufficient drinking water.
- An increase in HIV/AIDS and other STDs due to prostitution activities and temporary sexual relationships with local women, unwanted pregnancies that place further pressure on Basic Health Care Services.
- Dehydration and sunburn, as extreme temperatures could be experienced during summer months.

Management measures would include portable ablution facilities at the construction office area and at the turbine positions and a Health and Safety Officer that monitor health standards.

Mitigation Measures

- Implement measures to suppress dust, construction workers to wear protective clothing (e.g. masks that minimize dust inhalation and clothing that protects against sunburn).
- Dispose of the various types of waste generated in the appropriate manner at licensed waste fill sites at regular intervals. Waste manifests must be provided by the municipality to prove that the waste has been legally disposed of.
- Identify the waste types that are likely to be produced and aim to reduce the amount of waste as much as possible, through identifying routes to reuse or recycle materials. Label all waste storage and skips, detailing the type of waste.
- Provide safe and clean drinking water and ensure regular water breaks to keep workers hydrated.
- Provide sufficient chemical / portable toilets that are cleaned regularly. Waste manifests must be provided by the municipality to prove that the waste has been legally disposed of.
- Embark on a HIV/AIDS awareness campaign and provide condoms to workers.
- Appoint a Health and Safety Officer and comply with the Occupational Health and Safety Management System’s requirements. The contact details of this person should be made available to the local community and procedures to lodge complaints set out.
- Store any materials away from sensitive locations in fenced off areas.
- Accommodation and facilities of security guards and any other personnel that stay on site should comply with health and safety standards.

- Regularly inspect the site area for spillages and clean spillages using agreed wet handling methods.
- Vacuum or sweep regularly to prevent the build-up of fine waste dust.
- Inform the Municipality and emergency services if harmful substances are spilled.

No-go option

- No dust generation and impacts on respiratory illnesses of workers.
- No pollution problems on site.
- No increase in HIV/AIDS and other STDs due to an influx of outsiders, increase in prostitution activities and temporary sexual relationships with local women.
- No further pressure on Basic Health Care Services.

Significance Statement

Although impacts on health and health risks are possible, the severity of the impact actually occurring is unknown. A standard environmental principle of moderate severity is applied, with an overall low significance rating. Confidence in the rating is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Moderate	May Occur	LOW -
With Mitigation	Short Term	Study Area	Slight	May Occur	LOW -
No-Go					
Without Mitigation	Short Term	Study Area	Slight	Unlikely	LOW +

Impact 14: Construction related and road accidents

Cause and Comment

An impact on local emergency, disaster management and health services (fire, ambulance, police services, etc.) could be experienced in the case of construction related accidents and road accidents. To reduce the likelihood of construction related accidents, it is required of the main Contractor to adhere to the requirements of the Quality Management Guidelines, Environmental Management Systems Requirements and the Occupational Health and Safety Act. Protocols and procedures to manage fire, medical emergencies and vehicle and construction accidents would have to be implemented.

Disaster management, medical and emergency services in the nearby towns, such as Addo, Kirkwood, Uitenhage and the broader NMBM area deems to be sufficient to cope with construction related and road accidents, if they occur.

Unauthorized access to the construction site could also pose safety concerns for humans and the fencing of construction areas should be done where appropriate to minimise accidents, trespassing and theft. As a minimum, the construction site camp must be fenced. Visitors must report to the site office on arrival.

Mitigation Measures

- Enforce the use of protective clothing and equipment for construction workers.
- Identifiable tags and clothing for construction workers and the implementation of security measures at the entrance to the construction site.

- Fence off the construction site where possible to avoid illegal trespassing. Close off any excavation areas to prevent access.
- Designate a suitable area for cooking fires within the fenced area of the site camp.
- Display ‘danger’ warning signs and ‘no public access’ signs at all potential accesses and paths.
- Lock away dangerous plant, equipment and material when not supervised or in use.
- Appoint a Health and Safety Officer on site and implement an approved safety plan for the duration of the project.
- The contact details of the Health and Safety Officer should be made available to the surrounding property owners and Ward Councilors to enable them to lodge complaints when problems with regards to community and/or environmental health arise.
- Heavy vehicles to keep headlights switched on at all times to improve visibility.
- A speed limit of 40km/h must be maintained by all vehicles on site.
- Inspect vehicles on a regular basis and impose penalties for reckless driving.
- Ensure good visibility at the accesses to the site.
- Jobseekers should not be allowed to gather at the entrance to the construction site.

No-go option

- No additional pressure would be placed on Municipal and Provincial emergency and health services.

Significance Statement

Although the actual occurrence of this impact is unknown, a standard environmental principle is applied and rated as a moderate negative. With mitigation the overall severity of the impact could be reduced.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Severe	May Occur	MODERATE -
With Mitigation	Short Term	Study Area	Moderate	May Occur	LOW -

Impact 15: Security impacts

Cause and Comment

The perception exists that criminal activities increase in areas where construction projects take place. The appointment of local construction workers often aids in mitigating potential security issues.

General security on site should also receive attention as cables and other valuable material could attract criminals with negative economic consequences for the developer. Electric fencing, CCTV cameras, 24-hour security guards, random security checks throughout the site and access control to the site are some of the safety measures that could be implemented to eradicate potential crime on site and in the area.

Mitigation Measures

- Keep the local SAPS and Ward Councillors informed about the construction progress and time-lines to ensure that they would be able to adequately deal with any type of disruptive behaviour.

- The use of local labour will minimize safety and security concerns to a large extent. Only appoint workers with valid SA identification documents who have no criminal records.
- The gathering of jobseekers at the construction site should not be allowed. Establish a labour desk at suitable localities within communities and appoint workers through the structures as discussed previously.
- Provide workers with identity tags and prohibit the access of unauthorized people to the construction site.
- Workers should not be allowed to remain in and around the construction site when they are off duty. Transport workers to their places of residence after each shift.
- No informal traders to be allowed on or near the site.
- Implement safety and security measures, such as electrical fencing, 24-hour security guards, CCTV cameras, random security checks and access control.

No-go option

- No significant change to the local current crime and safety statistics is foreseen.

Significance Statement

The severity and probability of security impacts actually occurring is uncertain and a standard environmental principle of moderate severity is thus applied. The overall significance is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Moderate	May Occur	LOW -
With Mitigation	Short Term	Study Area	Slight	May Occur	LOW -

Impact 16: Intrusion impacts

Cause and Comment

Intrusion impacts refer to noise, visual and light pollution, aesthetic impacts and dust/air pollution during the construction phase, as a result of emissions, movement of construction vehicles, earthworks and general construction activities. Although short-term in nature, the severity of the impact would increase if sensitive receptors are located in close proximity to the construction area. From a social perspective sensitive receptors would include residential houses, farming activities, schools and other social infrastructure and businesses in close proximity to the site or access routes.

No intensive farming activities would be affected. At this stage it would seem that noise, dust and air pollution would affect farm houses located along the gravel access road that leads to the construction site from the R75, and could also impact on the health of construction workers.

Sufficient air / dust pollution control holds various advantages for the developer, surrounding communities and the environment. Negative impacts associated with air/dust pollution include health problems for residents and workers (respiratory diseases, eye, nose and throat irritations), air and water pollution, visibility problems, damaged or dirty properties and belongings, unsafe work conditions, increased costs associated with the loss of materials and additional work involved. Construction of the wind turbines would be visible from the R75 and from farms in the project vicinity. Intrusion impacts are discussed in greater detail as part of the EIA Report and the Visual Impact Assessment.

Mitigation Measures

- Generally construction activities should not take place before 8am and after 5pm and not on Sundays and public holidays unless an agreement is made between landowner and developer. A list of construction activities that may occur outside of these times has been added to the EMP. Any additional activities must be authorised by the ECO prior to initiation of the activity.
- Make the contact details of the Contractor and procedures to lodge complaints available to the local communities. This information must be displayed in a public area such as on a signboard at the junction of the R75 and access road.
- Ensure that all construction machinery has the required silencers, if required.
- Use low sulphur diesel and exhaust filtration measures on site, whenever possible, to reduce emissions of particles.
- Vehicles carrying dusty or light materials should be securely covered with a tarpaulin before leaving the site.
- All dust-generating activities and dirt roads should be damped down, especially during dry weather. Temporarily cover earthworks if possible and minimize drop heights to control the fall of materials.
- Avoid the use of long-term stockpiles on site wherever possible unless it performs the function of visual or noise screening.
- Always keep stockpiles away from the site boundary, sensitive receptors, watercourses and surface drains.
- Take into account the predominant wind direction when siting stockpiles to reduce the likelihood of affecting sensitive receptors.
- Erect fences or use windbreaks such as hedges and earth-banks of similar height and size to the stockpile to act as wind barriers..
- Service all fans and filters regularly to ensure they are properly maintained.
- No vehicles or plant will be left idling unnecessarily.
- Vehicles and plant should be well maintained. Should any emissions of dark smoke occur (except during start up) then the relevant machinery should be stopped immediately and any problem rectified before being used.
- Engines and exhaust systems should be regularly serviced according to manufacturer's recommendations and maintained to meet statutory limits/opacity tests. Machinery should be serviced at the service provider and not on site unless there is a designated service area that is bunded and equipped with spill kits.
- Agree a procedure to notify the Municipalities and emergency services, so that immediate and appropriate measures can be put in place to rectify any problem.
- Set up 24-hour phone hotlines or ensure that the local community is familiar with procedures to lodge complaints about high dust levels. Consider circulating summaries of monitoring results to the local community.
- Keep a log book at the entrance to the construction site where community members can lodge complaints, if necessary.

Significance Statement

Rating of these impacts fall outside the scope of this SIA report and are contained in the respective specialist reports dealing with these study requirements.

10.3 Operational Phase Impacts

10.3.1 General

ISSUE 1: AIR QUALITY AND CLIMATE CHANGE

Impact 1.1: The WEF will contribute towards a reduction in the need for fossil fuels resulting in an improved air quality and contributing toward the mitigation of climate change

Cause and comment

The electricity generated by the development 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 significant amount of CO₂, SO₂ and NO₂ that would otherwise be emitted to the atmosphere.

Mitigation measures

- Enhance this impact by promoting the use of renewable energy locally.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Planning and Design phase					
Without mitigation	Long Term	International	Mod. Beneficial	Probable	BENEFICIAL +
With mitigation	Long Term	International	Beneficial	Probable	VERY BENEFICIAL +

10.3.2 Ecological

Impact 8: Invasion of alien species

Cause and Comment

As with all building operations, the introduction of alien and invader species is inevitable; with environmental disturbance comes the influx of aliens. Alien invasive species such as prickly pear, which is already prevalent in some areas of the thicket vegetation found within this project area is likely to increase if mitigation measures are not implemented. Alien invasive species have negative impacts on the biodiversity as they compete with natural vegetation and reduce water availability. Studies show that almost all seven terrestrial biomes in South Africa have alien invasive species. Due to the disturbance of the proposed Dassieridge WEF, it is important that eradication of these species and proper management strategies are put in place to ensure the control of these species.

Mitigation Measures

Mitigation measures include the following:

- Eradication of the already established alien invasive species on site (This should be done during all phases of the project);
- Active management of alien species throughout both the construction and operation phases to prevent their spread into areas where they have not already been established;
- A rehabilitation plan must be designed and implemented;
- During the rehabilitation of the area, measures should be put in place to prevent accidental or unintended introduction of alien species from occurring; and

- An Alien Invasive Control Programme must be implemented.

Significance Statement

The introduction of alien invasive species will definitely occur and will have a **Severe**, Permanent impact. The environmental significance of this unmitigated impact will be HIGH NEGATIVE. This will be reduced to LOW POSITIVE if mitigation measures are implemented since existing alien species will be removed.

No-Go Option:

If no development was to occur on the site the overall impact would be LOW NEGATIVE since the existing alien invasive species will continue to increase in numbers in the project area due to the current land-use.

Impact	Effect			Risk or Likelihood	Total Score
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Permanent	Study Area	Severe	Probable	HIGH -
With Mitigation	Long Term	Localised	Mod. Beneficial	Probable	LOW +
No-Go					
Without Mitigation	Permanent	Study Area	Slight	Probable	LOW -

10.3.3 Agricultural

Impact 1: Increase in erosion potential

Cause and Comment

An increase in hard surfaces (concrete foundations and roads) will increase stormwater run-off and potentially lead to an increase in soil erosion.

Mitigation Measures

- All run-off water must be collected, channelled and disposed of in an appropriate manner.
- Pre-development run-off must be at least the same as post-development run-off.
- Anti-erosion features must be installed where required.
- Ensure that all cleared and impacted land is rehabilitated and re-vegetated.

Significance Statement

Impacts associated with erosion from increased stormwater run-off during the operational phase is definite over the next 20 years. The extent of the impact is likely to be limited to the study area but may be severe. The overall significance of the impact will be reduced from high negative to low negative after mitigation.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Severe	Definite	HIGH -

With Mitigation	Long Term	Study Area	Slight	Unlikely	LOW -
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Impact 2: Establishment of renewable energy infrastructure on agricultural land

Cause and Comment

Loss of up to 35 ha of moderate to low potential agricultural land as a result of new WEF infrastructure development.

Mitigation Measures

- Do not fence off any WEF infrastructure. This will allow maximum grazing and movement of game within the site.

Significance Statement

Loss of land currently utilised as agricultural land is definite. The extent of the impact is likely to occur over a long period (20 years) but will be localised to the immediate study area. Mitigation will not change the overall significance of the impact but will reduce the cumulative impact.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Localised	Slight	Definite	MODERATE -
With Mitigation	Long Term	Localised	Slight	Definite	MODERATE -

Cause and Comment

The gradual reduction of available agricultural land as a consequence of an increase in renewable energy development in the local area.

Mitigation Measures

- Avoid developing on moderate potential agricultural land.
- If unavoidable, ensure that all development footprints are kept at a minimum.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Regional	Severe	Definite	HIGH -
With Mitigation	Long Term	Regional	Moderate	Definite	MODERATE -

10.3.4 Avifauna

Impact 1: Bird collision & electrocution on overhead power lines

Cause and comment

The presence of the wind turbines and overhead power lines may result in bird collision and electrocution.

Mitigation measures

- Bury all ‘on site’ cabling underground. On powerlines to grid, mark relevant sections of the line with anti-collision marking devices on the earth wire to increase the visibility of the line and reduce likelihood of collisions.
- Bird friendly pole/pylon designs should be used to prevent electrocutions.

Significance Statement

Collision and electrocution of birds on overhead power lines on site, and connecting to the grid is anticipated to be of HIGH significance. Both of these impacts can be mitigated successfully in our opinion to reduce the significance to LOW. In both cases the first and foremost approach to mitigation should be the selection of the shortest possible length of new overhead power line to be constructed, and the optimal route for this line. In the case of bird collision, all power line linking turbines to the on-site substation must be buried underground. To mitigate for collision of the relevant species, it is recommended that the earth wires on the spans identified as high risk be fitted with the best available (at the time of construction) Eskom approved anti bird collision line marking device. This should preferably be a dynamic device, i.e. one that moves as it is believed that these are more effective in reducing collisions, especially for bustards, which are one of the key species (Denham’s Bustard) in this area. It is recommended that a durable device be used as this area is clearly prone to a lot of strong wind and dynamic devices may be susceptible to mechanical failure. At the time of writing to this author’s knowledge the best available flapper type devices are made by Eberhardt Martin (EBM) and Preformed Line Products. It will be either Dassiesridge Wind Power or Eskom’s responsibility to ensure that these line marking devices remain in working order for the full lifespan of the power line, as we cannot afford to have significant numbers of bird collisions on this new line. It is important that these devices are installed as soon as the conductors are strung, not only once the line is commissioned, as the conductors and earth wires pose a collision risk as soon as they are strung. The devices should be installed alternating a light and a dark colour to provide contrast against dark and light backgrounds respectively. This will make the overhead cables more visible to birds flying in the area. Eskom Distribution has a guideline for this work and this should be followed. Note that 100% of the length of each span needs to be marked (i.e. right up to each tower/pylon) and not the middle 60% as some guidelines recommend. This is based on a finding by Shaw (2013) that collisions still occur close to the towers or pylons. It is also recommended that the stay wires on the met masts on site be installed with these devices as soon as possible.

In the case of bird electrocution, all power lines linking turbines to the on-site substation must be buried underground. The grid connection power line must be built on an Eskom approved bird-friendly pole structure which provides ample clearance between phases and phase-earth to allow large birds to perch on them in safety.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Permanent	Study Area	Severe	Probable	HIGH -
With Mitigation	Permanent	Study Area	Slight	Unlikely	LOW -

Impact 2: Bird collision with turbine blades

Cause and comment

The presence of the wind turbines (and subsequently turbine blades) may result in bird collision.

Mitigation measures

This is extremely difficult to mitigate for post construction. Sensitivity mapping and pre-construction monitoring should inform the final turbine layout in order to proactively mitigate for this. If key species are found to collide in significant numbers post construction then mitigation options will need to be implemented. These could include options such as: “restriction of turbine operation” if strong patterns in collision risk are evident; “turbine shutdown on demand” based on actual collision risk detected by automated systems or human observers; “habitat management” where it can be shown that this could play a role in influencing collision risk, and not have detrimental secondary effects; “deployment of audible deterrents” to deter particular at risk birds from site; and any others identified by the relevant specialist conducting operational phase bird monitoring.

Significance Statement

Collision of birds with turbines is judged to be of LOW significance pre mitigation, as the bird species most at risk are common species, and the flight activity recorded was generally low. In addition, the more important Red List species have been recorded flying seldom and at lower heights than the rotor zone. The only specific mitigation in this regard is to adhere to the sensitivity map presented in the Avifaunal Impact Report.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Localised	Moderate	May Occur	LOW -
With Mitigation	Long Term	Localised	Moderate	May Occur	LOW -

10.3.5 Bats

Impact 1: Bat mortalities during foraging by turbine blades

Cause and Comment

Bats are thought to perceive turbines as possible roosting spaces or foraging areas due to the presence of concentrated pockets of insects within the wing path (Horn *et al.* 2008). The presence of lights on wind turbines have also been identified as possible causes for increased bat fatalities as a result of higher insect densities attracted to the flashing lights (Johnson *et al.* 2003). Clearings around wind turbines may also improve conditions for insects, thereby attracting bats to the area and the “swishing sound” of the turbine blades could confuse bats (Kunz *et al.* 2007). Whatever the reason for bat mortalities around wind turbines, the facts indicate that this is a very serious and concerning problem.

Mitigation Measures

- It is essential that an effective mitigation measure, such as curtailment, be implemented to lessen bat mortalities. In the process of curtailment, the turbine is kept stationary at a lower wind speeds and is allowed to rotate in response to a specific wind velocity.
- In theory, there is a negative correlation between bat activity and wind speed, thus, by increasing the turning speed of the blades, the movement of air around the blades will increase, resulting in decreased bat activity.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of		

				Impact		
Operational phase						
Without Mitigation	Long Term	Study Area	Severe	Probable	HIGH-	
With Mitigation	Long Term	Study Area	Slight	May Occur	MODERATE -	

10.3.6 Visual

Impact 1: Impact of introducing highly visible wind turbines into a rural landscape

Cause and comment

Highly visible wind turbines will be introduced into a landscape which has a low sensitivity to the proposed development (the rural sense of place of the landscape is unlikely to be altered by the turbines).

Mitigation measures

There are no mitigation measures that will change the significance of the landscape impact other than to plant shielding vegetation around affected residences. A reduction in wind turbine numbers is unlikely to have an appreciable effect since even a few wind turbines will still have high visibility.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Moderate	Probable	MODERATE -
With Mitigation	Long Term	Study Area	Moderate	Probable	MODERATE -

Impact 2: Intrusion of large wind turbines on the existing views of sensitive visual receptors

Cause and comment

Wind turbines are very tall structures and in this case will be installed in an area which is surrounded by numerous farmsteads. There are a large number of residents that will potentially be affected by the development.

Mitigation measures

There are no mitigation measures that can reduce the perception of a negative impact significantly unless the site is avoided. But there are a number of measures that can enhance the positive aspects of the impact. It has been shown that uncluttered sites are preferred for wind farms (Gipe, 1995; Stanton, 1996; Vissering, 2005). Mitigation measures and suggestions may enhance the positive visual aspects of the development:

- Maintenance of the turbines is important. A spinning rotor is perceived as being useful. If a rotor is stationary when the wind is blowing it is seen as not fulfilling its purpose and a negative impression is created (Gipe, 1995).
- Signs near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards must be avoided.
- Lighting should be designed to minimise light pollution without compromising safety. Investigate using motion sensitive lights for security lighting. Turbines are to be lit according to Civil Aviation regulations.
- An information kiosk (provided that the kiosk and parking area is located in a low visibility area)

and trails along the wind farm can enhance the project by educating the public about the need and benefits of wind power. ‘Instilling the concept of sustainability, and creating awareness of the need for wind farm developments, is an important process that can engage the entire community’ (Johnston, 2001).

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Regional	Severe	Definite	HIGH -
With Mitigation	Long Term	Regional	Severe	Definite	HIGH -

10.3.7 Noise

Impact 1: Noise generated by wind turbines

Cause and comment

The effects of low frequency noise include sleep disturbance, nausea, vertigo etc. These effects are unlikely to impact upon residents due to the distance between the wind farm and the nearest communities. Sources of low frequency noise also include wind, train movements and vehicular traffic, which are all sources that are closer to the residential areas.

Mitigation measures

All turbines met the minimum 500m horizontal setback distance to the nearest Noise Sensitive Area. The noise impact from the wind turbine generators should be measured during the operational phase, to ensure that the impact is within the recommended rating limits.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without mitigation	Permanent	Localised	Slight	May Occur	LOW -
With mitigation	Permanent	Local	Slight	Unlikely	LOW -

10.3.8 Social

Impact 1: Job creation

Cause and Comment

Few permanent employment positions (unskilled, semi- and highly skilled) would emerge during the 25 year operational period of the Dassiesridge WEF. Employment positions could include:

- Technicians, electricians, IT specialists, engineers, administrators (highly skilled);
- Security (semi-skilled); and
- Site maintenance (lower skilled).

In addition to the above a financial manager and supporting staff would be required to implement SED projects and manage related finances. It is highly likely that skilled employees would rather

be sourced from the NMBM area, as the tertiary education levels of the Cacadu DM and SRVM are very low, 8.3% and 3.8% respectively (Section 4.8 of the SIA; Education levels).

Periodically temporary employment may become available for civil works maintenance (roads, crane pads, etc.) and site clearance to minimize potential veld fires, etc. The opportunity for local service providers exists to conclude contracts with the developer to perform duties at the plant.

Mitigation Measures

- Maximize the number of local permanent and temporary employees (from the NMBM, SRVM and Cacadu DM) where possible.
- Through ED contributions do training and capacity building where necessary.

No-go option

- No employment creation and opportunities for skills development would occur.

Significance Statement

Employment opportunities are limited during the operational phase, and would thus be slightly beneficial to the region. However, as employment is definite over the long term it bears a moderate overall significance.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long term	Regional	Slight	Definite	MODERATE +
With Mitigation	Long term	Regional	Moderate	Definite	MODERATE +
No-Go					
Without Mitigation	Long term	Regional	Slight	Unlikely	LOW -

Impact 2: Skills development and capacity building

Cause and Comment

Although limited, skills development and capacity building would result as on-site training is likely. An important outcome of skills development and training is that employees would be in a position to source work on similar plants once their contracts expire. A skilled labour force is more likely to find employment, resulting in economic advantages for the local economy over the long-term.

Mitigation Measures

- Implement measures (bonuses or other financial benefits) for highly skilled staff to minimize the negative impacts associated with a high staff turnover.
- Do training and capacity building wherever necessary.

No-go option:

- No contribution to local employment and skills development.
- No contribution to the local economy.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					

Without Mitigation	Long Term	Regional	Slight	May Occur	MODERATE +
With Mitigation	Long Term	Regional	Slight	Probable	MODERATE +
No-Go					
Without Mitigation	Long Term	Regional	Slight	Unlikely	LOW -

Impact 3: Impacts on the local economy

Cause and Comment

During the operational phase it is expected that the local economy would benefit in the following ways:

- The families of employees would benefit economically with an increase in incomes and spending power;
- A possible increase in municipal rates and taxes, as the land would be rezoned from “Agriculture” to “Special Use for Agriculture and Renewable Energy Infrastructure”, resulting in higher levels of rateable income;
- Local communities would benefit economically through shareholding and community upliftment and Social Development projects; and
- The establishment of local downstream industries and services that would support the WEF’s operations (to a lesser extent).

Mitigation Measures

- Maximize the number of local permanent and temporary employees (from the NMBM, SRVM and Cacadu DM) where possible.
- Do training and capacity building wherever necessary.
- Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Enterprise Development funding is available to assist the local SMME’s with skills training and capacity building, etc.

No-go option

- No economic benefits in terms of salaries, ED and SED contributions and community projects would accrue to the local communities.
- No skills development and capacity building opportunities for local SMME and other supporting industries.
- No economic benefits for the local Municipalities.

Significance Statement

The local economy would experience definite positive impacts over the long term. However, the Rand-value for rates and taxes, net incomes and shareholding dividends is not known at this stage. Without mitigation an overall moderate significance rating is applied. A slight severity has been assigned as standard environmental principle. Confidence in the overall significance is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Regional	Slight	Definite	MODERATE +
With Mitigation	Long Term	Regional	Moderate	Definite	MODERATE +
No-Go					

Without Mitigation	Long Term	Regional	Slight	Unlikely	LOW -
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Impact 4: Community projects, ED and SED contributions

Cause and Comment

It is recommended that the project proponent embarks on a holistic, strategic approach for the Enterprise Development and (ED) and Socio-economic Development (SED) components of the project to avoid fragmented community projects in the region.

Problems that have been experienced in this regard at similar projects include:

- The main driving force behind processes for approved renewable energy projects would be National Government. Local and district Municipalities are informed of progress and developments, but not sufficiently involved and actively engaged in processes from the onset.
- Appropriate structures are not put into place to manage Socio-economic development projects, distribute funds and monitor progress.
- A lack in communication often results in unrealistic expectations that are being created at community level.
- DoE defines the beneficiary communities as those within a 50 km radius from the project site. Large portions of the affected Municipality are thus often excluded from project benefits and conflict is exacerbated when a project affects more than one Municipality.

At this stage it would seem that the beneficiary communities would be Uitenhage (NMBM) and Addo (SRVM) and could also include Kirkwood (SRVM).

To ensure a holistic approach that includes all three the Municipalities it is recommended that a forum or similar structure be established. The forum would:

- Consist of representatives of the NMBM, CDM and SRVM’s and their relevant Directorates for Economic Development;
- Identify major “renewable energy development nodes” where wind energy projects are taking place, such as Blue Crane, Oyster Bay, Grassridge, etc. and co-ordinate projects in a holistic manner;
- Prioritise projects identified in the IDP’s and LED programmes;
- Formulate a strategy to achieve long-term sustainable goals that would include large economic development projects in the major “renewable energy development nodes” that would contribute to the region’s economic growth; and
- Identify short-term food security and local community development projects.

The idea would thus be to collaborate and embark on larger income-generating projects within the “renewable energy development nodes” that would benefit the broader region, instead of implementing scattered small-scale projects.

The advantage of such an approach would be greater sustainability and potential for long-term income generation, employment creation and skills development.

Localised short and medium-term projects, such as community infrastructure developments, training programmes, food security projects, and so forth could also be implemented but the main focus should be holistic.

Mitigation Measures

- Establish a PSC or similar structure consist of representatives of the NMBM, CDM and SRVM's and their relevant Directorates for Economic Development as well as DEDEAT
- The PSC will identify major “renewable energy development nodes” where wind energy projects are taking place, such as Blue Crane, Oyster Bay, Grassridge, etc. and co-ordinate projects in a holistic manner;
- PSC prioritizes projects identified in the IDP's and LED programmes;
- Formulate a strategy to achieve long-term sustainable goals that would include large economic development projects in the major “renewable energy development nodes” that would contribute to the region’s economic growth; and
- In addition to this also identify some short-term food security and local community development projects.

No-go option

- No economic advantages that accrue to local communities.
- No skills development and capacity building would take place.

Significance Statement

The impact is awarded a positive moderate overall significance, however, confidence in the rating is low, as adequate information regarding previous projects, the amount to be allocated towards SED and past experiences for similar projects could not be obtained.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Regional	Slight	Definite	MODERATE +
With Mitigation	Long Term	Regional	Moderate	Definite	MODERATE +
No-Go					
Without Mitigation	Long Term	Regional	Slight	Unlikely	LOW -

Impact 5: Impacts on land values of farm portions included in the project

Cause and Comment

Construction of the proposed wind farm and infrastructure development would in all likelihood add value to land that is included in the project, as rental incomes would be secured for the duration of the project. A positive economic impact is anticipated for those landowners.

No-go option

- No infrastructure would be erected, no agreements with landowners would be concluded and none of the economic benefits in terms of an increase in land values and rental incomes would manifest.

Significance Statement

Insufficient information is available (monetary values, etc.) and a slight severity is thus applied as standard environmental principle. The impact would have a moderate overall significance, with low confidence.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					

Without Mitigation	Long Term	Local	Slight	Definite	MODERATE +
No-Go					
Without Mitigation	Long Term	Local	Slight	Unlikely	LOW -

Impact 6: Impacts on land values for surrounding properties

Cause and Comment

The owner of the farm Prentice Kraal (Portion 2 of the Remainder of Portion 233, Uitenhage) in extent of 500 ha is concerned about the commercial land value of his farm as he purchased the farm approximately 4 years ago with the intention of converting the farm into a game farm for hunting purposes. Substantial additional expenses have been incurred to upgrade infrastructure, fencing, the lodge and the purchase of various wild animals (kudu, bushbuck, impala, duiker, etc.). The current proposed layout of the wind turbines imply that wind turbines would be visible from all vantage points on the farm. The land owner is also concerned about potential noise impacts during the operational phase. As these factors could detract from the wildlife experience it could possibly have a negative impact on the commercial land value of the farm.

A noise impact assessment is done for this EIA and it would be safe to assume that the I&AP will not be impacted from a noise perspective, as the current location of the nearest turbine is 900 m from the property's border. In terms of visual impacts, the property is already impacted by the Grassridge wind turbines (located 7 km from his farm), as well as the 132 kV Eskom power that runs along the property's northern border. A visual impact was carried out to assess this potential impact in greater detail.

From a Socio-economic perspective, experience indicates that infrastructure such as Eskom power lines and turbines would not have a negative impact on agricultural property values, although the potential impact on commercial land values would be more complex to determine.

A recent example is Farm No. 68, Bedford district in extent of 919,920 hectares and located in very close proximity to the Cookhouse WEF. The wind turbines have a significant visual impact on Farm No. 68 as well as surrounding farms. Thirty hectares of Farm No. 68, Bedford is under irrigation and 889 hectares is veld (grazing). Construction of the Cookhouse WEF had no impact on the market value of the farm. Farm No. 68 recently sold for R11.5 million (R150 000/ha for irrigated land and R7 800/ha for veld), which is far above market value.

Also, no evidence of negative impacts on surrounding property values due to WEF developments emerged through discussions with land valuers and estate agents in the Jeffrey's Bay and Oyster Bay areas (major wind energy nodes)

Mitigation Measures

- Apart from mitigation measures that would address possible visual impacts, no mitigation measures are proposed.

No-go option

- Market values of surrounding properties would be determined in accordance with standard valuation practices and would not be influenced by visual impacts of large-scale developments such as the Dassiesridge WEF.

Significance Statement

Although a negative impact on agricultural land values is not expected and a possible negative impact on commercial land values may occur, the impacts are rated as a moderate negative. Confidence in the rating is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Moderate	May Occur	MODERATE -
With Mitigation	Long Term	Study Area	Slight	May Occur	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Unlikely	LOW +

Impact 7: Impacts on aviation

Cause and Comment

For the last number of years the owner of Sutherland Transport, situated in Perseverance (midway between Despatch and Port Elizabeth), allegedly commutes on a daily basis by helicopter between his business and farm, located halfway between Kirkwood and Addo. According to the I&AP the flight route is the shortest and most economical and is flown under 2 000 feet above sea level. The I&AP further states that within this airspace no flight plan needs to be filed. (Section 10.3 of the SIA contains relevant flight logs dated 03/09/14 up until 21/2/15).

The I&AP claims that the proposed Dassiesridge WEF will affect the flight route, with the following consequences:

- The construction of the wind turbines would increase the flight height to more than 2 000 feet and a flight plan would need to be lodged on a daily basis;
- A flight plan would require additional time, administration and costs and is not practical as the route is being flown on average two times per day and intermittently more than twice per day;
- Another alternative would be to fly around the Dassiesridge WEF and the extra time, insurance costs, maintenance and other running costs of the helicopter would amount to an extra cost of approximately R675 000 per year (refer to the I&AP comments contained in the detail EIA Report); and
- At this stage it would seem that the construction of the Grassridge WEF would also affect an alternative route that the I&AP could have used should Dassiesridge WEF be constructed. According to the I&AP, he was not consulted during the Grassridge WEF EIA process; and
- The I&AP indicated their inclination to instate legal action should their concerns not be considered and addressed.

The professional opinion of an Obstacle Specialist of the South African Civil Aviation Authority was obtained with regards to private aviation. The Specialist’s findings, based on the positioning of the turbines and the comment and flight logs provided by the helicopter operator, are that:

- No information has been made available to confirm that the I&APs flight path crosses the Dassiesridge site; and
- TMA is 2 500 feet and there is adequate clearance below the controlled airspace for the pilot to fly over the wind turbines, should he wish to do so. No daily flight plan would thus be required.

Mitigation Measures

- No mitigation is required

No-go option

- Should the project not proceed, the developer would lose substantial development costs (Feasibility studies, EIA, Specialist, Engineering study costs, etc.) that have already been expended to ensure the successful implementation of the project.

Significance Statement

The flight path for this I&AP is not affected (unlikely risk) and the overall significance on private aviation is thus low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Slight	Definite	LOW -
With Mitigation	Long Term	Study Area	Slight	Probable	LOW -

Impact 8: Potential impacts on incomes: Rental incomes

Cause and Comment

For the duration of the operational phase landowners that are directly involved in the project, albeit a small number of landowners, would benefit financially. Long-term lease agreements are put in place and a positive economic impact is experienced in this regard.

No-go option

- No rental and other financial income would accrue to accommodation establishment owners.

Significance Statement

Although definite, the impact is slightly beneficial as a limited number of land owners would benefit. The impact has an overall moderate significance, with low confidence as details of the rental agreements are unknown at this stage.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Local	Slight	Definite	MODERATE +
No-Go					
Without Mitigation	Long Term	Local	Slight	Unlikely	LOW -

Impact 9: Potential impacts on incomes: Gaming / hunting industry

Cause and Comment

The possible impact wind turbine structures could have on income potential from an economic point of view is something that could be debated as different role players may have different opinions and views. The following information was obtained, and emphasise the diversity of opinions:

- It is the concern of the land owner of Portion 2 of the Remainder of Portion 233, Registration Division of Uitenhage that he would not be able to successfully operate his farm as a commercial hunting operation as wind turbines would have a negative visual and potential noise impact from almost all the vantage points on his farm. In his opinion this would detract from the wildlife experience for overseas and local hunters. The I&AP has made significant investments in terms of infrastructure development and the purchase of wild animals. He is dependent on incomes derived from hunting to service his bond. However, commercial hunting is envisaged for the future and not operated to its full potential yet. Therefore impacts on potential future revenues/losses cannot be determined at this stage. Also, existing infrastructure (the 132 kV Eskom power line along the northern boundary, the unused railway line that runs along the border of the property and the Grassridge wind turbines) already have a visual impact and the potential negative impact that the Dassiesridge turbines could have on commercial hunting on this farm is thus questionable.
- One of the property owners directly involved in the project hosts an approximate hundred (100) local and international hunters per year. Approximately 700 to 800 animals are being hunted annually. Even though wind turbines would be erected on these farms, he is not concerned that there would be a significant impact on his commercial hunting operations. An agricultural farm located adjacent to the Cookhouse WEF is in the process of being converted from livestock to a game farm, even though the farm is impacted visually by the turbines.
- Hunting/game farms near Cookhouse, such as Highdale, have wind turbines on the property with no significant impact on the industry.

The conclusion can thus be drawn that there is a potential of economic impacts on current activities (especially the hunting industry) and potential future eco-tourism opportunities, but it is highly unlikely that these activities would cease as a result of the facility.

Mitigation Measures

- Open and direct consultation with concerned and affected land owners.
- Structures and ancillary infrastructure be appropriately planned and placed and maintained in neat and appealing way.

No-go option

- Gaming / hunting industry would operate unhindered.
- Loss of foreign direct investment and the associated job creation, SED & ED contributions.
- Less power generated in the area to increase supply and grid stability.

Significance Statement

The overall significance of this impact could be rated as moderate (standard environmental principle is applied), although views and opinions of role-players are diverse and monetary values cannot be determined. Confidence in this rating is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Moderate	May Occur	MODERATE -
With Mitigation	Long Term	Study Area	Slight	May Occur	LOW -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Unlikely	LOW +

Impact 10: Impacts on leisure and tourism activities

Cause and Comment

The Cacadu DM identified the Sunday’s River Valley/surrounds of the Addo Elephant National Park as one of its tourism development nodes (Cacadu IDP). The area is well provided with B&B’s and Guesthouses. The Addo National Park is located approximately 10 km from the site and the Springs Local Authority National Park approximately 8 km to the north.

‘Addo to Eden’ is trying to establish wildlife corridors and are in the process talking to landowners in the Jansenville area to link significant protected areas to prevent “wildlife islands”. A hiking trail across Springbok Vlake also exists and a bicycle adventure route is planned. This area is 30 km to the north-west of the study area and no negative visual or other significant impact on leisure/tourism for this activity is expected.

The Dassiesridge WEF is thus located in the “gateway” to this tourism area and would be observed by tourist/motorists travelling along the R75. .

If authorised the facility could be promoted and regarded = as an attraction and land mark for the region as it will be impossible to hide.

Mitigation Measures

- If authorised the facility could be promoted and regarded as an attraction and land mark for the region as it will be impossible to hide.
- Structures and ancillary infrastructure be appropriately planned and placed and maintained in neat and appealing way.

No-go option

- Tourism would not be affected in a positive or negative way.

Significance Statement

The overall significance of the impact is rated as low, albeit positive should it be regarded as a tourist attraction. Confidence in the rating is low.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Slight	May Occur	LOW +
With Mitigation	Long Term	Region	Slight	May Occur	MODERATE +

Impact 11: Impacts on infrastructure and services

Cause and Comment

No existing infrastructure would be removed, damaged or impacted on during the operational phase. Impacts on road infrastructure would be insignificant as the WEF is designed to operate continuously, with low maintenance and with only a small workforce.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Local	Slight	Unlikely	LOW -

Impact 12: Impacts on the ‘sense of place’

Cause and Comment

Extensive dust, traffic and security issues as a result of the wind energy facility during the operational phase are highly unlikely and should not impact on the community’s ‘sense of place’. Although potential noise impacts have been raised as a concern, the proximity for residences to the turbines makes the impact highly unlikely and the assessment and rating thereof falls outside the scope of this report.

Visual impacts have the potential to affect the local ‘sense of place’ and could thus impact on game farming, hunting and similar eco-tourism related land uses if ‘sense of place’ is altered to such an extent that it affects the numbers of visitors / tourists to the area or impacts the quality of life for locals.

It should be noted that existing structures such as Eskom power lines and pylons, a railway line, roads, and windmills already have a visual impact on the study area. Over time communities often become “desensitised” towards these “man-made” structures and structures could even be regarded as iconic (e.g. windmills in the Karoo). It is therefore possible that negative impacts of the wind turbines and associated infrastructure on the community’s ‘sense of place’ could decline over time.

Furthermore, although some of the turbines would be visible from the R75 and from a few farm residences, there are no sensitive receptors or residential areas in close proximity to the site. The impact on the community’s ‘sense of place’ can therefore not be regarded as severe.

Through discussions with landowners and I&APs it became clear that people in the district in general have become accustomed to wind turbines and would “tolerate” these structures as they recognize the advantages of renewable clean energy for the country as a whole.

Mitigation Measures

- Structures and ancillary infrastructure be appropriately planned and placed and maintained in neat and appealing way to minimize negative visual impacts.
- Implement all mitigation measures as proposed in the Specialist Visual Impact Assessment Report.
- Maintain access roads to the site and implement measures to suppress dust on gravel roads.
- Do site clearance of alien vegetation regularly and implement measures to minimize the possibility of veld fires.
- Strict access control to the wind turbines to restrict unlawful trespassing and curb safety and security issues for local land owners.
- Ensure that residents and landowners are aware of the procedures to lodge complaints and make the details of the EMC / Operations Manager available to the public. Respond and attend to issues and complaints diligently.

No-go option

- No visual impacts and no negative impacts on the community's 'sense of place'.

Significance Statement

A moderate overall significance is assigned to impacts on the 'sense of place', as visual impacts have the potential to affect the surrounding landowners' perception of their living environment and also incomes derived from the gaming / hunting industry negatively.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Study Area	Moderate	May Occur	MODERATE -
With Mitigation	Long Term	Study Area	Slight	May Occur	MODERATE -
No-Go					
Without Mitigation	Long Term	Study Area	Slight	Unlikely	LOW +

Impact 13: Electricity supply and the environment

Cause and Comment

Even though the cost-competitiveness of renewable energy sources still holds many challenges, the proposed Dassiesridge WEF would have a positive impact on a regional and national level:

- Wind energy is renewable and sustainable and cannot be depleted, as is the case with fossil fuels;
- Wind energy facilities generally require less maintenance with lower operational costs;
- Renewable energy has minimal impact on the environment and produces little or no waste products, such as carbon dioxide and other chemical pollutants; and
- Renewable energy projects can bring economic benefits for the country, e.g. in the form of new 'green' jobs.

No-go option

- Coal-fired power stations would remain South Africa's primary source of electricity generation with numerous environmental disadvantages.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	National	Beneficial	Definite	HIGH +
No-Go					
Without Mitigation	Long Term	National	Severe	Probable	HIGH -

10.4 Decommissioning Phase Impacts

10.4.1 Social

Impact 1: Job creation

Cause and Comment

Temporary workers would be required to do the disassembling and/or replacement of components and skilled employees (project managers, technicians, etc.) would also be required. The number of employment positions is unknown as this is new technology and none of the existing plants have as yet been decommissioned. However, it could be expected that suitable workers will be available as a large number of people would have gained relevant skills over the 25 year operational period of the Dassiesridge WEF and similar plants in the region.

Significance Statement

At this stage it is expected that the same number of workers (800) would be used for decommissioning as was employed during the construction period. A positive impact of moderate significance is anticipated over the short term.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Decommissioning phase					
Without Mitigation	Short Term	Regional	Moderate	Definite	MODERATE +

Impact 2: Impacts on living and movement patterns

Cause and Comment

Negative impacts on traffic movement patterns would be inevitable as large construction vehicles would be required to move new and old components to and from the site.

Significance Statement

Although traffic volumes on the R75 and R335 and road conditions at the time of decommissioning are unknown at this stage, the impact could be regarded as severe due to the high number of trucks and abnormal loads that would be transported. An impact with an overall negative moderate significance is likely.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Decommissioning phase					
Without Mitigation	Short Term	Regional	Severe	Definite	MODERATE -

Impact 3: Impacts associated with a change in land use

Cause and Comment

Two scenarios that are at this stage foreseen are:

- The land would be rehabilitated and rezoned to Agriculture, in which case it could be used for livestock grazing and/or game farming purposes; or
- New technology would enable the proponent to extend the operational phase and applications would be lodged to extend rezoning Consents and / or Long-term lease agreements with landowners and authorities.

Significance Statement

Regardless of the preferred land uses post the decommissioning phase, no severe impact is anticipated, provided that the land is rehabilitated to its natural state.

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of		

Impact					
Decommissioning phase					
Without Mitigation	Short Term	Local	Slight	Probable	LOW +

Impact 4: Safety and security concerns

Cause and Comment

The decommissioning phase would increase the influx of people, which could increase the likelihood of safety and security issues.

Significance Statement

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Decommissioning phase					
Without Mitigation	Short Term	Study area	Severe	May Occur	MODERATE -

Impact 5: Intrusion impacts

Dust / air pollution, visual impacts and other nuisance factors not unlike those experienced during the construction phase is possible and could be mitigated in a similar way. Refer to Section 10.2 of this report.

10.5 Cumulative Impacts

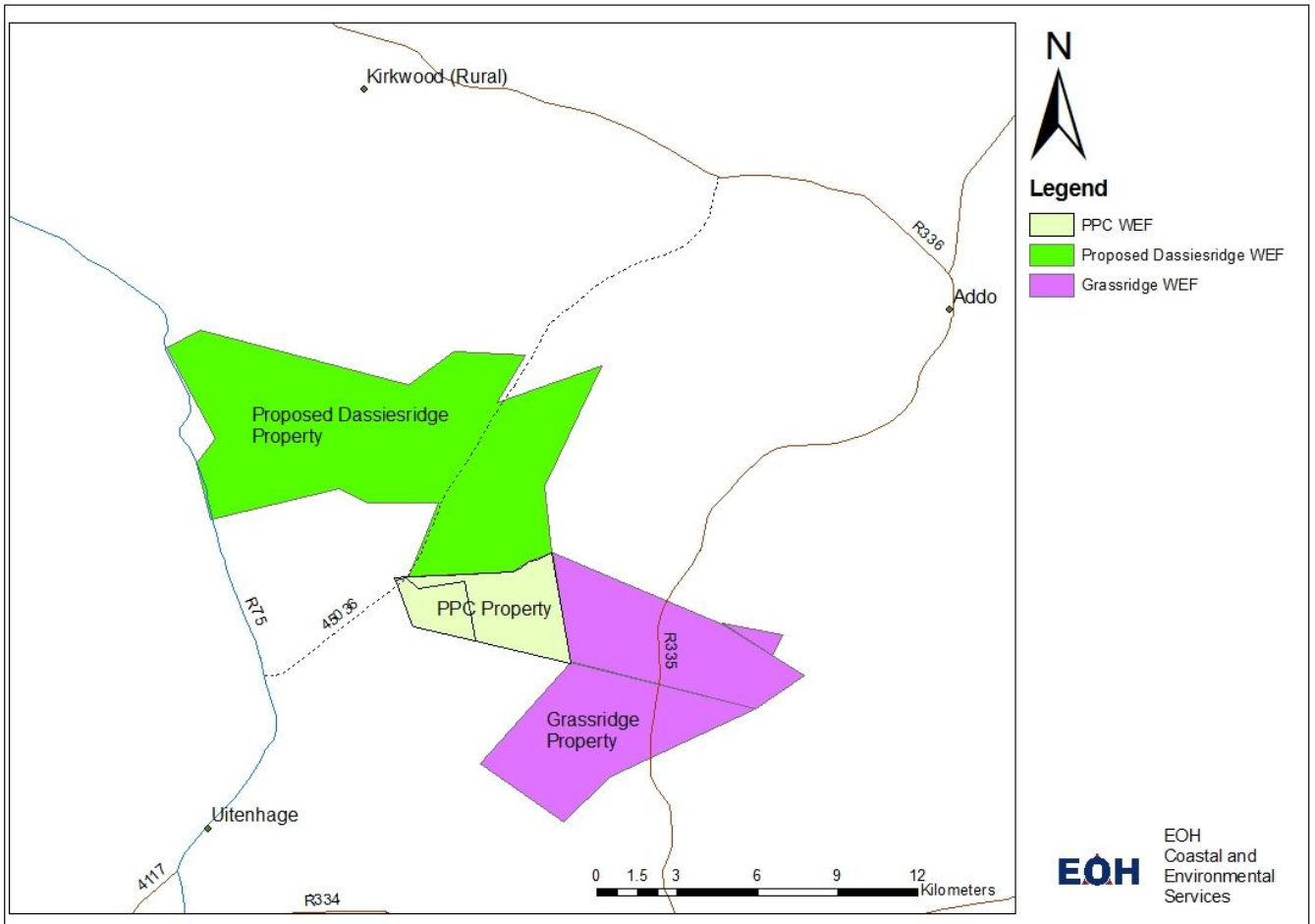
Cumulative impact refers to the combined effects of numerous single developments combined. The purpose of cumulative impact assessment is to ensure the full range of consequences of actions is considered. Cumulative impacts can occur over different temporal and spatial scales by interacting, combining and compounding so that the overall effect often exceeds the simple sum of previous effects.

As per the NEMA regulations, cumulative impact means “*the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.*”

The Dassiesridge WEF is proposed to be located on a number of properties, one of which is contiguous with the border of the properties on which the Grassridge Wind Energy Facility is located and on which the proposed Grassridge II (PPC Properties as per Figure 10-1) is set to be located. The Grassridge WEF, operated by Grassridge Wind Power, consists of 20 turbines. The proposed Grassridge II WEF will consist of approximately eight turbines.

The cumulative impacts of the three bordering Wind Energy Facilities has been assessed by the various specialists in the sections 10.5.1 to 10.5.7.

Figure 10-1: Wind Energy Facilities (WEFs) which surround the Dassiesridge WEF



10.5.1 General

Impact 1: Increased power input to the grid

Cause and Comment

The local municipal area is faced with the problem of load shedding and the resultant distribution disruptions. This highlights the need to save and conserve energy. The addition of approximately 48 MW of renewable energy into the existing grid will result in the alleviation of a portion of the burden on the municipality to provide electricity (especially during winter when the energy demand is higher) to its residents.

Cumulative Impact

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Operational phase					
Without Mitigation	Long Term	Regional	Beneficial	Definite	HIGH +
With Mitigation	N/A	N/A	N/A	N/A	N/A

Impact 2: Increased traffic during the construction phase

Cause and Comment

Heavy construction vehicles will be utilising the existing road network during the construction phase of the development which may result in traffic congestion and damage to existing roads. However this impact will be of short term duration as no additional traffic will be required during the operational phase other than for maintenance purposes.

Cumulative Impact

Impact	Effect			Risk or Likelihood	Overall Significance
	Temporal Scale	Spatial Scale	Severity of Impact		
Construction phase					
Without Mitigation	Short Term	Study Area	Slight - Moderate	Definite	LOW -
With Mitigation	Short Term	Study Area	Slight - Moderate	Definite	LOW -

10.5.2 Ecological

Sadler (1996) defines cumulative impacts as the “the net result of environmental impact from a number of projects and activities”, The impact of the proposed WEF may not be significant or be a serious threat to the environment, but a large number of projects in one area, or occurring in the same vegetation type may have significant impacts (DEAT, 2004). This section attempts to identify the cumulative impacts associated with Wind farm projects taking place in similar vegetation type in this area. Even though the possible extent of the cumulative impacts cannot be determined due to not knowing the number of projects that will be accepted, it is still important to try and identify the negative and positive impacts which may arise in the long term and this includes looking at this project in conjunction with other projects. For this reason the cumulative impacts associated with the existing Grassridge and proposed Grassridge 2 WEFs adjacent to the site have been assessed

Impact 1: Loss of Coega Bontveld vegetation

Cause and Comment

This vegetation type is already listed as threatened by activities such as mining in the area. Additional developments within this vegetation type will have further impacts on this vegetation. Given the limited distribution of this vegetation type, the unmitigated cumulative impacts associated with the neighbouring Grassridge WEF and PPC mine are likely to be high. However, since Coega Bontveld is comprised of a mosaic of vegetation (bushclumps, succulent patches and grassland) mitigation measures that avoid areas of high sensitivity (Bushclumps and succulent patches) will reduce the impacts the WEF is likely to have. As mentioned previously, the turbine infrastructure associated with the WEF will only impact 0.6% of the Coega Bontveld on the property or of the total vegetation type.

Impact 2: Loss of Sunday Valley thicket vegetation

Cause and Comment

Even though the proposed project (Dassiesridge WEF) may not result in significant losses of this vegetation type, the cumulative impacts associated with this project and other WEFs (eg Grassridge WEF) in the area must be assessed. The SRV biodiversity Sector Plan states that the removal of large expanses of this vegetation has been identified as one of the factors which may encourage global climate change due to the increase in CO₂ input into the atmosphere. The Thicket vegetation acts as a carbon sink by fixing carbon in plants and storing it in the soil through the process of decomposition. *Portulacaria afra* (*Spekboom*) is a common species in the Thicket vegetation, and studies have shown it is able to store large quantities of carbon. This vegetation

type has a wider distribution than Coega Bontveld and the cumulative impacts on this vegetation type are likely to be moderate.

Impact 3: Loss of SCC

Cause and Comment

The proposed project (Dassiesridge) will have an impact on SCC found to occur in both the Coega Bontveld and the Thicket vegetation. SCC are species which need to be conserved as they are threatened by various factors. Various factors are used to determine if a species is classified as a SCC and these include habitat destruction, habitat loss and the harvesting or poaching of species. Anthropogenic activities such as urban settlement and development are some of the causes which result in the above factors. Due to the Coega bontveld and Thicket vegetation having a number of SCC associated with them and the Coega bontveld having a restricted distribution, the cumulative impact of the Loss of SCC needs to be assessed.

Cumulative Impacts

The extent of the loss of SCC can only be predicted and therefore a precautionary approach has been adopted. The cumulative impact associated with the Dassiesridge WEF and the Grassridge and Grassridge 2 WEFs nearby is likely to be high.

10.5.3 Avifaunal

Cause and Comment

The proposed Dassieridge Wind Energy Facility is situated in an area of the country where several such projects are either under assessment or already under construction. To our knowledge, the following projects exist and are relevant:

- Grassridge Wind Energy Facility. This is situated immediately south of the Eastern half of the Dassieridge site and is already under construction.
- Bayview Wind Energy Facility. This project is currently conducting Environmental Impact Assessment. It is situated approximately 8 kilometres east of the Dassieridge boundary.

In such areas, where multiple facilities may be built, it is important to consider the overall or cumulative impact of these facilities on birds. Consideration of each project in isolation may not adequately judge the effect that projects will have on avifauna when combined.

The International Finance Corporation (IFC) recognises Cumulative Impact Assessment (CIA) and management as essential in risk management. However CIA is also “One of the biggest risk management challenges currently facing project developers in emerging markets...”. Challenges include: a lack of basic baseline data, uncertainty associated with anticipated developments, limited government capacity, and absence of strategic regional, sectoral, or integrated resource planning schemes. Considerable debate exists as to whether CIA should be incorporated into good practice of Environmental and Social Impact Assessment, or whether it requires a separate stand-alone process. As a minimum, according to the IFC, developers should assess whether their projects could contribute to cumulative impacts or be impacted upon by other projects. The IFC recommend that developers conduct a Rapid Cumulative Impact Assessment (RCIA) either as part of the EIA or separately. This RCIA should follow 6 steps: 1 & 2 – scoping; 3 - baseline determination; 4 - assessment of the contribution of the development under evaluation to the predicted cumulative impacts; 5 - evaluation off the significance of predicted cumulative impacts to the viability or sustainability of the affected environmental components; 6 - design and implementation of mitigation measures to manage the development’s contribution to the cumulative

impacts and risks (see the “Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets”. International Finance Corporation).

Additional challenges specific to the Dassieridge area and avifauna include:

- The difficulty in defining which projects to include in a CIA. Not all the projects in the area have obtained environmental authorisation, or authorisation from the Department of Energy, so may never materialise. The question is which projects should be considered then, only those authorised, or those successful bidders, or those that have reached financial close.
- The difficult in defining the spatial extent of a CIA, bearing in mind that some of the relevant bird species move hundreds of kilometres across the landscape and could theoretically be affected by developments within this entire range.

Cumulative Impacts

The IFC step wise approach is useful to follow for this study, and has been elaborated on below:

Step 1 & 2: The Dassieridge study has achieved these through the scoping of issues and identification of aspects worthy of attention. It is assumed that these aspects will be similar on the other project sites in similar topography and vegetation. In particular, we have obtained reports from bird monitoring at the closest site, Grassridge. Studies at Grassridge identified the following bird species as being particularly important: Blue Crane, Denham’s Bustard, Secretarybird, and Black Harrier. Flight activity of threatened species such as Blue Crane and Denham’s Bustard was relatively low, and most recorded flight was below rotor height. Similarly to Dassiesridge, species recorded flying the most were common, including Southern Pale Chanting Goshawk, Rock Kestrel and Black-shouldered Kite. No sensitive species were found breeding on site.

Step 3:

Although baseline information has been obtained on the relevant bird species for the Dassieridge site, obtaining relevant, detailed data on baseline conditions on all the other facilities in the general area is not possible at this stage as the pre-construction bird monitoring reports from these projects are not in the public domain. This information is not readily available publicly, so assumptions need to be made about which species will be affected by these other facilities. As described above, some information has been obtained from the Grassridge site, and mention is made earlier in this report of post construction monitoring results from the single wind turbine near Coega (Doty & Martin, 2013).

Step 4: requires a judgment of the contribution that the Dassiesridge site makes to the predicted cumulative impacts. In our opinion, with respect to the key species listed as most important for this area, the Dassiesridge site makes a contribution to impacts in the area, on account of its size, and available open habitat on site (which is attractive to key Red List bird species).

Step 5: The overall cumulative effect of wind energy facilities on birds in this area, is likely to be of LOW - MEDIUM significance prior to mitigation in our opinion.

Step 6: It is recommended that each project within this broader area ensures that no effort is spared in mitigating impacts on avifauna. It is hoped that if each project provides sufficient mitigation, the overall cumulative impact can be reduced. There are strong grounds for a strategic cumulative avifaunal impact assessment to be conducted for the greater Coega-Addo area as soon as possible. It is recommended that the Department of Environmental Affairs implement such a study.

10.5.4 Heritage

Cause and Comment

Cumulative effects can be defined as impacts which combine from different projects, resulting in significant change, which is larger than the sum of the individual impacts. Cumulative Effects Assessment (CEA) is, in South Africa, an emerging process in the field of Integrated Environmental Management (IEM). It aims to provide direction in the decision making process from a holistic point of view – through the understanding of impacts on past, present and future generations by broadening the spatial and temporal focus of Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA). It focusses on the consideration of long term changes, not only as the result of a single action or development, but the combined effects of many actions over time, and on the environment in order to guide the decision making process through an understanding of local, regional and global linkages (DEAT 2004). The concept of a tiered context analysis to guide the planning and decision making process is not new. Possibly in its simplest form, albeit from the field of architecture, Aliel Saarinen (1873 – 1950) explained: ‘Always design a thing by considering it in its next larger context – a chair in a room, a room in a house, a house in an environment, an environment in a city plan.’

CEA can be done as a stand-alone assessment or can be incorporated in the SEA through inclusion in the EIA, with the latter approach being preferred as a result of the more applied methodology inherent therein (DEAT 2004). When CEA principles are included in the EIA level, individual aspects thereof can already be addressed on specialist assessment level. DEAT (2004) prescribes a 2-tiered context for basic analysis, namely:

- Project based; and
- Regional based.

The principles of CEA are not lost on the South African heritage compliance arena, albeit in large limited to the project based level. The SAHRA (2007) guidelines state that: ‘The legislation (NHRA 1999) require that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance be protected. Thus any assessment should make provision for the protection of ALL these heritage components, including archaeology, shipwrecks, battlefields, graves and structures over 60 years, living heritage and the collection of oral histories, historical settlements, landscapes, geological sites and palaeontological sites and objects.’ It continues: ‘Where possible archaeological and palaeontological sites should be saved, but where this is not possible, the loss of information about our heritage resources can be mitigated against or minimized through a process of excavation (or sampling) and dating of a representative sample of the evidence from the site. This allows us to record at least part of the history of the place.’ And ‘When a Phase 1 is part of an EIA, wider issues such as public consultation and assessment of the spatial and visual impacts of the development may be undertaken as part of the general study and may not be required from the archaeologist. If however the Phase 1 forms a major component of an HIA it will be necessary to ensure that the study addresses such issues and complies with Section 38 of the National Heritage Resources Act.’

The above describes the basic process of the SAHRA Heritage Impact Assessment (HIA), including the archaeological (AIA) and palaeontological (PIA) components thereof: Firstly as the type of sites that are protected and needs to be recorded during Phase 1 assessment, their documentation and associated relevant recommendations, either conservation or (Phase 2) mitigation and if the assessment formed a major part of the HIA for inclusion in an EIA, the need to assess the findings in a wider project based context. In practice this is often done by the cumulative description of identified impacts on the immediate receiving cultural environment: An archaeological and cultural heritage description of the impact of development on the cultural landscape and viewscape is a first tier cumulative context description; an interpretation of impact on a project based level.

Cumulative Impacts

Specialist input on a regional based level was requested with specific reference to proposed Wind Farm developments in the wider region: With a focus on the Grassridge WEF, situated immediately adjacent to the Dassiesridge WEF study site, south towards Port Elizabeth and the Jeffrey's Bay / Humansdorp area, to Jansenville in the west, Somerset-East / Bedford in the north and Grahamstown in the east. Many of the proposed developments are still in a Scoping phase, some in a construction phase and with a selected few having been completed.

During the Grassridge Phase 1 AIA, and best describing the immediate greater receiving archaeological and cultural environment of the Dassiesridge WEF, Booth (2012) identified only 3 low density Middle Stone Age (MSA) lithic surface scatters, with additional Stone Age occurrences identified along access roads travelled. Recommendations included archaeological monitoring at the time of vegetation clearing and during excavation activities (very similar to the recommendations contained in this report for the Dassiesridge WEF), but with findings of the recommended archaeological monitoring not available for purposes of this report. Similarities between the recorded Low Significance Stone Age deposits at both Grassridge and at the Dassiesridge WEF supports a low cumulative impact of the proposed Dassiesridge WEF on a project based level, whilst also providing a platform for discussion and comparison with archaeological and cultural heritage findings of Wind Farm developments on a regional level. In addition the identification of 2 Colonial Period sites at the Dassiesridge WEF, both of which will be conserved and considering development time frames, including indirect recording on possible unforeseen or natural impact, ensuring reporting on the conservation thereof for a minimum 20 year period, adding a valuable though low level Colonial Period layer to the existing heritage record of the area.

Though the Phase 1 AIA report for the Coega IDZ WEF was not available for interpretation, Binneman's (2010c) survey of the greater Coega IDZ provides for a fair interpretation of the area: A number of Earlier (ESA), MSA and Later Stone Age (LSA) sites and occurrences characterized the area with a wealth of LSA shell midden sites clustered in IDZ Zones 1, 7 and 10, along the Coega (Koega) River and the coastline and situated within the general 5km sensitive coastal zone of archaeological shell midden sites. The report highlights the change in archaeological sensitivity, type sites and paleo landscape use across the various geographic zones of the IDZ.

Along the south coast LSA shell midden sites were again identified within the 5km sensitive coastal zone: At the MetroWind WEF study site a number of shell middens were recorded during the Phase 1 AIA (Binneman & Booth 2010). Phase 2 mitigation and monitoring greatly served to further interpretation of the surface identified middens: Pre-pottery and pottery phased hunter-gatherer (San) associated middens were identified with later phased middens intersecting ephemeral pastoralist (Khoen) middens, further describing the past cultural complexity of the area;

the result of scientific mitigation and analysis (Nilssen & Van Ryneveld 2012), emphasizing not only the contribution, but also the responsibility of development towards our non-renewable heritage where development may or will impact thereon.

Further along the south coast, despite proximity to the said 5km sensitive coastal zone, recorded shell middens seem to elude CRM documentation despite their known existence in accordance with publicized sites. One significant ESA, MSA and LSA site was recorded in the Central Cluster study site of the Red Cap Kouga WEF (Van Ryneveld 2010), with further reports on low density ESA and MSA occurrences recorded in the Ubuntu, Oyster Bay and Tsitsikamma assessments (Binneman 2011a, 2011b, 2011c). Limited Phase 2 monitoring and mitigation serves to clarify, at least in part, subsurface uncertainties pertaining to the Stone Age record: Adding to our interpretation of technology and typology, but more importantly that of palaeo landscape use and post-depositional processes along the south coast of the Eastern Cape (Van Ryneveld 2012b, 2013). Again the Stone Age record is overlain by a low impact, general Low Significance Colonial Period layer, directly associated with continuing landscape use, and complimented by identified Grave and Cemetery sites (Van Ryneveld 2010, 2013).

No archaeological reports are available on SAHRIS for Wind Farm developments proposed to the west of the Dassiesridge WEF, near Jansenville or further north towards Pearston.

To the north of the Dassiesridge WEF, a desktop assessment by Booth (2011a) describes the range of heritage sites that may be expected in the area. Field assessment at the Golden Valley study site (Hart 2010) confirmed the general presence of widely scattered low density MSA lithic surface material, while an ESA and a LSA site, notable for the presence of ceramics at the site, were identified. The Colonial Period landscape is characterized by ample farmstead and associated farming infrastructural remains, but with the significance thereof greatly diminished by contemporary cultural overlay, the result of continuing cultural tradition, albeit unfortunately not with the necessary cognizance to heritage resources impacted on. The 2-tiered Stone Age / Colonial Period cultural landscape identified at the Golden Valley WEF is echoed by findings of the Amakhala-Emoyeni WEF: Here Halket *et al.* (2010) again recorded Pre-colonial Stone Age deposits associated with a Colonial Period layer, primarily comprising of farmstead remains. At the Cookhouse WEF Booth (2011b) reported on MSA and LSA lithic scatters, with LSA lithics associated with surface finds designating a Colonial Period date, but without a confirmed Colonial Period layer at the site.

Towards the east of the Dassiesridge WEF study site, field assessment at the Peddie WEF (Booth 2011c) identified low density scatters of MSA surface deposits and at Waainek (Anderson 2009) isolated MSA and LSA lithic incidents were reported on, defining the direct impact of these Wind Farm developments on the recorded tangible archaeological and cultural heritage.

When considering specialist input for purposes of CEA it is, first and foremost, the location of the development that needs to be considered, with evaluation of layered specialist concerns describing and defining aspects to guide the decision making process.

- With reference to the project based cumulative impact on archaeological and cultural heritage resources for the Dassiesridge WEF, recorded low density MSA and LSA Stone Age occurrences and the 2 identified Colonial Period sites provide for a notably low cumulative impact on heritage resources. The described low project based cumulative impact is supported by the correspondingly low heritage impact of the adjacent Grassridge WEF, where construction is currently underway.

- Considering the more regional based impact on archaeological and cultural heritage resources, the locality of the Dassiesridge WEF study site, being situated more than 20km from the coastline, remain paramount; implying that no sensitive coastal archaeological resources, so often associated with intangible heritage aspects and associated cultural landscapes and viewsapes cannot be affected. The general 2-tiered Stone Age / Colonial Period landscape identified at the Dassiesridge WEF is, excluding more coastal based Wind Farms, repeated at study sites towards the east and importantly the Spitskop / Middleton / Amakhala / Golden Valley / Cookhouse WEF complex towards the north: A large WEF complex of low cumulative project and regional based significance. The very similar cultural environment at the Grassridge / Dassiesridge WEF complex will provide for an equally low cumulative project and regional based development, not only confirming the locale's ideality, but also pointing towards the feasibility of future expansion of the Grassridge / Dassieridge WEF complex.

10.5.5 Paleontological

Cumulative Impacts

The fossil heritage impact significance of the existing Grassridge WEF, immediately to the southeast of the proposed Dassiesridge WEF, was assessed as low in a previous study by Almond (2011). Impacts in Grassridge WEF area mainly concern poorly-fossiliferous, recrystallized marine limestones of the Alexandria Formation similar to those underlying the main development footprint for the Dassiesridge WEF. The limestones and sparse associated fossils are of widespread occurrence within the broader Port Elizabeth – Uitenhage region (cf Almond 2010). It is concluded that the cumulative impacts of the two adjacent wind energy facilities is LOW.

10.5.6 Visual

Cumulative Impacts

The impact of the additional turbines at Dassiesridge greatly increases the cumulative visual impact on the surrounding communities and visual receptors. The visual impact will therefore increase for individuals who are directly affected by the additional turbines within close proximity to their residences. However, the overall impact of the additional Dassiesridge WEF is not as high as introducing a WEF to an area which is pristine as the surrounding road users and visual receptors have generally been desensitised to the presence of these structures.

10.5.7 Social

Impact 1: Influx of jobseekers and the impact of temporary construction workers

Cause and Comment

A 20-month construction period is foreseen and approximately 100 to 300 workers would intermittently be on site per month. An estimated 80 - 90% of these jobs would be allocated to unskilled and semi-skilled positions. Large-scale unemployment levels in the Metro (37%), District (25%) and local Municipality (15%) (Refer Section 4.9) could result in high numbers of people seeking employment if the project is a successful bidder and becomes public knowledge. It could further be anticipated that 'outsiders' from the wider area and other Provinces would also attempt to find employment at the construction site and mitigation measures would be required in this regard, as the Department of Energy (DoE) sets high standards in terms of local content, which includes local employment.

Cumulative Impacts

- Locals from the Motherwell area are mainly employed at the construction site of the Grassridge WEF and locals from Uitenhage, Addo and possible Kirkwood would be employed at Dassiesridge WEF. By the time Dassiesridge WEF is constructed (if approved), construction of Grassridge WEF will be complete and it is thus not anticipated that the construction periods of the two WEF's would coincide.
- It is not known whether 'outsiders' were attracted by potential employment at other WEF's in and around the area (as locals were employed) and subsequently the cumulative impact of 'outsiders' on the local community (conflict, etc.) and the Municipality (infrastructure, social services, etc.) cannot be determined. If labour is managed pro-actively by the various IPP's the cumulative impact is expected to be negligible.

Impact 2: Employment opportunities and employment equity

Cause and Comment

The construction period of the wind energy facility is labour intensive with positive socio-economic consequences. Although not certain at this stage, approximately 800 employment opportunities would become available over the short-term (20-month construction period). At the peak of construction an estimated 300 people would be on site. Employment is not constant and will start slow, reach a peak and then slow down again towards the end of the construction period.

Unskilled workers do not necessarily require previous work experience and would be employed to do basic labour such as site clearing, digging of trenches, erecting fences, laying foundations, etc. Unskilled workers will be sourced from the nearby towns of Uitenhage, Addo and possibly Kirkwood and socio-economic benefits during the construction phase would thus relay to the local area. Unskilled workers would amount to approximately 560 to 640 of the total labour force.

Semi-skilled workers include machine operators, drivers, rehabilitation workers, etc. It is also expected that most of these positions be filled by residents of the NMBM, SRVM or the wider Cacadu district. Community members with skills obtained from similar construction projects such as Grassridge and Cookhouse WEF's could also be sourced. The Contractor and Sub-contractors' tender documents would need to reflect the worker requirements and should be enforced through the CLOs and Compliance Officer. Eighty to 120 positions would be filled by semi-skilled workers.

Skilled professionals would include Land Surveyors, Project Managers, Assistant Project Managers, Engineers, an Environmental Control Officer and so forth. Wind energy facilities are new technology in South Africa and require specialised skills, which is not always readily available in South Africa. A portion of the skilled labour force would thus consist of foreigners and/or expatriates (80 to 120 skilled employment opportunities).

However, the number of foreigners employed would in all likelihood decrease as skills are being transferred to South Africans through completed renewable energy projects in the country. Recruitment of a 'local' skilled workforce would in all likelihood be done in the NMBM area where higher tertiary education levels (30.5%) occur. DoE requires a minimum of 30% skilled Black people during the construction phase, which could increase at a later stage.

Although policies with regards to the employment of disabled people, the youth and women have not been formulated at this stage, it is recommended that the recruitment policy takes employment equity of minority groups into consideration (wherever possible) to increase the potential employment advantages of the proposed project. This would not always be possible, as the construction phase comprises strenuous physical labour.

Cumulative Impacts

- An increase in employment, social and economic advantages for individuals and families

through the implementation of various renewable energy projects in the NMBM, Cacadu district and SRVM.

Impact 3: Skills development and capacity building

Cause and Comment

Skills development and capacity building for workers, whether through training or hands-on experience would be a positive outcome of the construction phase. However, due to the relative short length of the construction phase it is doubtful that comprehensive skills training programmes could be undertaken.

The majority of the workforce would be unskilled labour that does manual labour and activities which requires minimal previous work experience or training (digging of trenches, site clearing, etc.). However, experience gained at the construction site could, to a certain extent, be advantages for these workers once they seek employment at other construction sites.

Semi-skilled labour would require previous work experience and/or a certain level of training as pre-requisite of employment. Skills development and capacity building for the anticipated 10 - 15% of the workforce would thus be valuable and significant and in addition to technical training, could include Fire Marshall training, First Aid Training, etc.

Skilled workers would fill specialist positions and a higher / tertiary education would be essential. Even as such, renewable energy technology is new technology in South Africa and on-site training and skills transfer, especially for South Africans, is likely.

Cumulative Impacts

- Collective skills development and capacity building will enhance the employability of the local labour force with positive economic advantages for the NMBM, SRVM, Cacadu DM and Eastern Cape Province.

Impact 4: Local procurement

Cause and Comment

Local procurement would be more focused on the procurement of general construction materials and goods, infrastructure elements and the wind farm components by the Coega Development Corporation (CDC) and other industries in Port Elizabeth and the broader South Africa, as many of the high-technology components (complex turbine parts) would be imported. The DoE prescribes a minimum of 40% local content (labour, material and goods), aiming for 65%. This would have positive impacts on the local economy.

Currently it is not known how the local content of this project would be calculated, as procurement and local labour figures cannot accurately be determined at this stage.

Cumulative Impacts

- Increasing local procurement, technology development and skills development through the various wind energy and related renewable energy projects would manifest in positive cumulative impacts for the local and regional economies.

Impact 5: Skills development of supporting industries / local SMMEs

Cause and Comment

Supporting industries refer to small business enterprises and services that would be required to fulfil needs or requirements that develop as a result of the construction activities and would thus fall under the 'Enterprise Development' (ED) and 'Socio-economic Development' (SED) component of the project. This could include catering, laundry services, suppliers of protective clothing, transport and so forth.

An indirect objective and positive spin-off of the Dassiesridge WEF construction period would therefore be the establishment and support for local small businesses, and thus contributing to economic growth within the Municipalities. However, SMME development is a challenge in most peri-urban and rural areas as exposure to an economic growth climate has usually been absent.

Even though skills development and training for SMMEs is not directly the responsibility of the project proponent, there are a number of measures that could be implemented in advance to enhance the development and growth of PDIs and local small service providers. This would include:

- Identify the needs, services and small business requirements necessary for all stages of the construction period;
- Draw up a strategy and policy to ensure the involvement / shareholding of upcoming local businesses or PDIs that tender;
- Meet with the affected Municipalities, Councillors, the local business forums, community representatives and other relevant structures to provide a list of the required services and convey the tender policies to them;
- Appoint a Compliance Officer (CO) and establish a Community Liaison Office (CLO) to ensure compliance of SMMEs, PDIs and other individuals that tender; and
- Award the tenders well in advance to ensure that the SMMEs are prepared, trained, registered and well-equipped once construction commences.

The above strategy would thus aim to give preference to small upcoming businesses or PDIs. Where the necessary skills, expertise or capital lack, established local businesses could be contracted, but would be required to involve and train upcoming businesses or PDIs (thus forming a partnership), thereby contributing to skills development of small business.

Cumulative Impacts

- Establishment of various SMMEs and enterprises that enter the small business market and are able and willing to compete in the local economy.
- Improved development of local small businesses, job creation, skills development, economic spin-offs and thus positive impacts on the local economy.

Impact 6: Impacts on the Local Economy

Cause and Comment

Positive impacts for the local economy associated with the construction phase would include:

- Employment of locals and an increase in salary earners;
- Contracts with SMME's and local service providers (catering, transport, etc.) where possible;
- Local procurement of material and goods, if possible;

- Increase in spending power and expenditure on groceries, goods and services, which would be advantages for local merchants, food suppliers and informal traders; and
- Accommodation of foreigners in local establishments and other spin-offs.

Local procurement would be more focused on the procurement of general construction materials and goods as the majority of technology requirements would be imported. The site is located in relative close proximity to a number of industrial zones in the NMBM where manufacturing of components, material and goods could be produced to the benefit of the local economy.

Cumulative Impacts

- Enhanced local economic opportunities, job creation and other economic spin-offs.

Impact 7: Attitude formation, interest group activity, community mobilisation

Cause and Comment

No interest group activity or community mobilisation for, or against, the proposed project has been observed. However, the following should be noted:

- Two distressed I&AP's have obtained legal representation and legal action could be implemented should their grievances not be addressed. These relate to aviation issues and potential economic impacts in the operational phase.
- A lack in communication, unrealistic expectations and other employment issues resulted in labour tension and riots during the initial construction phases of the Cookhouse WEF. The Cookhouse project affects two local and two district Municipalities and animosity amongst locals developed as some of the locals were, in their opinion, "excluded" from the benefits of the project. As the Dassiesridge WEF affects two Municipalities, i.e. NMBM and the SRVM, implementation of pro-active mitigation and management measures would be essential to ensure that labour unrests do not also occur. Involve the Municipalities from the onset of the project in decision making processes.
- The DoE defines the beneficiary community as those communities located within a 50 km radius of the project. As experience from the construction of the Cookhouse WEF has illustrated, this requirement has the potential to create conflict, as portions of the affected Municipalities would be excluded from receiving socio-economic benefits.
- Although not a regular occurrence, some violent incidents between local and foreign seasonal workers have in the past occurred in the SRVM and Cacadu district and again emphasise the importance of a local workforce.

Cumulative Impacts

- Community mobilization and negative interest group activities could increase should a portion of the local community feel that they are repeatedly being excluded from renewable energy projects and the associated socio-economic benefits.
- Aviation issues would may accumulate with the construction of both the Grassridge and Dassiesridge WEF's, as the grieved party may not be able to fly around the Dassiesridge WEF with, amongst others, financial implications. The exact flight paths have not been accurately provided and as such this may not be at impact.

Impact 8: Impacts on the Nelson Mandela Bay Metropolitan Municipality, Cacadu District and Sundays River Valley Local Municipality

Cause and Comment

The proposed construction project would hold economic advantages for the affected Municipalities in terms of employment, skills development, small business development and so forth.

However, a project of this nature also poses various challenges for Municipalities. This includes possible shortfalls in capacity and management experience, bureaucratic procedures that hamper progress, financial constraints, possible exploitation and even corruption opportunities.

Specific impacts on the NMBM, Cacadu DM and SRVM as a result of the construction phase of the Dassiesridge WEF would include:

- Challenges between the three Municipal entities to co-operate, identify the beneficiary communities and ensure that the socio-economic benefits of the project reaches the target communities;
- An increase in responsibility to do a skills analysis, compile a database of an available local workforce, identify local service providers and provide relevant training;
- Issuing of zoning permits timeously;
- Representation on the Environmental Monitoring Committee (EMC) to do environmental monitoring of the construction site, representation on a Project Steering Committee (PSC) and any other structures, which requires extra time and capacity; and
- Legal responsibilities in terms of actions against land owners, the developer or any other parties that contravene Municipal bylaws.

Council should, on a regular basis, be informed about expected timelines and any issues arising. It is advisable for the developer to establish a Project Steering Committee (PSC) for the duration of the construction period. Members of the PSC (developer, Contractor, Municipalities, community representatives, etc.) would meet on a quarterly basis to discuss issues that may arise during the course of the construction period. Contact details of the PSC could also be made available to the general public if community members or landowners want to lodge complaints.

The significance of negative impacts on the LM could thus be addressed through proper communication, but should commence well in advance of the actual construction period starting.

Cumulative Impacts

- Simultaneous construction of Grassridge and Dassiesridge WEF would increase the NMBM's responsibilities and duties. However, this is not anticipated, as construction should not overlap.
- Simultaneous construction of various renewable energy projects in the district could increase duties and capacity requirements for SRVM and Cacadu DM.
- Experience obtained from the construction of renewable energy projects would increase capacity building and skills development within the affected Municipalities.

Impact 9: Health risks

Cause and Comment

Inadequate management of the construction process could result in health issues for workers and surrounding landowners/community members. Although the site is not located in close proximity to a residential area or farm houses and there are no open water bodies that could be subject to contamination, health issues could impact on workers on site and appropriate mitigation and management is thus required. Health issues could manifest through:

- Dust generation and air pollution resulting in respiratory diseases.

- Poor management of the construction process resulting in pollution problems (e.g. insufficient sanitation facilities, littering and refuse), flies rodents and pests and possible contamination of water sources.
- Unsafe and insufficient drinking water.
- An increase in HIV/AIDS and other STDs due to prostitution activities and temporary sexual relationships with local women, unwanted pregnancies that place further pressure on Basic Health Care Services.
- Dehydration and sunburn, as extreme temperatures could be experienced during summer months.

Management measures would include portable ablution facilities at the construction office area and at the turbine positions and a Health and Safety Officer that monitor health standards.

Cumulative Impacts

- The simultaneous construction and mismanagement of various WEF's would impact and place pressure on Municipal Health Services.

Impact 10: Construction related and road accidents

Cause and Comment

An impact on local emergency, disaster management and health services (fire, ambulance, police services, etc.) could be experienced in the case of construction related accidents and road accidents. To reduce the likelihood of construction related accidents, it is required of the main Contractor to adhere to the requirements of the Quality Management Guidelines, Environmental Management Systems Requirements and the Occupational Health and Safety Act. Protocols and procedures to manage fire, medical emergencies and vehicle and construction accidents would have to be implemented. Disaster management, medical and emergency services in the nearby towns, such as Addo, Kirkwood, Uitenhage and the broader NMBM area deems to be sufficient to cope with construction related and road accidents, if they occur.

Unauthorized access to the construction site could also pose safety concerns for humans and the fencing of construction areas should be done where appropriate to minimise accidents, trespassing and theft.

Cumulative Impacts

- The simultaneous construction of various renewable energy plants would place pressure on local health and emergency services.

Impact 11: Job creation

Cause and Comment

Few permanent employment positions (unskilled, semi- and highly skilled) would emerge during the 25 year operational period of the Dassiesridge WEF. Employment positions could include:

- Technicians, electricians, IT specialists, engineers, administrators (highly skilled);
- Security (semi-skilled); and
- Site maintenance (lower skilled).

In addition to the above a financial manager and supporting staff would be required to implement SED projects and manage related finances. It is highly likely that skilled employees would rather be sourced from the NMBM area, as the tertiary education levels of the Cacadu DM and SRVM are

very low, 8.3% and 3.8% respectively (Section 4.8; Education levels).

Periodically temporary employment may become available for civil works maintenance (roads, crane pads, etc.) and site clearance to minimize potential veld fires, etc. The opportunity for local service providers exists to conclude contracts with the developer to perform duties at the plant.

Cumulative Impacts

- Employment, training and capacity building of employees at the various WEF's would enhance skills of the local and regional workforce.
- The various WEF's in the region would have a positive cumulative impact on the local economy through employment creation.

Impact 12: Skills development and capacity building

Cause and Comment

Although limited, skills development and capacity building would result as on-site training is likely. An important outcome of skills development and training is that employees would be in a position to source work on similar plants once their contracts expire. A skilled labour force is more likely to find employment, resulting in economic advantages for the local economy over the long-term.

Cumulative Impacts

- Employment, training and capacity building of employees at the various WEF's would enhance skills of the local and regional workforce.

Impact 13: Impacts on the local economy

Cause and Comment

During the operational phase it is expected that the local economy would benefit in the following ways:

- The families of employees would benefit economically with an increase in incomes and spending power;
- A possible increase in municipal rates and taxes, as the land would be rezoned from "Agriculture" to "Special Use for Agriculture and Renewable Energy Infrastructure", resulting in higher levels of rateable income;
- Local communities would benefit economically through shareholding and community upliftment and Social Development projects; and
- The establishment of local downstream industries and services that would support the WEF's operations (to a lesser extent).

Cumulative Impacts

- Positive impacts on the local economy would be enhanced with the implementation of additional renewable energy projects in the municipal and district areas.

Impact 14: Community projects, ED and SED contributions

Cause and Comment

It is recommended that the project proponent embarks on a holistic, strategic approach for the Enterprise Development and (ED) and Socio-economic Development (SED) components of the project to avoid fragmented community projects in the region.

Problems that have been experienced in his regard at similar projects include:

- The main driving force behind processes for approved renewable energy projects would be National Government. Local and district Municipalities are informed of progress and developments, but not sufficiently involved and actively engaged in processes from the onset.
- Appropriate structures are not put into place to manage Socio-economic development projects, distribute funds and monitor progress.
- A lack in communication often results in unrealistic expectations that are being created at community level.
- DoE defines the beneficiary communities as those within a 50 km radius from the project site. Large portions of the affected Municipality are thus often excluded from project benefits and conflict is exacerbated when a project affects more than one Municipality.

At this stage it would seem that the beneficiary communities would be Uitenhage (NMBM) and Addo (SRVM) and could also include Kirkwood (SRVM).

To ensure a holistic approach that includes all three the Municipalities it is recommended that a forum or similar structure be established. The forum would:

- Consist of representatives of the NMBM, CDM and SRVM's and their relevant Directorates for Economic Development;
- Identify major "renewable energy development nodes" where wind energy projects are taking place, such as Blue Crane, Oyster Bay, Grassridge, etc. and co-ordinate projects in a holistic manner;
- Prioritise projects identified in the IDP's and LED programmes;
- Formulate a strategy to achieve long-term sustainable goals that would include large economic development projects in the major "renewable energy development nodes" that would contribute to the region's economic growth; and
- Identify short-term food security and local community development projects.

The idea would thus be to collaborate and embark on larger income-generating projects within the "renewable energy development nodes" that would benefit the broader region, instead of implementing scattered small-scale projects.

The advantage of such an approach would be greater sustainability and potential for long-term income generation, employment creation and skills development.

Localised short and medium-term projects, such as community infrastructure developments, training programmes, food security projects, and so forth could also be implemented but the main focus should be holistic.

Cumulative Impacts

- The collaboration of more renewable energy projects would increase the economic power within the "renewable energy development nodes" and ED and SED projects would be able to compete in the broader economy of the region and country.
- Short-term development and community projects would enhance local food security and employment creation.

Impact 15: Impacts on aviation

Cause and Comment

For the last number of years the owner of Sutherland Transport, situated in Perseverance (midway between Despatch and Port Elizabeth), allegedly commutes on a daily basis by helicopter between

his business and farm, located halfway between Kirkwood and Addo. According to the I&AP the flight route is the shortest and most economical and is flown under 2 000 feet above sea level. The I&AP further states that within this airspace no flight plan needs to be filed. (Section 10.3 of the SIA contains relevant flight logs dated 03/09/14 up until 21/2/15).

The I&AP claims that the proposed Dassiesridge WEF will affect the flight route, with the following consequences:

- The construction of the wind turbines would increase the flight height to more than 2 000 feet and a flight plan would need to be lodged on a daily basis;
- A flight plan would require additional time, administration and costs and is not practical as the route is being flown on average two times per day and intermittently more than twice per day;
- Another alternative would be to fly around the Dassiesridge WEF and the extra time, insurance costs, maintenance and other running costs of the helicopter would amount to an extra cost of approximately R675 000 per year (refer to the I&AP comments contained in the detail EIA Report);
- At this stage it would seem that the Grassridge WEF would also affect an alternative route that the I&AP could have used should Dassiesridge WEF be constructed. According to the I&AP, he was not consulted during the Grassridge WEF EIA process; and
- The I&AP indicated their inclination to instate legal action should their concerns not be considered and addressed.

The professional opinion of an Obstacle Specialist of the South African Civil Aviation Authority was obtained with regards to private aviation. The Specialist's findings, based on the positioning of the turbines and the comment and flight logs provided by the helicopter operator, are that:

- The flight paths provided by the I&AP do not cross the Dassiesridge site; and
- TMA is 2 500 feet and there is adequate clearance below the controlled airspace for the pilot to fly over the wind turbines, should he wish to do so. No daily flight plan would thus be required.

Cumulative Impacts

- It is unlikely that the neighbouring Grassridge WEF will affect the flight path, as there is adequate clearance below the controlled airspace for the pilot to fly over the wind turbines.

Impact 16: Potential impacts on incomes: Gaming / hunting industry

Cause and Comment

The possible impact wind turbine structures could have on income potential from an economic point of view is something that could be debated as different role players may have different opinions and views. The following information was obtained, and emphasise the diversity of opinions:

- It is the concern of the land owner of Portion 2 of the Remainder of Portion 233, Registration Division of Uitenhage that he would not be able to successfully operate his farm as a commercial hunting operation as wind turbines would have a negative visual and potential noise impact from almost all the vantage points on his farm. In his opinion this would detract from the wildlife experience for overseas and local hunters. The I&AP has made significant investments in terms of infrastructure development and the purchase of wild animals. He is dependent on incomes derived from hunting to service his bond. However, commercial hunting is envisaged for the future and not operated to its full potential yet. Therefore impacts on potential future revenues/losses cannot be determined at this stage. Also, existing infrastructure (the 132 kV Eskom power line along the northern boundary, the railway line that runs through the property and the Grassridge wind turbines) already have a visual impact and

the potential negative impact that the Dassiesridge turbines could have on commercial hunting on this farm is thus questionable.

- One of the property owners directly involved in the project hosts an approximate hundred (100) local and international hunters per year. Approximately 700 to 800 animals are being hunted annually. Even though wind turbines would be erected on these farms, he is not concerned that there would be a significant impact on his commercial hunting operations.
- An agricultural farm located adjacent to the Cookhouse WEF is in the process of being converted from livestock to a game farm, even though the farm is impacted visually by the turbines.
- Hunting/game farms near Cookhouse, such as Highdale, have wind turbines on the property with no significant impact on the industry.

The conclusion can thus be drawn that there is a potential of economic impacts on current activities (especially the hunting industry) and potential future eco-tourism opportunities, but it is highly unlikely that these activities would cease as a result of the facility.

Cumulative Impacts

- From a regional point of view it would be more appropriate to concentrate various wind energy facilities in close proximity to each other to create nodes where potential negative impacts are concentrated and not dispersed.

Impact 17: Impacts on leisure and tourism activities

Cause and Comment

The Cacadu DM identified the Sunday's River Valley/surrounds of the Addo Elephant National Park as one of its tourism development nodes (Cacadu IDP). The area is well provided with B&B's and Guesthouses. The Addo National Park is located approximately 10 km from the site and the Springs Local Authority National Park approximately 8 km to the north.

'Addo to Eden' is trying to establish wildlife corridors and are in the process talking to landowners in the Jansenville area to link significant protected areas to prevent "wildlife islands". A hiking trail across Springbok Vlakte also exists and a bicycle adventure route is planned. This area is 30 km to the north-west of the study area and no negative visual or other significant impact on leisure/tourism for this activity is expected.

The Dassiesridge WEF is thus located in the "gateway" to this tourism area and would be observed by tourist/motorists travelling along the R75. No direct impact is anticipated on nature reserves, tourism facilities or protected areas as their proximity to the facility is not pertinent.

As it would not be possible to hide the facility, the aim should rather be to promote and regard it as an attraction and land mark for the region.

Cumulative Impacts

- From a regional point of view it is to the benefit of the tourism and leisure industry to concentrate various wind energy facilities in close proximity to each other to create nodes and minimize potential negative impacts on tourism and leisure opportunities.

Impact 18: Impacts on the 'sense of place'

Cause and Comment

Extensive dust, traffic and security issues as a result of the wind energy facility during the

operational phase are highly unlikely and should not impact on the community's 'sense of place'. Although potential noise impacts have been raised as a concern, the proximity for residences to the turbines makes the impact highly unlikely and the assessment and rating thereof falls outside the scope of this report.

Visual impacts have the potential to affect the local 'sense of place' and could thus impact on game farming, hunting and similar eco-tourism related land uses if 'sense of place' is altered to such an extent that it affects the numbers of visitors / tourists to the area or impacts the quality of life for locals. Assessment of visual impacts is done as part of the detail EIA of this project and falls outside the scope of the SIA.

It should be noted that existing structures such as Eskom power lines and pylons, a railway line, roads, and windmills already have a visual impact on the study area. Over time communities often become "desensitised" towards these "man-made" structures and structures could even be regarded as iconic (e.g. windmills in the Karoo). It is therefore possible that negative impacts of the wind turbines and associated infrastructure on the community's 'sense of place' could decline over time.

Furthermore, although some of the turbines would be visible from the R75 and from a few farm residences, there are no sensitive receptors or residential areas in close proximity to the site. The impact on the community's 'sense of place' can therefore not be regarded as severe.

Through discussions with landowners and I&APs it became clear that people in the district in general have become accustomed to wind turbines and would "tolerate" these structures as they recognize the advantages of renewable clean energy for the country as a whole.

Cumulative Impacts

- The establishment of WEF nodes (such as Blue Crane, Cookhouse, Grassridge, Tsitsikama, etc.) is favourable as dispersed facilities would scatter and increase impacts on the 'sense of place' over a larger area, and would thus intensify the impact.

Impact 19: Electricity supply and the environment

Cause and Comment

Even though the cost-competitiveness of renewable energy sources still holds many challenges, the proposed Dassiesridge WEF would have a positive impact on a regional and national level:

- Wind energy is renewable and sustainable and cannot be depleted, as is the case with fossil fuels;
- Wind energy facilities generally requires less maintenance with lower operational costs;
- Renewable energy has minimal impact on the environment and produces little or no waste products, such as carbon dioxide and other chemical pollutants; and
- Renewable energy projects can bring economic benefits for the country, e.g. in the form of new 'green' jobs.

Cumulative Impacts

- Eskom's intention to purchase 3 750 MW of electricity from renewable energy projects over the next few years, would contribute significantly to environmental advantages.

11 DASSIESRIDGE WEF SENSITIVITY ANALYSIS

A site development sensitivity map (Figure 11.1) was developed based on specialist and general site information gathered, and the site was classified into areas of **GO** (unrestricted development), **GO-BUT** (conditional development) and **NO-GO** (no development).

- **NO-GO** areas included areas of high sensitivity indicated by the bird and bat specialists, identified heritage sites and buffers around existing infrastructure (including a 500 m buffer around all noise sensitive areas).
- **GO-BUT** areas are areas where construction is conditional on the fulfilment of one or other aspect-specific requirement. For example, all construction on the Heritage GO-BUT area will require sign-off by a palaeontologist in order to ensure that no fossils (if found) are damaged or destroyed. Other GO-BUT areas included areas of moderate sensitivity identified by the bird and bat specialist and ecologically sensitive areas such as watercourses, wetlands and thicket vegetation.
- **GO** areas are areas where construction may take place without hindrance.

In response to the site development sensitivity analysis conducted on the draft layout (Alternative 1), Dassiesridge Wind Power revised their project layout and provided a final layout (Alternative 2) (Figure 11-1 to Figure 11-3). Figure 11-1 to Figure 11-3 represents the Dassiesridge WEF layout changes in response to site sensitivities – 11-1 Draft Layout (Alternative 1), 11-2 Final Layout (Alternative 2), 11-3 Comparative Layouts.

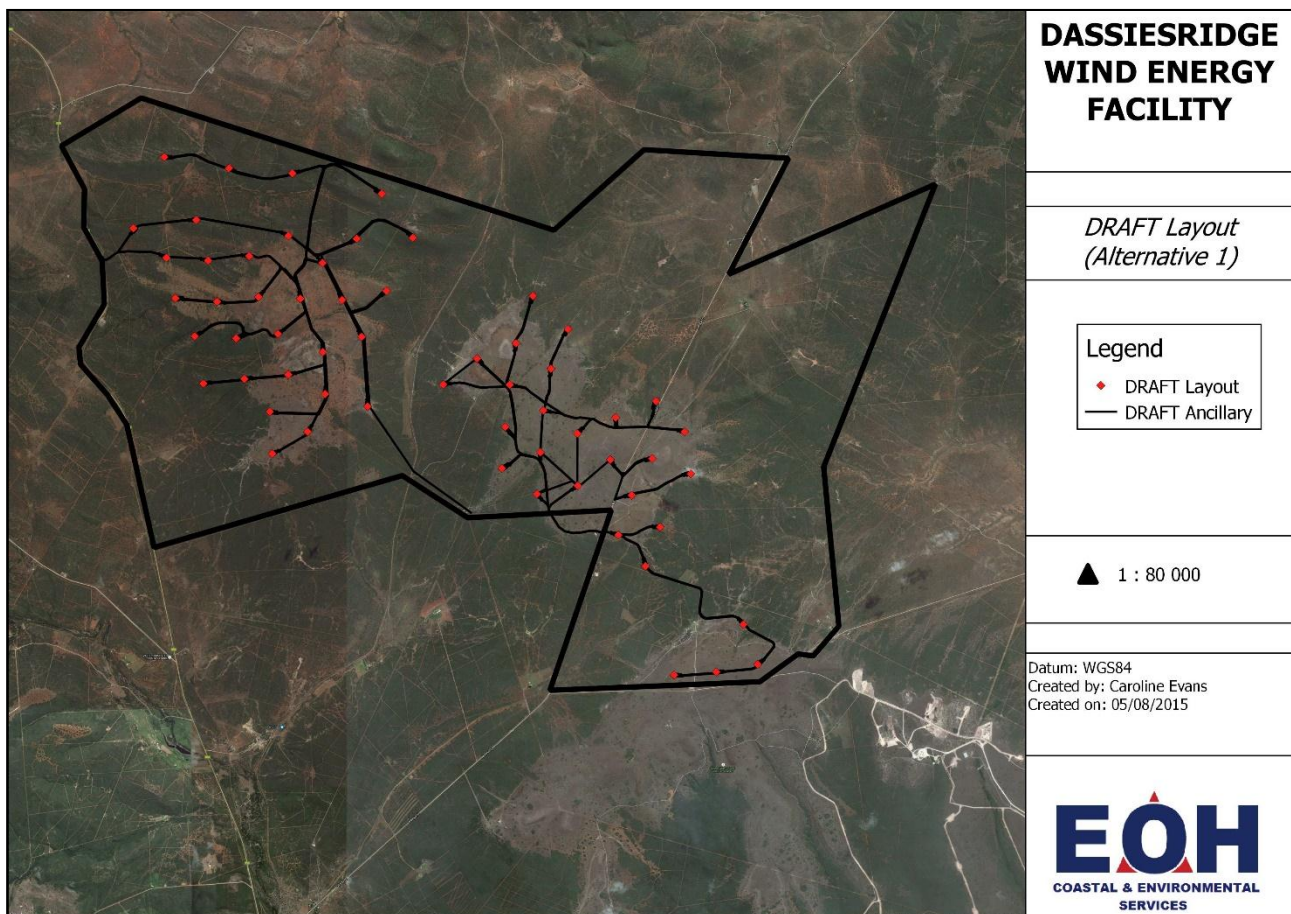


Figure 11-1: Dassiesridge WEF layout changes in response to site sensitivities - Draft Layout (Alternative 1)

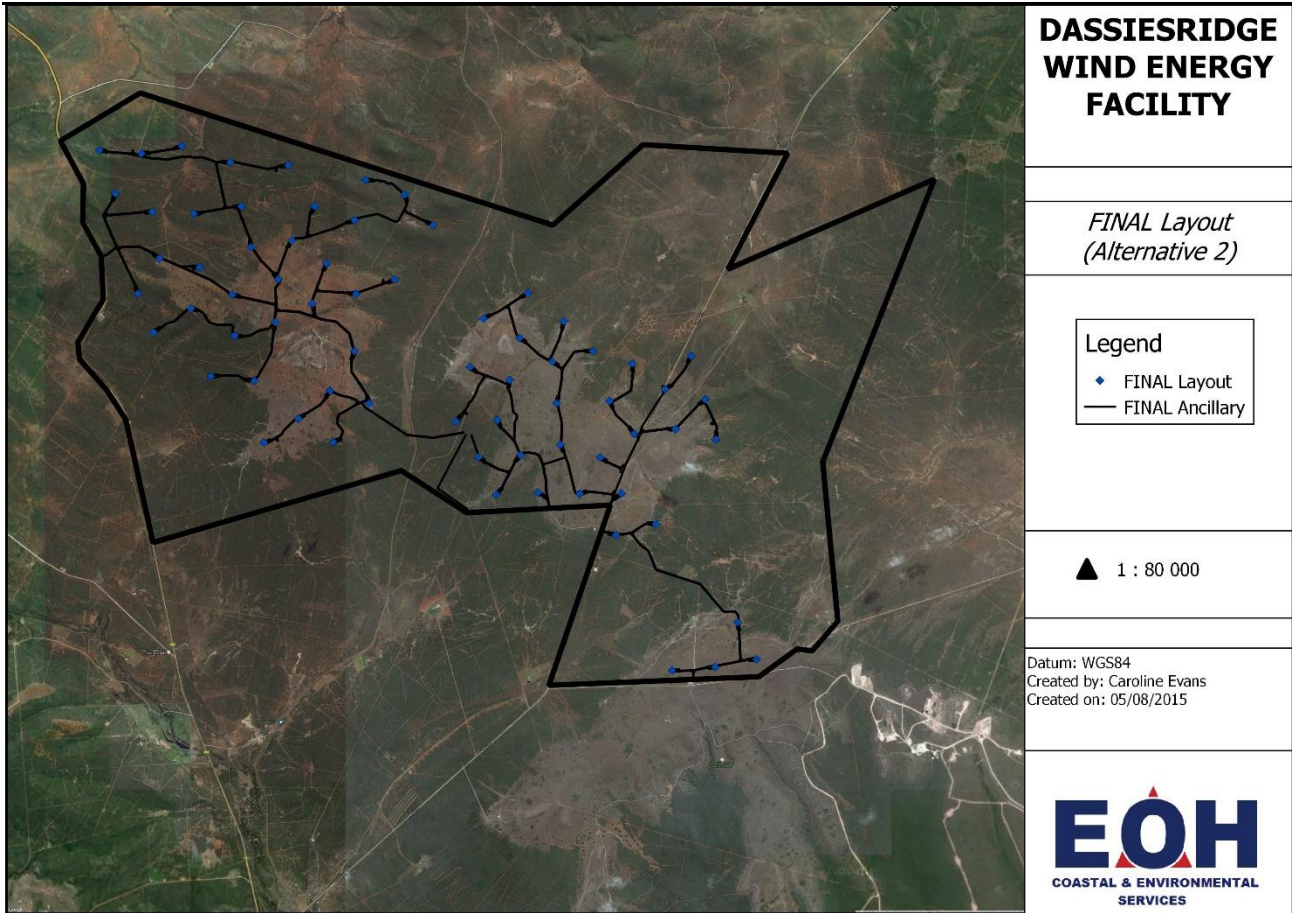


Figure 11-2: Dassiesridge WEF layout changes in response to site sensitivities - Final Layout (Alternative 2).

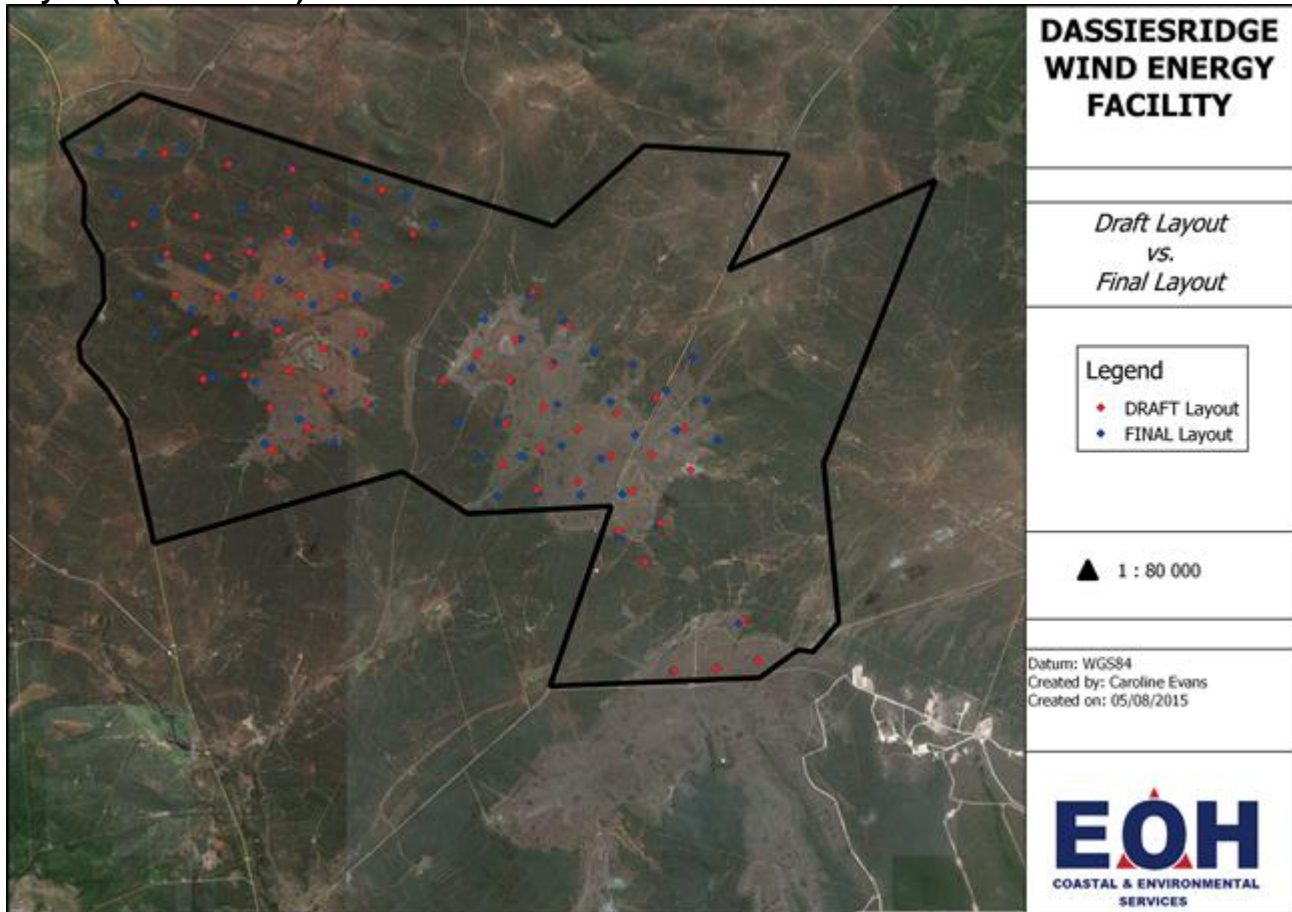


Figure 11-3: Dassiesridge WEF layout changes in response to site sensitivities -

Comparative Layouts
11.1 Ecological Sensitivity

Ecologically sensitive areas have been categorised as **GO-BUT** areas (Figure 11-4 and 11-5). This is based on the requirement for:

- Water use licenses for all construction within 50m of a watercourse and within 500m of a wetland;
- Plant removal/destruction permits if protected plant or tree species are identified;
- Strict compliance with EMP conditions and additional management plans, such as:
 - Rehabilitation Plans
 - Alien Vegetation Eradication Plan
 - Plant Search and Rescue Plan
 - Stormwater Management Plan; and
- An ECO to be closely involved in the preconstruction phase and ensure that the construction areas are clearly demarcated and no activity takes place outside of the demarcated areas.

Turbines have been moved out of the ecologically sensitive areas.

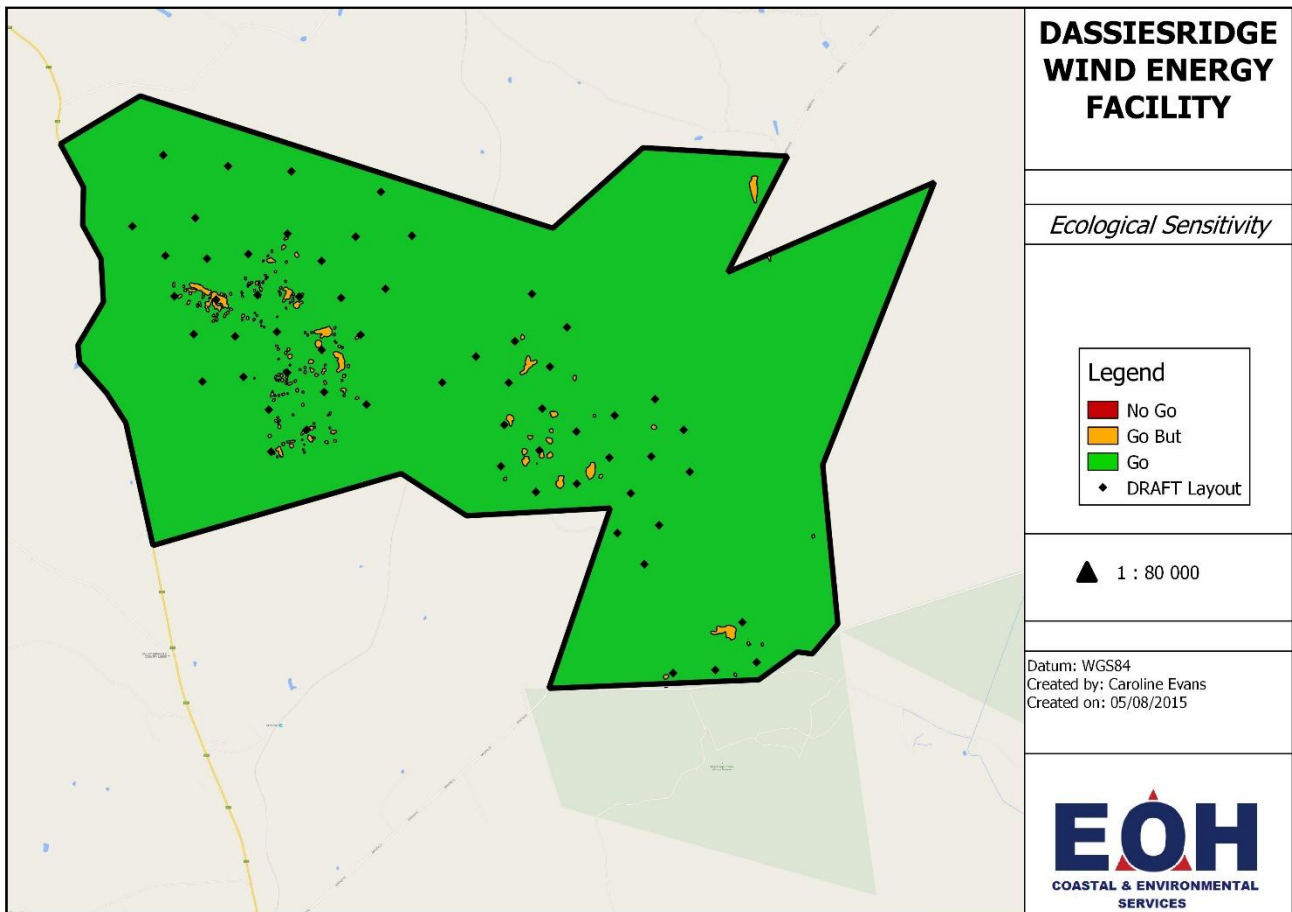


Figure 11-4: Dassiesridge WEF Ecological Sensitivity – DRAFT Layout

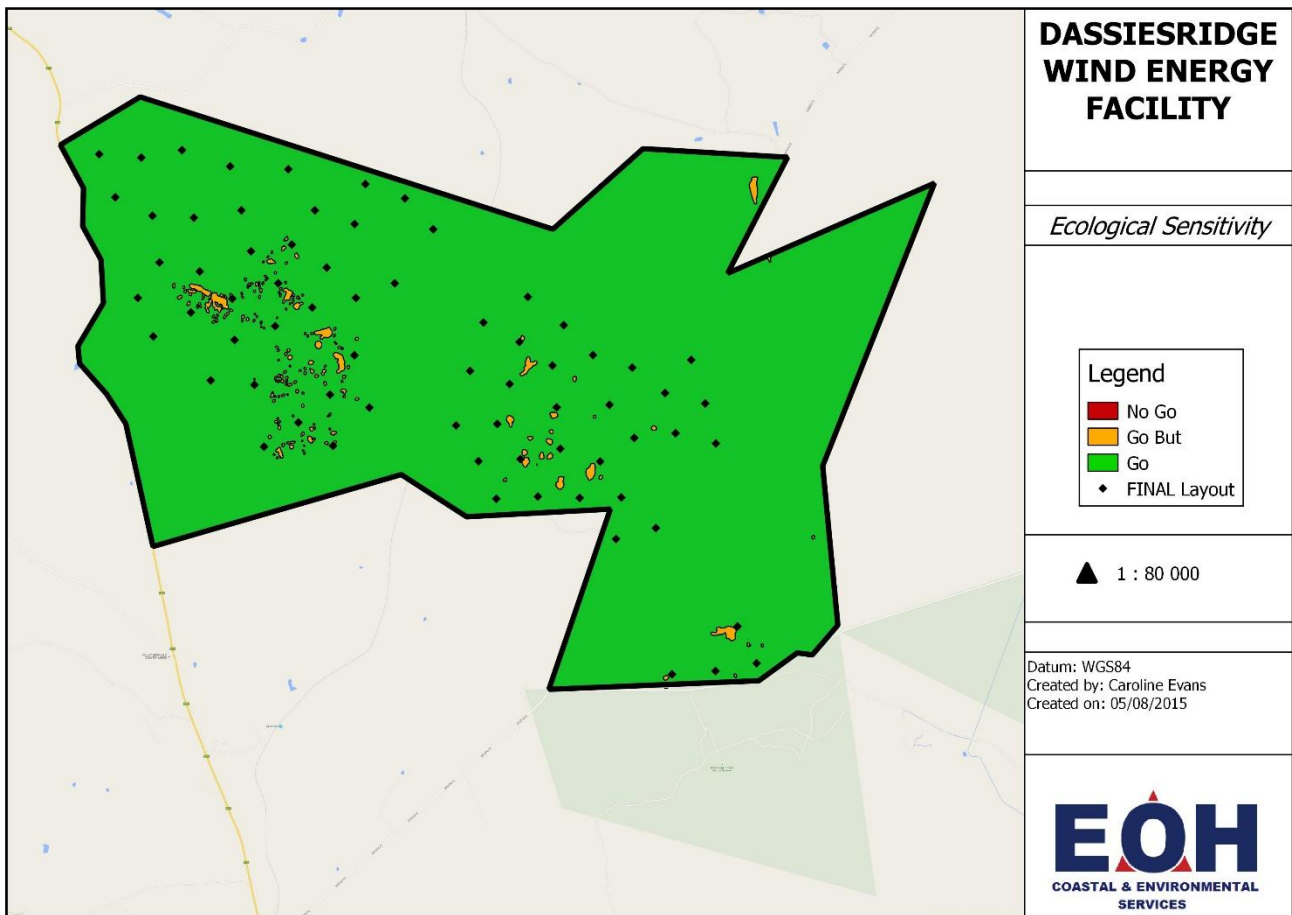


Figure 11-5: Dassiesridge WEF Ecological Sensitivity – FINAL Layout

The Ecological Impact Assessment identified protected plants AND trees within the site boundaries. In order to construct within the ecological **GO-BUT** areas, permits will need to be obtained from the Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape) for the removal of plant species protected by the Provincial Nature Conservation Ordinance, and a separate permit will need to be obtained from the Department of Agriculture, Forestry and Fisheries for the removal of protected tree species. The exact requirements for these permits will be determined based on the micrositing exercise prior to construction. It is thus NOT necessary to obtain these permits at this stage.

11.2 Avifaunal Sensitivity

Important habitats have been classified as **GO-BUT** areas to conserve and protect possible movement of birds on site (Figure 11-6). **Turbines have been moved out of the GO-BUT area (Figure 11-7) as per recommendations by the avifaunal specialist.**

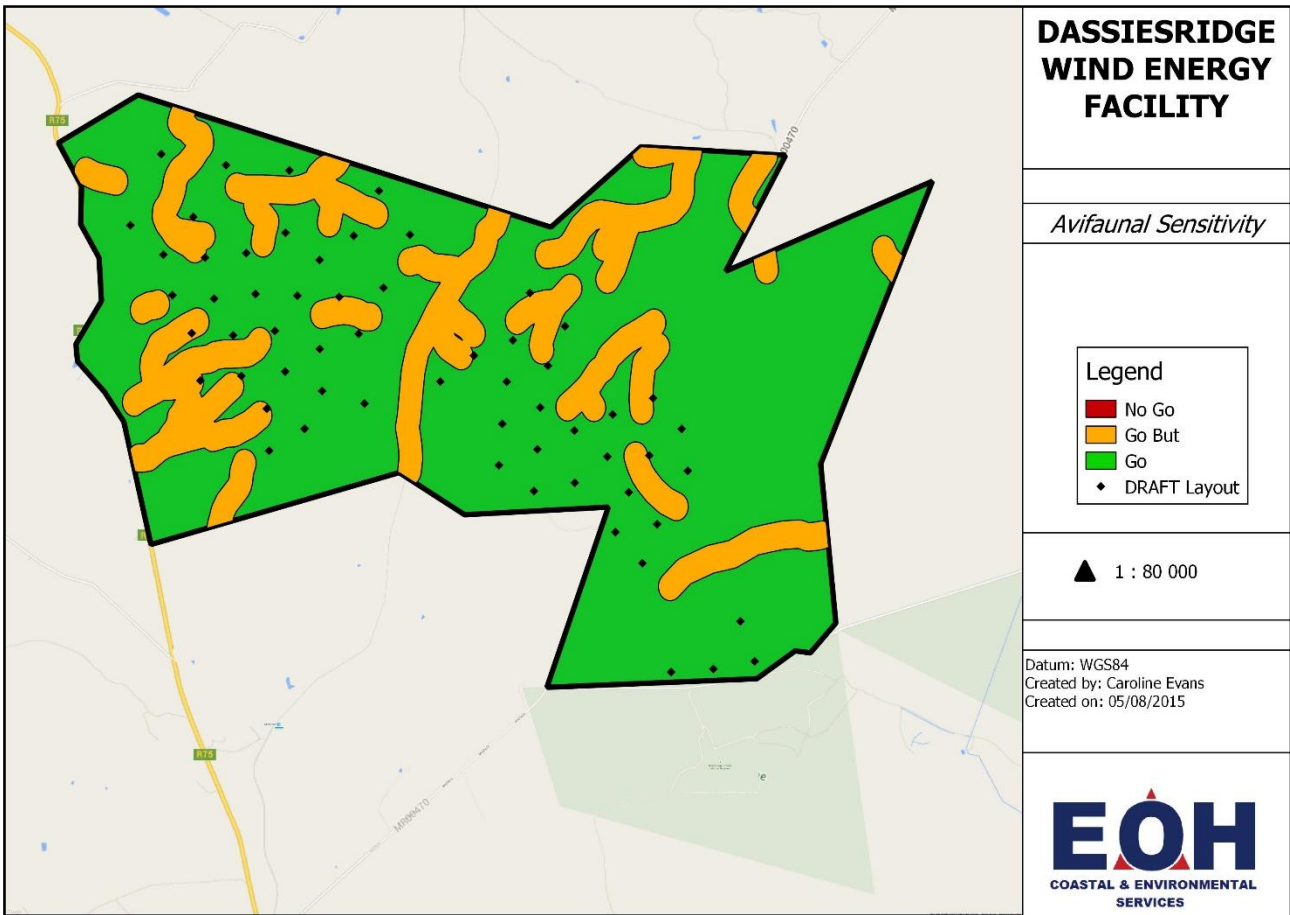


Figure 11-6: Dassiesridge WEF Avifaunal Sensitivity – DRAFT Layout

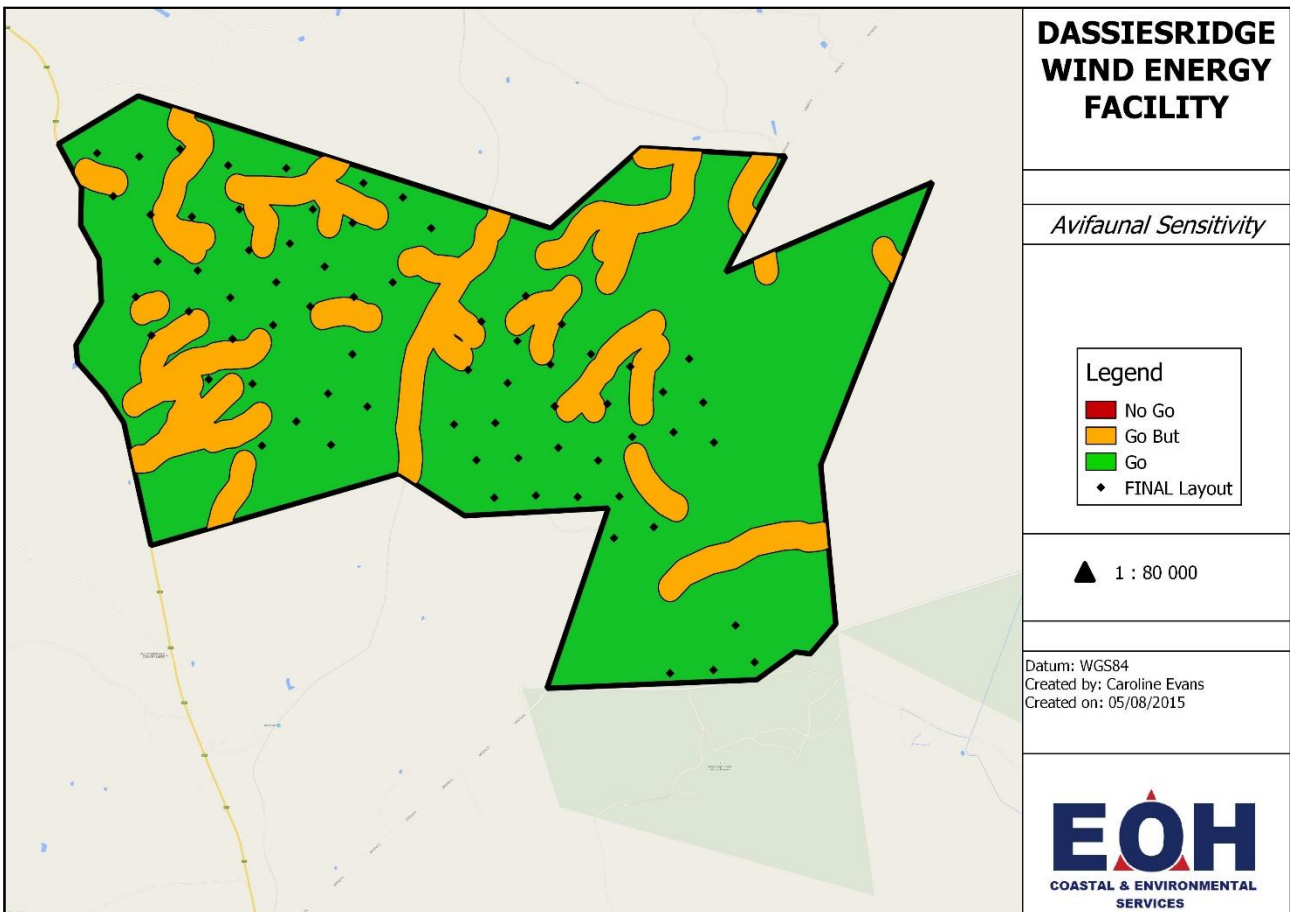


Figure 11-7: Dassiesridge WEF Avifaunal Sensitivity – FINAL Layout

11.3 Bat Sensitivity

The bat specialist identified high sensitivity areas as those deemed critical for resident bat populations and those capable of supporting elevated levels of bat activity and greater bat diversity than other areas. These areas are categorised as **NO-GO** areas for development (Figure 11-8 and 11-9).

Moderate sensitivity areas were identified as having good foraging habitat and potential roosting sites for bats. These areas were categorised as **GO-BUT** areas. The turbines within these areas must be prioritised during operational monitoring, and may be subjected to additional mitigation if bat mortalities are found to be unacceptably high. The turbines which occur on the boundary areas of the **NO-GO** areas will be subject to mitigation measures specified in the **GO-BUT** areas.

Turbines have been removed from the NO-GO areas, and have also been relocated out of the GO-BUT areas as per the bat specialists' recommendations.

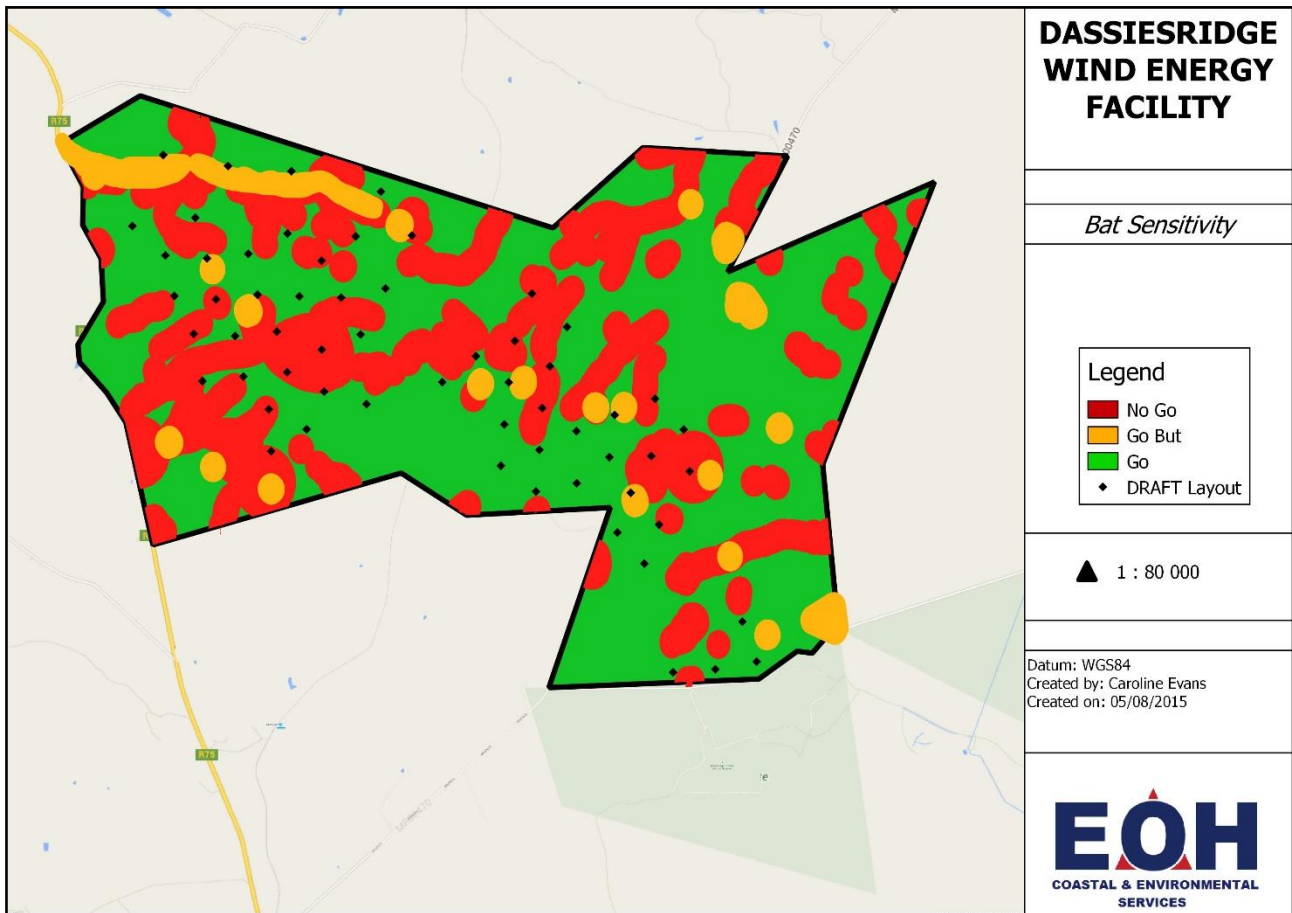


Figure 11-8: Dassiesridge WEF Bat Sensitivity – DRAFT Layout

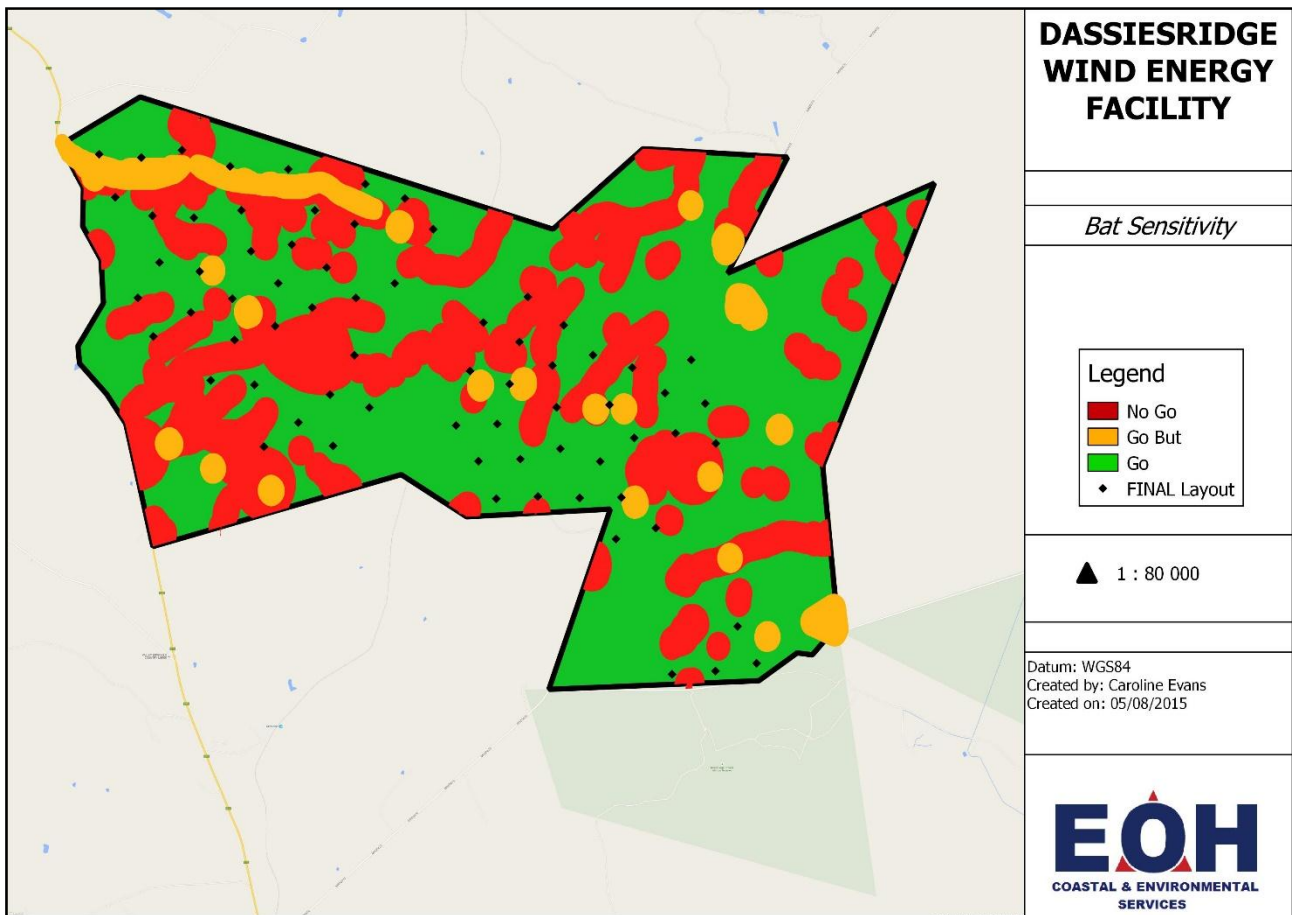


Figure 11-9: Dassiesridge WEF Bat Sensitivity – FINAL Layout

11.4 Palaeontological Sensitivity

Significant impacts on fossil heritage are only anticipated in two small portions of the Dassiesridge WEF study area (Figure 11-10 and 11-11) and as a result have been classified as **GO-BUT** areas.

- a sector of the access road from the R75 that runs in a low-lying area underlain by the Voorstehoek Formation (Grassridge 187);
- Wind turbine positions and associated access roads in the eastern portion of Farm 3/190 that may impact fossil oyster beds in the basal Alexandria Formation as well as fossil wood and marine shells in the Kirkwood and Sundays River Formations respectively.

The rest of the site has a very low palaeontological significance and has therefore been classified as **GO** areas (Figure 11-10 and 11-11).

A palaeontologist or a suitably trained ECO must visit construction areas located in the **GO-BUT** areas prior to pouring of any concrete for the foundations. The purpose of these visits will be to examine all exposed rock for potential fossils. If fossils are identified in the rock material, construction on that particular excavation shall cease until a permit is acquired from ECPHRA for the removal of the fossil, and such removal has been completed to the satisfaction of ECPHRA.

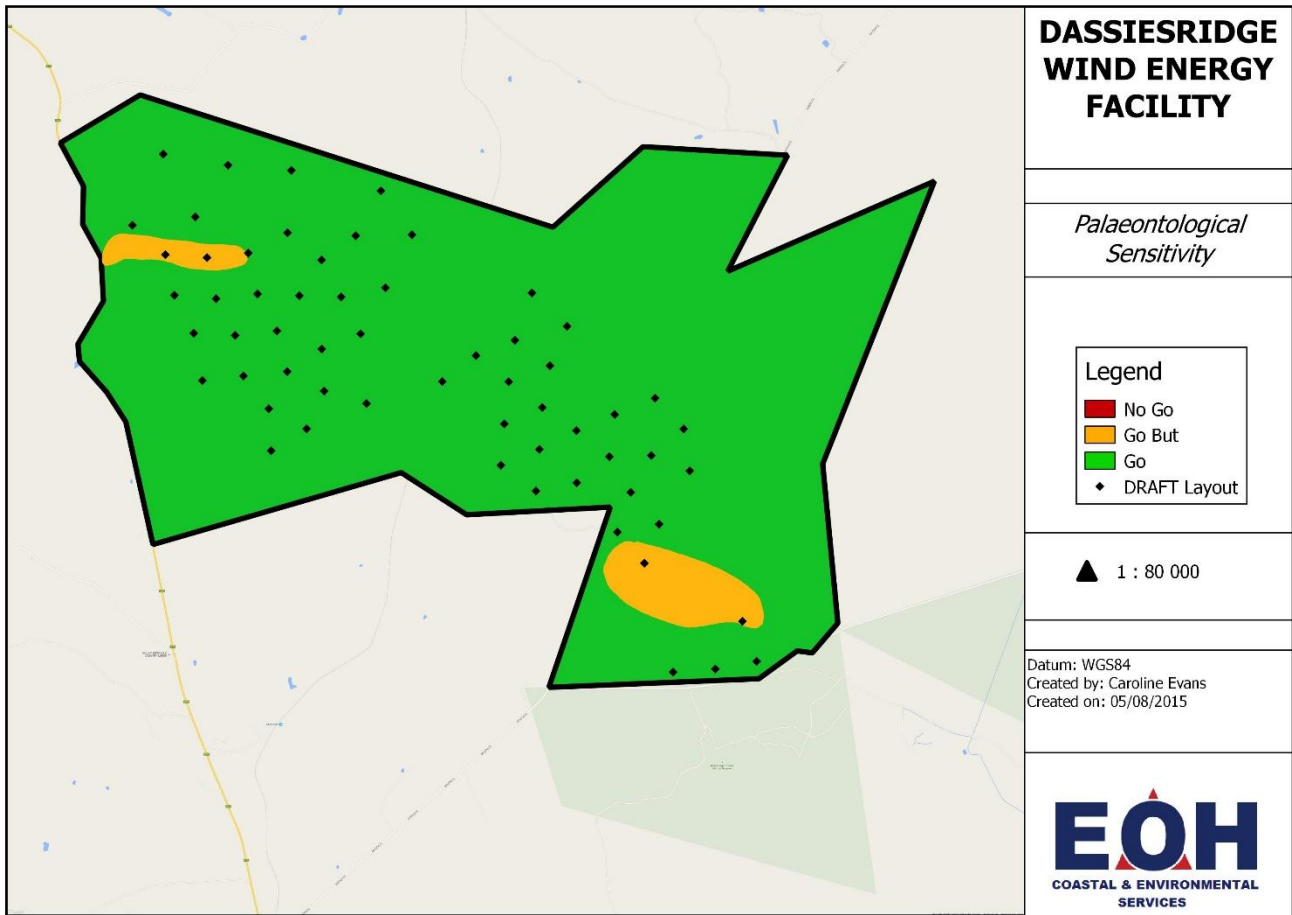


Figure 11-10: Dassiesridge WEF Palaeontological Sensitivity – DRAFT Layout

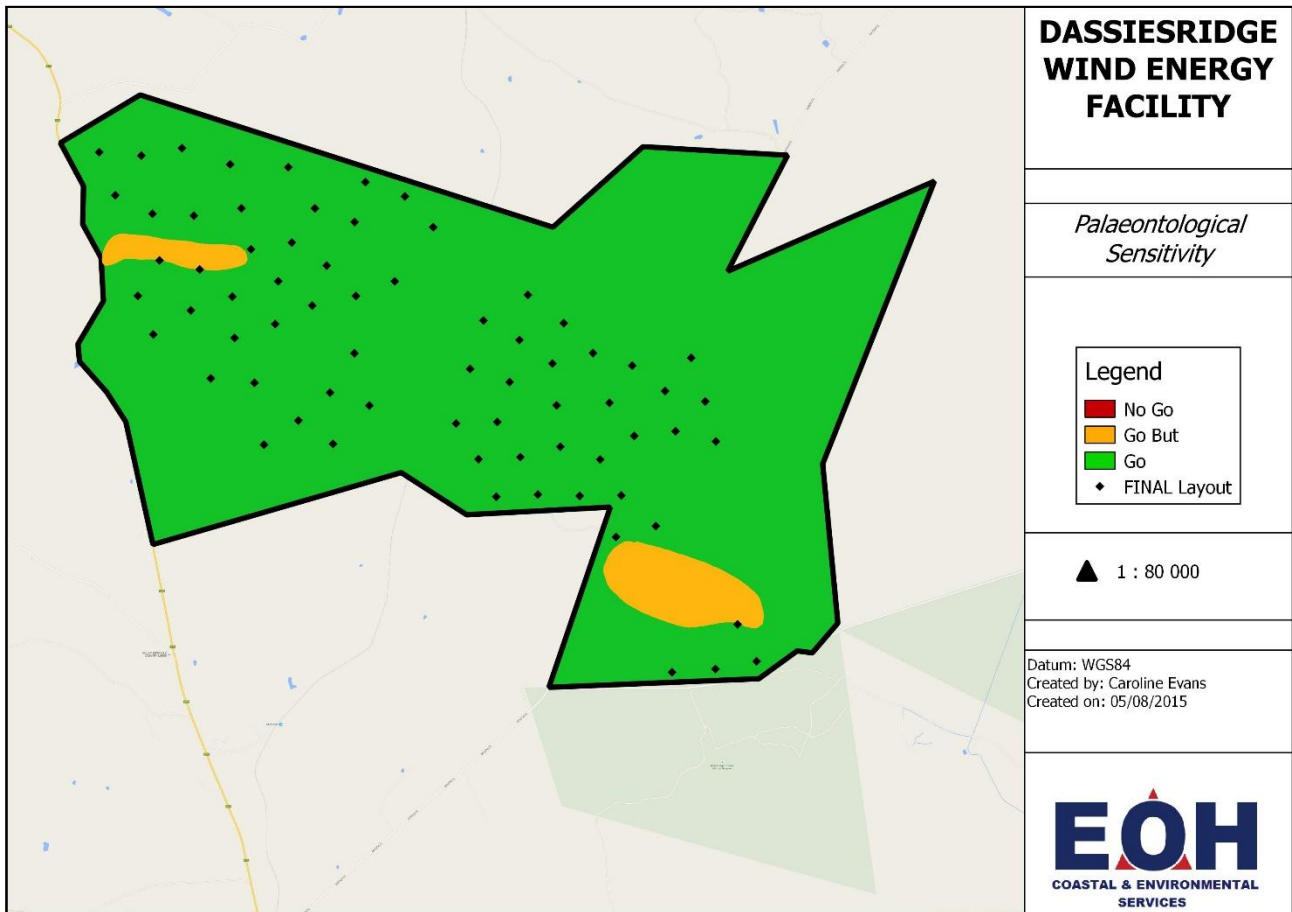


Figure 11-11: Dassiesridge WEF Palaeontological Sensitivity – FINAL Layout

11.5 Overall Site Development Sensitivity (turbine sites)

Figure 11-12 indicates the overall sensitivity of the site in terms of development according to the draft layout (Alternative 1). This sensitivity map combined with the information in Table 11-1 informed the new final layout (Alternative 2) which appears in Figure 11-13.

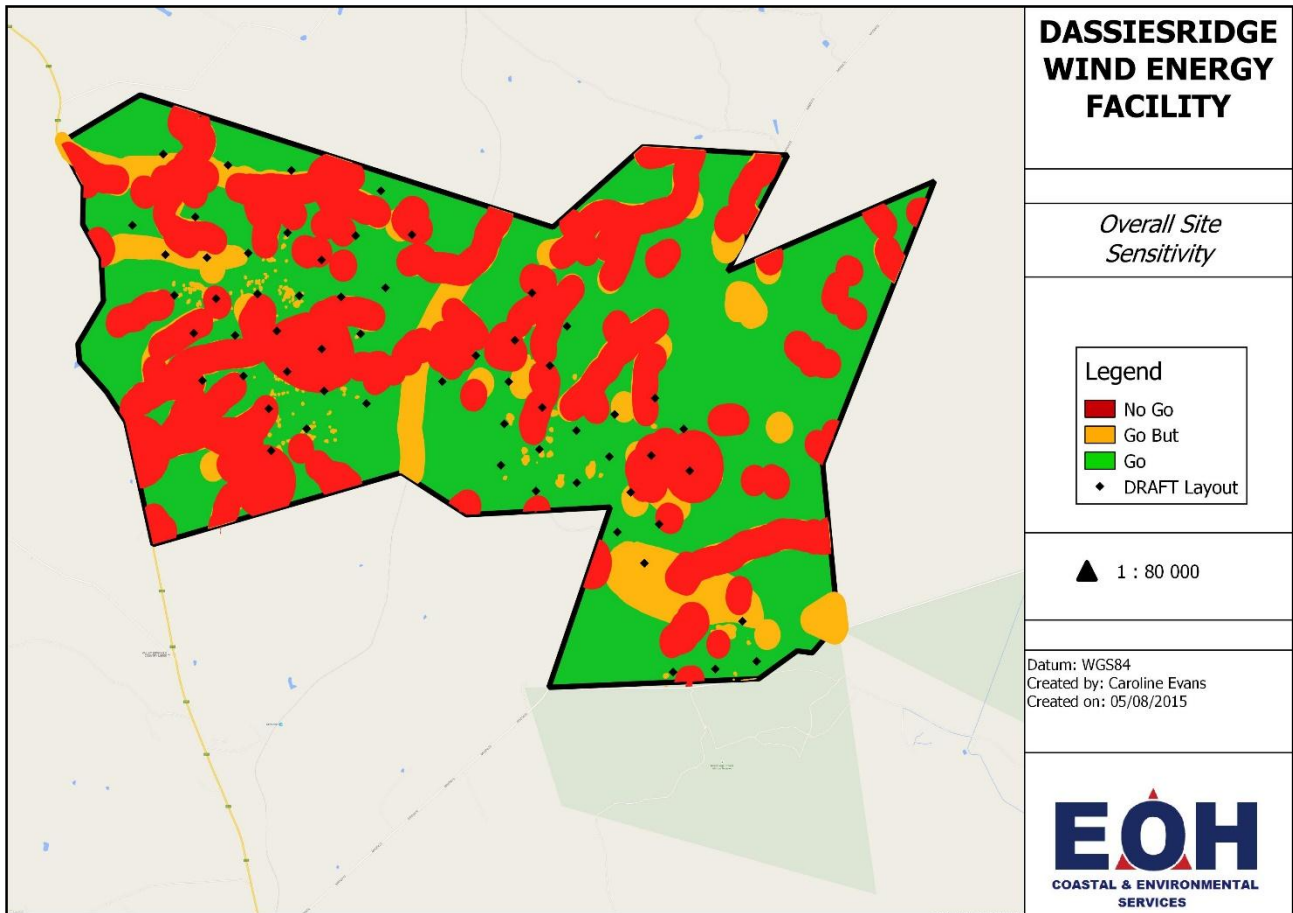


Figure 11-12: Dassiesridge WEF Overall Sensitivity – DRAFT Layout (Alternative 1)

Table 11-1 summarises the position of each of the draft layout turbines in order to inform the final layout.

Table 11-1. Assessment of the Draft Layout against the Go, GO-BUT and NO-GO criteria

Turbine number	DRAFT			FINAL
	GO	GO-BUT	NO-GO	COMMENT
1	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
2	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
3	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
4	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
5			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
6	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
7		✓		MOVED DUE TO GO-BUT ECOLOGICAL SENSITIVITY
8	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
9		✓		MOVED DUE TO GO-BUT PALAEOLOGICAL SENSITIVITY
10		✓		MOVED DUE TO GO-BUT PALAEOLOGICAL AND BAT SENSITIVITY
11	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA

12	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
13			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT ECOLOGICAL SENSITIVITY
14		✓		MOVED DUE TO GO-BUT ECOLOGICAL SENSITIVITY
15		✓		MOVED DUE TO GO-BUT ECOLOGICAL SENSITIVITY
16			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
17	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
18			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
19			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
20			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
21			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
22			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
23			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
24			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
25			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
26	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
27	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
28			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
29	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
30	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
31	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
32	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
33		✓		MOVED DUE TO GO-BUT BAT SENSITIVITY
34	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
35	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
36			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
37		✓		MOVED DUE TO GO-BUT BAT SENSITIVITY
38		✓		MOVED DUE TO GO-BUT ECOLOGICAL SENSITIVITY
39			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
40	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
41	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
42	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
43	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
44			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
45	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
46			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
47	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
48	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
49	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
50			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
51		✓		MOVED DUE TO GO-BUT PALAEOLOGICAL SENSITIVITY
52	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA

53	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
54	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
55			✓	MOVED DUE TO NO-GO BAT SENSITIVITY AND GO-BUT AVIFAUNAL SENSITIVITY
56	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
57			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
59	✓			UNCHANGED. DOES NOT OCCUR WITHIN A SENSITIVE AREA
60			✓	MOVED DUE TO NO-GO BAT SENSITIVITY
61		✓		MOVED DUE TO GO-BUT PALAEOLOGICAL SENSITIVITY
TOTAL NUMBER	30	10	20	AS PER FIGURE 11-12 (FINAL), NO ALL TURBINES HAVE BEEN MOVED OUT OF THE NO-GO AND GO-BUT AREAS AND ONLY OCCUR IN THE GO (GREEN) AREAS.

Table 11-1 assesses the draft layout (Alternatives 1) against the **GO**, **GO-BUT** and **NO-GO** criteria. Both Figure 11-12 and Table 11-1 show that 33% of the turbines in the draft layout (Alternative 1) are in unacceptable locations and would need to be moved. The turbines in the final layout (Alternative 2) are all within the **GO** areas due to the final layout having been designed around the sensitive areas identified during this process (Figure 11-13).

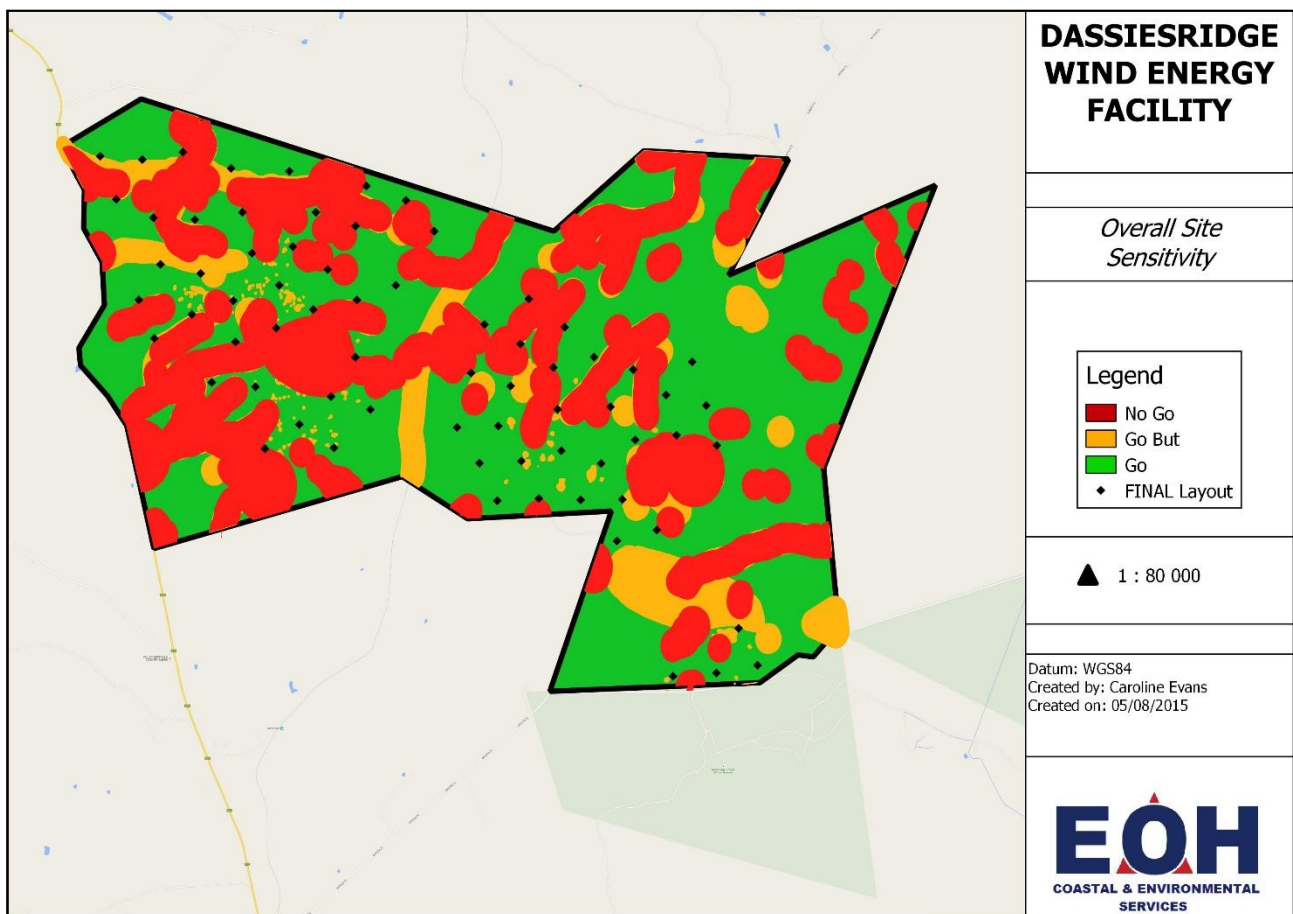


Figure 11-13: Dassiesridge WEF Overall Sensitivity – FINAL Layout (Alternative 2)

11.6 Overall Site Development Sensitivity (powerline)

The five powerline alternatives have been assessed by all of the specialists and the EAP. None of the powerline alternatives have been classified as **NO-GO** as the sensitivity of the five alternatives is considered LOW in terms of the ecological, avifaunal, paleontological and heritage assessments.

The following table summarises the five powerline alternatives in terms of their overall length, the length of existing powerline servitudes which will be incorporated and their sensitivity as stated by the various specialists.

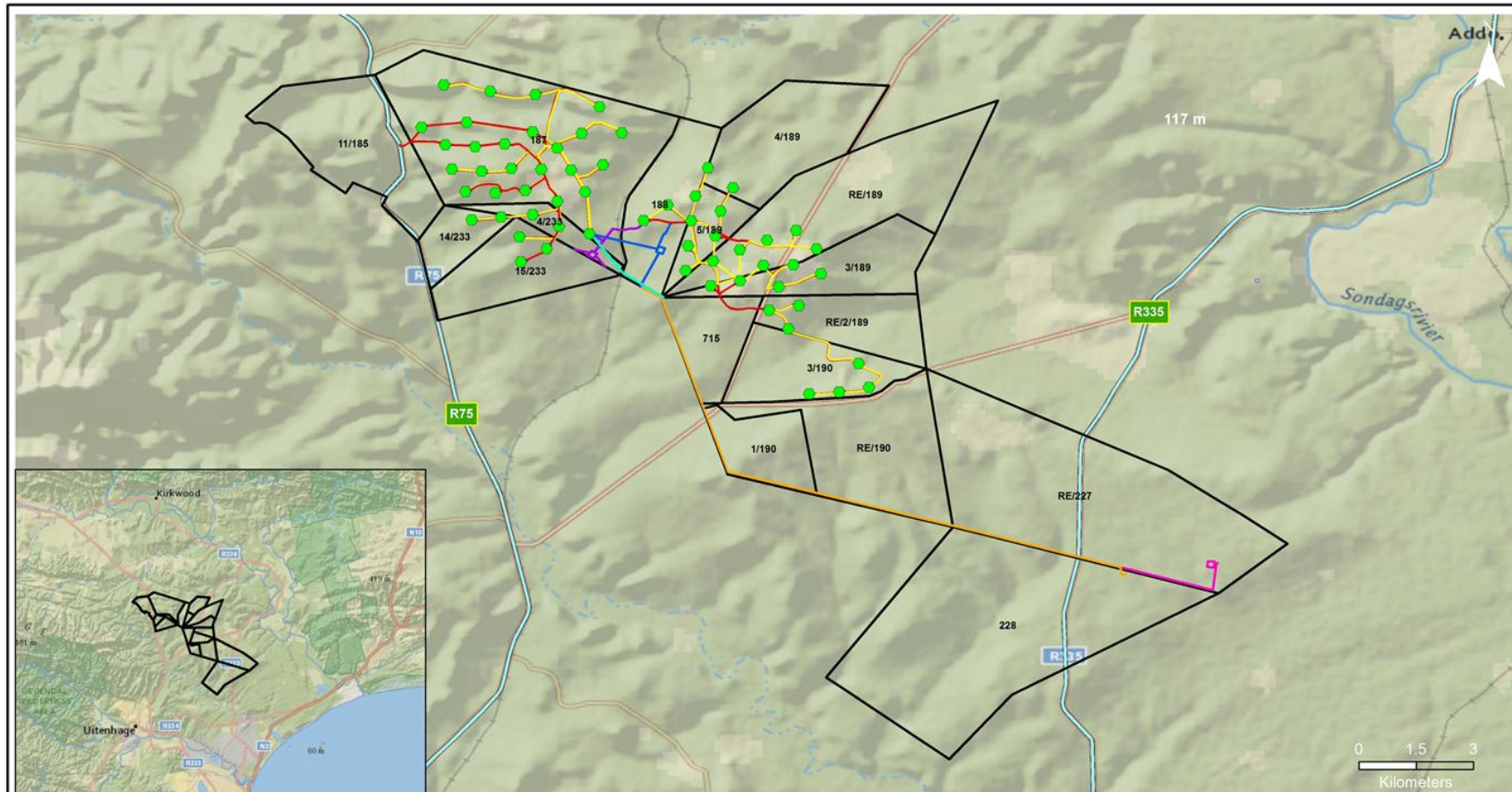
The preferred powerline alternative for the proposed Dassiesridge WEF is **powerline alternative 3**. The motivation for the use of powerline alternative 3 as the preferred powerline has been incorporated in the table (Table 11-2).

Figure 11-14 illustrates the various powerline alternative routes. It should be noted (as stated in Table 11-2) that powerline alternative 4 and powerline alternative 5 follow the exact same route and are illustrated as one single line in Figure 11-14.

Table 11-2: Summary of the powerline alternatives sensitivity analysis

	Powerline Alternative 1	Powerline Alternative 2	Powerline Alternative 3	Powerline Alternative 4	Powerline Alternative 5
Powerline Description	<i>One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site.</i>	<i>One substation will be constructed on the site and a loop-in, loop-out line used to connect to the existing 132kV Skilpad line on the Western part of the site.</i>	<i>One substation will be built on site and will connect via a new 132kV powerline at Olifantskop substation.</i>	<i>Two substations will be built; one on the eastern part of the project site and one on Grassridge and a loop in-loop out line used to connect to the existing Nooitgedacht (132kV) line.</i>	<i>This option will be the same as option 4 but instead of connecting with the Nooitgedacht line it will connect with the 400 kV Cookhouse line.</i>
Total Overhead Powerline Length	$\pm 0.4\text{km}$	$\pm 1\text{km}$	$\pm 16\text{km}$	$\pm 19\text{km}$	$\pm 19\text{km}$
Length of section of proposed alternative which runs parallel to existing powerlines	$\pm 0\text{km}$	$\pm 0\text{km}$	$\pm 15\text{km}$	$\pm 18\text{km}$	$\pm 18\text{km}$
Length of section of proposed alternative which does not run parallel to existing powerlines	$\pm 0.4\text{km}$	$\pm 1\text{km}$	$\pm 1\text{km}$	$\pm 1\text{km}$	$\pm 1\text{km}$
Preferred Powerline Alternative	✘	✘	✔	✘	✘
Agriculture & Soils Specialist Comment	Alternative 1 is considered as the preferred powerline alternative. This consideration is based on the fact that alternative 1 will have the smallest impact on soils and agricultural land. None of the other powerline alternatives (A2, A3, A4 and A5) are considered “fatally flawed”.				
Avifaunal Specialist Comment	The preferred option for connecting this facility to the grid is Alternative 1, which requires the shortest length of new overhead 132kV powerline to be built. All five of the grid connection options are however acceptable.				
Bat Specialist Comment	Not Applicable				
Ecological Specialist Comment	The preferred option for connecting this facility to the grid is Alternative 1, which requires the shortest length of new overhead 132kV powerline to be built. All five of the grid connection options are considered ecologically acceptable.				
Heritage Specialist Comment	All powerline alternatives are considered acceptable as none of the alternatives are located in archeologically sensitive areas.				

Noise Specialist Comment	Not Applicable
Palaeontology Specialist Comment	All powerline alternatives are considered acceptable as none of the alternatives are located in paleontologically sensitive areas.
Social Specialist Comment	All powerline alternatives are considered socially acceptable.
Visual Specialist Comment	All powerline alternatives are considered visually acceptable due to the fact that the majority of the length of the various alternatives will run parallel to existing powerline infrastructure.
EAP Comment	<p>Three of the specialists concluded that Powerline Alternative 1 would be the preferred option based on the length of the powerline. However, all specialists concluded that all Powerline Alternatives are considered acceptable, with none of the specialists fatally flawing any of the proposed Alternatives.</p> <p>Alternative 3 is considered the preferred alternative based on the assessment of capacity and distribution of electricity performed by the developer, in consultation with Eskom. Alternative 3 is therefore considered to be the overall preferred alternative as the connecting powerline for the proposed Dassiesridge WEF. Alternative 3 requires the construction of approximately 16km of new powerline infrastructure. Approximately 1km of alternative 3 would be located in an area void of existing powerline infrastructure (as is the case with the remaining alternative options), approximately 15km of the proposed Alternative 3 powerline would be constructed parallel to the existing Skilpad Powerline Servitude (Eskom).</p>



Map source: X:\PROJECTS\CURRENT LARGE Above R250 000\Innowind Dassieridge WEF EIA (172)\PICS&MAPS\Projects\Amended DSR\Infrastructure Layout.mxd


 Coastal and Environmental Services	TITLE:	Legend [Black Outline] Study Area [Blue Line] Main Roads [Green Dot] Turbine Layout Internal Cabling [Red Line] Internal Site Road [Cyan Line] Internal Cable (22KV) Overhead [Yellow Line] Internal Cable (22KV) Underground [Purple Line] Hardstanding Area [Purple Line] Line Option 1 [Blue Line] Line Option 2 [Orange Line] Line Option 3 [Pink Line] Line Option 4
	Infrastructure Layout	
Drawn by: Justin Green	PROJECT:	
Date: 29.09.2014	InnoWind Dassieridge WEF	
CES Project Code: 172		

Figure 11-14: Illustration of powerline alternative routes for the proposed Dassiesridge WEF

11.7 Overall Site Development Sensitivity (ancillary infrastructure)

In most cases, the electrical cabling connecting turbines to the on-site substation will be buried under the access roads. The specialist input which is considered for this section includes Avifauna (collision with powerline); Ecological (clearing of vegetation); Palaeontology (excavations) and Watercourses (water crossings). **Turbines have been moved out of the avifaunal, ecological and paleontological GO-BUT areas, where possible. No turbines occur in the NO-GO area as per the final recommended layout (Alternative 2)** Water crossings which require Water Use Licence Applications will be submitted to the Department of Water and Sanitation (DWS) should the Dassiesridge WEF be granted preferred bidder status.

The proposed ancillary infrastructure layout for Alternative 2 is indicated in Figure 11-16. Figure 11-16 illustrates the movement of ancillary infrastructure from Alternative 1 (Figure 11-15) where possible.

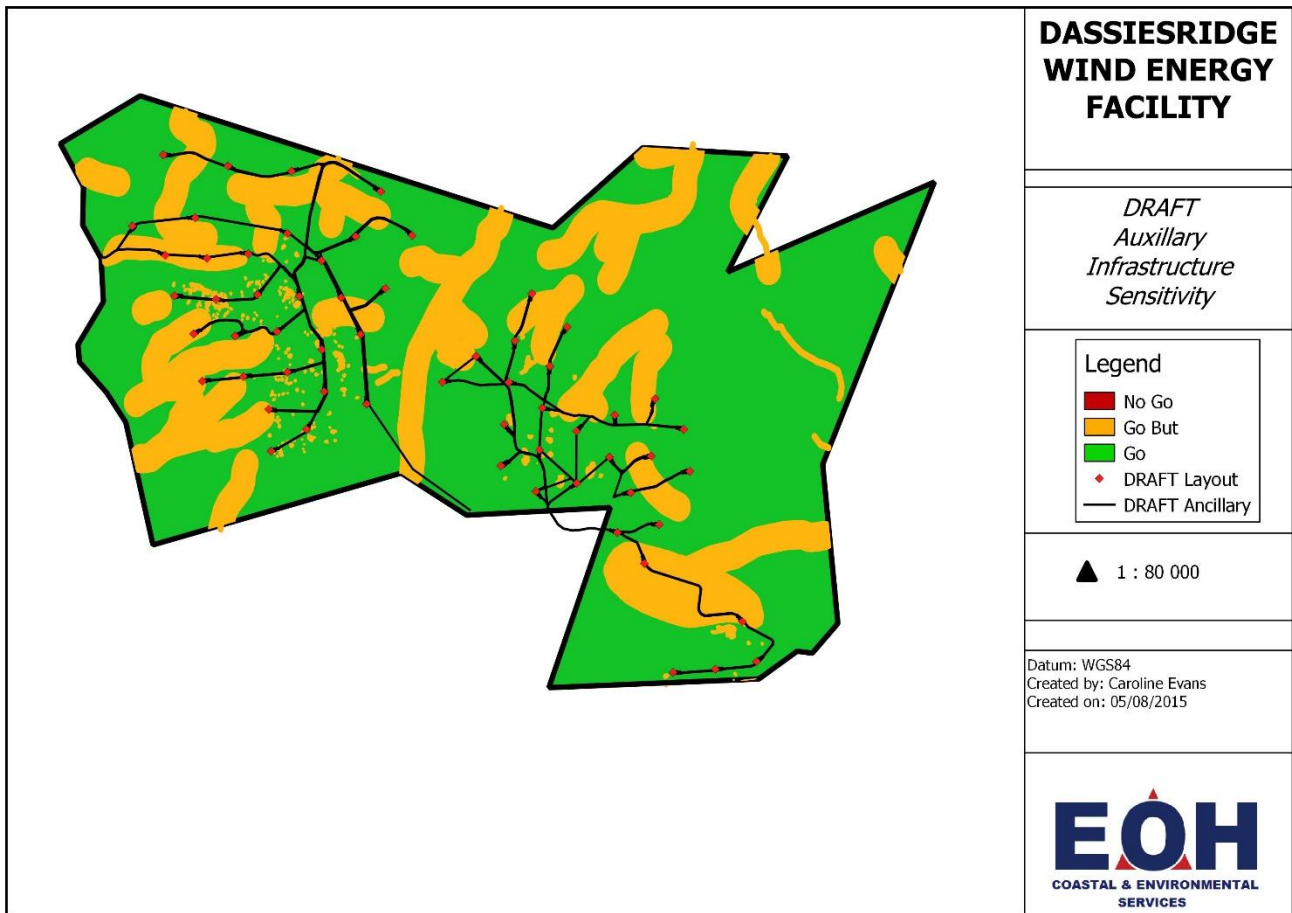


Figure 11-15: Dassiesridge WEF Ancillary Sensitivity – DRAFT Layout (Alternative 1)

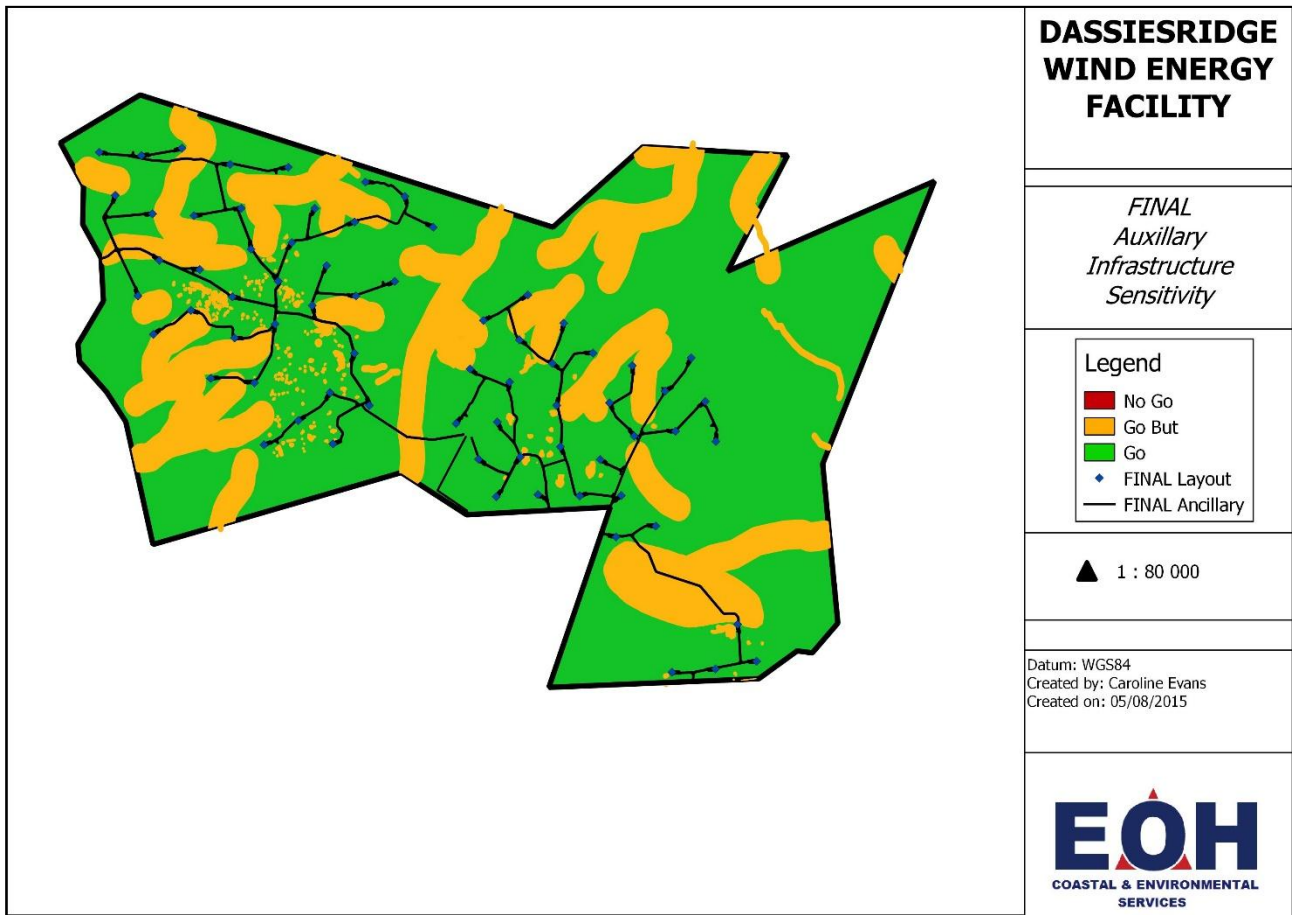


Figure 11-16: Dassiesridge WEF Ancillary Sensitivity – FINAL Layout (Alternative 2)

12 CONCLUSIONS AND RECOMMENDATIONS

In terms of Section 31(2) of the EIA Regulations (2010), an Environmental Impact Assessment Report must contain all the information necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35, and must include–

- (n) A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised; any conditions that should be made in respect of that authorisation;**
- (o) An environmental impact statement which contains–**
 - (i) A summary of the key findings of the environmental impact assessment; and**
 - (ii) A comparative assessment of the positive and negative implications of the proposed activity and identified alternatives.**

In line with the above-mentioned legislative requirement, this Chapter of the Draft EIR provides a summary of the findings of the proposed Dassiesridge WEF EIA and a comparative assessment of the positive and negative implications of the proposed project and identified alternatives. In addition, this Chapter provides the EAP's opinion as to whether the activity should or should not be authorised as well as the reason(s) for the opinion.

12.1 Description of Proposed Activity

Dassiesridge Wind Power (Pty) Ltd. is proposing to construct a Wind Energy Facility (WEF) to be developed near Uitenhage. The WEF will host a maximum of 47 wind turbines, each generating between 1.5 – 4 megawatts (MW) of power, with total combined potential power output of approximately 140MW. The final number of turbines which will be constructed will decrease from the assessed number of turbines (60) to a maximum of 47 turbines as per the recommendations made in this report and the associated specialist reports. In other words, 13 turbines will be excluded from the final layout.

12.2 Assumptions, Uncertainties and Gaps

12.2.1 Assumptions

The following assumptions have been made during the EIA process:

- The layouts provided are preliminary, and will undergo further more detailed micro-siting in response to the recommendations contained in this report.
- Further specialist inputs into the micro-siting process will be sought.

12.2.2 Gaps

No detailed engineering input was provided in this phase of the development. It is general engineering practice that the detailed design phase of a project is generally only initiated once environmental authorisation for a project (based on what is submitted as preliminary design) is secured. In particular, for a renewable energy facility, detailed engineering design is only initiated if the project is confirmed as a preferred bidder in the DoE REIPPP programme. In this regard, the EIR considered industrial norms. This has also provided the EIA process an opportunity to guide the Planning and Design proactively rather than reactively. The Environmental Management Programme (EMPr) should therefore be viewed as a dynamic evolving document that can be adapted to specific needs and design conditions.

If the project is authorized by the Department of Environmental Affairs (DEA), Dassiesridge Wind Power will be required to provide DEA with final layout plans. These plans should be informed by the EIA and any other post-authorization studies or surveys, such as geotechnical investigations. The final layout requirement will further serve to demonstrate to DEA how the relevant environmental standards and management specifications contained in the EMP, as informed by the site specific environmental context and potential impacts thereon identified in the EIA process, as well as the relevant conditions of authorisation will be incorporated in the detailed design process.

12.3 Environmental Cost/Benefit Analysis

It is important to note that cost/benefit analyses can take many forms and that there is no prescribed methodology for conducting such an analysis. The approach is generally limited by the difficulty in attaching economic values to environmental impacts (costs) or benefits and the availability of relevant quantitative information. Most environmental cost/benefit analyses therefore adopt a qualitative approach, where one simply identifies the types of costs and benefits associated with a particular activity and then apply a simple ranking system to assist in reaching an overall conclusion.

We therefore suggest that the current EIA impact assessment provides a sound basis for conducting an environmental cost/benefit analysis for the Dassiesridge WEF, where the full range of positive and negative impacts is integral to the process.

Table 12-1 provides an overall summary of the negative (cost) and positive (benefit) environmental impacts associated with the proposed Dassiesridge WEF.

Overall, the summary Table 12-1 indicates that there are numerous potential negative impacts (environmental costs) associated with the Dassiesridge WEF. However, the vast majority of these costs can be reduced to an acceptable level by implementing appropriate mitigation measures.

There are a number of significant positive impacts (benefits) associated with the Dassiesridge WEF. These relate primarily to indirect benefits relating to climate change mitigation and resource (energy) conservation and to economic benefits for the surrounding communities.

Table 12.1 Summary of negative (costs) and positive (benefits) environmental impacts associated with the Dassiesridge WEF for all phases of proposed development (+ = beneficial impact)

	PRE-MITIGATION				POST-MITIGATION			
	LOW	MODERATE	HIGH	VERY HIGH	LOW	MODERATE	HIGH	VERY HIGH
General Impacts								
Planning & Design	1 (-)	6 (-)			7 (-)			
Construction	3 (-)	2 (-)			5 (-)			
Operation			1 (+)					1 (+)
Agriculture & Soils Impacts								
Construction	1 (-)	1 (-)	1 (-)	1 (-)	4 (-)			
Operation		1 (-)	1 (-)	1 (-)	2 (-)	1 (-)		
Ecological Impacts								
Construction		6 (-)	2 (-)		2 (-)	6 (-)		
Operation			1 (-)		1 (+)			
Avifaunal Impacts								
Construction	2 (-)	1 (-)			3 (-)			

Operation	1 (-)		1 (-)		2 (-)			
Bat Impacts								
Construction		2 (-)			2 (-)			
Operation			1 (-)			1 (-)		
Paleontological Impacts								
Construction		1 (-)				1 (-)		
Heritage Impacts								
Construction	1 (-)	2 (-)			2 (+)	1 (+)		
Social Impacts								
Construction	4 (-) 3 (+)	4 (-) 2 (+)			5 (-) 1 (+)	2 (-) 5 (+)		
Operation	1 (-) 1 (+)	2 (-) 6 (+)			5 (-)	1 (-) 5 (+)		
Visual Impacts								
Construction			1 (-)				1 (-)	
Operation		1 (-)	1 (-)			1 (-)	1 (-)	
Noise Impacts								
Construction	1 (-)				1 (-)			
Operation	1 (-)				1 (-)			
TOTAL	17 (-) 4 (+)	29 (-) 8 (+)	9 (-) 1 (+)	2 (-)	39 (-) 4 (+)	13 (-) 11 (+)	2 (-)	1 (+)

12.4 Consideration of Alternatives

The following alternatives were assessed as part of the EIR:

Incremental alternatives in terms of layout of individual turbines within the site

CES strongly recommends that if all conditions described in Chapter 10 are adhered to, and that specialist input is sought during any micrositing exercise, the final layout (ALTERNATIVE 2) would be most suitable for the site.

Powerline Alternatives

CES recommends that if all the conditions described in Chapter 10 and in the associated EMP are adhered to then Powerline Alternative 3 would be suitable and environmentally acceptable as the preferred powerline route for the proposed Dassiesridge WEF.

The NO-GO or no development option

The No go option would mean abandoning the proposed development with the following implications:

- None of the negative environmental impacts identified would materialise.
- The greater Nelson Mandela Bay area will continue to rely on fossil fuel-generated electricity supplied by Eskom.
- Increases in the demand for electricity as the surrounding area grows will increase the amount of fossil fuels required to generate this electricity.
- Loss of potential income for communities the proportional benefits from the community trust.
- None of the positive environmental impacts (e.g. replacement of fossil fuel electricity with renewable energy, and climate change mitigation) would materialise.

12.5 Opinion of the EAP

The proposed Dassiesridge Wind Energy Facility is consistent with National renewable energy and climate change policy. It is the professional opinion of CES and specialists that:

- The vast majority of environmental impacts identified can be adequately mitigated to reduce the impacts to an acceptable level, provided mitigation measures recommended in this report are implemented and maintained throughout the life of the project.
- **Layout Alternative 2** and the associated layout of ancillary infrastructure should be approved. If any changes to these layouts are made, the input of the relevant specialists must be obtained and incorporated into any changes.
- **Powerline Alternative 3** should be approved. Specialist input must be obtained should the powerline be deviated from the route specified in this report.
- A detailed operational environmental management plan must be drawn up prior to operation, incorporating the recommendations of the bird and bat specialists in terms of additional operational phase monitoring.
- The information in the report is sufficient to allow DEA to make an informed decision.

It is the opinion of EOH Coastal & Environmental Services that NO FATAL FLAWS are associated with the proposed Dassiesridge Wind Energy Facility.

12.6 Recommendations of the EAP

It is the recommendation of CES that the proposed development should be approved provided that appropriate mitigation measures are implemented and that the Environmental Management Programme is implemented, maintained and adapted to incorporate relevant legislation, standard requirements and audit reporting, throughout the life of the development.

The mitigation measures for all impacts identified in the EIA are provided in the Environmental Management Programme.

The Environmental Management Programme must be used by the engineers during the detailed Planning & Design Phase, by the contractors during the Construction and Decommissioning phases and by Dassiesridge Wind Power during the Operation Phase.

Inclusions, additions and adaptations of the EMPr, as well as all final plan drawings and maps must be submitted to both DEA and DEDEAT for final approval.

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14 APPENDICES

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