

**SOCIAL IMPACT ASSESSMENT
FOR
ENVIRONMENTAL IMPACT ASSESSMENT
(FINAL REPORT)**

**ESKOM WIND ENERGY FACILITY AND ASSOCIATED
INFRASTRUCTURE**

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SAVANNAH ENVIRONMENTAL (Pty) Ltd

By

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SECTION 1: INTRODUCTION

1.1 INTRODUCTION

Savannah Environmental (Pty) Ltd were appointed by Eskom as the lead consultants to manage the Environmental Impact Assessment (EIA) process for the establishment of proposed wind energy facility and associated infrastructure in an area to the north of the mouth of the Olifants River, on the west coast of the Western Cape Province, South Africa. In terms of its specific location, the northern half of the site falls within the within the DMA of Western Cape Municipal Area 1 (WCMA01). The southern section of the site falls within the Matzikama Local Municipality (LM) area. Vredendal, the largest town in the region, is located approximately 60 km east of the site.

Tony Barbour was appointed by Savannah Environmental (Pty) Ltd to undertake an independent specialist Social Impact Assessment (SIA) as part of the EIA process. This report contains the findings of the Final SIA undertaken as part of the EIA process.

1.2 TERMS OF REFERENCE

The terms of reference for the SIA require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility;
- The identification and assessment key social impacts (including direct, indirect and cumulative impacts) associated with the proposed development.
- The recommendation of site-specific mitigation, where relevant.

1.3 PROJECT LOCATION

ESKOM has undertaken a regional site identification and selection process for a broader study area on the West Coast (the Olifants River as the southern boundary and the boundary with the Northern Cape as the northern boundary) to determine and delineate areas suitable for wind energy development. This process was based on the regional assessment methodology developed and implemented by Western Cape DEA&DP and included the consideration of sites/areas of special environmental importance and planning criteria, as well as issues relating to landscape character, value, sensitivity and capacity. These aspects were then balanced with technical constraining factors affecting the siting of a wind farm, including the wind resource (wind potential diminishing with distance from the coastline), land availability, accessibility and existing grid infrastructure.

Based on the siting study undertaken by Eskom, an area (~37km² in extent) located north of the Olifants River has been identified as being potentially suitable for the establishment of a wind energy facility. In terms of its specific location, the northern half of the site falls within the within the DMA of Western Cape Municipal Area 1 (WCMA01). The southern section of the site falls within the Matzikama Local Municipality (LM) area. The area is located 2 km inland from the coast and comprises the farms:

- Portion 5 of Gravewaterkop 158;
- A portion of Portion 620 of the farm Olifants River Settlement;
- A portion of Portion 617 of the farm Olifants River Settlement.

1.4 PROJECT DESCRIPTION

Wind energy facility

The proposed wind energy facility will consist of up to 100 turbines each with a capacity of approximately 2 MW. The total capacity will be in the region of 200 MW. However, the final capacity will depend on the choice of turbines. In comparison the three wind turbines at Eskom's experimental wind energy facility near Klipheuwel in the Western Cape have a generation capacity of 660, 1 750 and 750 KW respectively. The largest turbine at Klipheuwel can generate sufficient energy to meet the energy demand requirements of 200 first world households and 1 000 rural households. The new wind energy facility therefore has the potential (when the wind resource is at its optimum) to meet the energy requirements of approximately 20 000 first world and 100 000 rural households respectively.

Based on ESKOM's requirements, the proposed wind turbine will include:

- A tower with a hub height of 80m;
- A 90 m diameter rotor consisting of 3 x 45 m turbine blades.
- A concrete foundation of 15m x 15m for each turbine,

In addition to the wind turbines the following infrastructure will also be established on the site:

- An access road to the site from the main road/s within the area;
- An internal, access road that links of the 100 wind turbines on the site. The road will be approximately 6 m wide;
- A substation that will occupy an area of approximately 80m X 80m in size;
- A small office building and visitors centre at the facility located at the entrance that will occupy approximately 400m²;
- An access road linking the site to the main road/s in the area. The nearest main road in the area, the R363, is located approximately 20 km east of the site. .
- An overhead 132 kV power line that will link the wind energy facility to the electricity distribution network/grid at Juno Substation just outside of Vredendal (located approximately 30km east of the site).

Power lines

Two route alternatives have been identified for the overhead 132 kV power line linking the site to the Juno Substation, namely:

- Alternative 1 (Northern route), with a sub-alternative 1A;
- Alternative 2 (Southern route).

The proposed alternatives follow as far as possible existing linear infrastructure such as roads, railway lines and power lines. This was intentional in order to minimise the potential impacts associated with the footprint as well as the need for additional access points (construction and maintenance). Irrespective of the routes, single pole (albeit double circuit) tower structures are proposed. Along straight segments (the majority of the length of the routes), the towers will be approximately 25m tall. Bend tower structures could be taller in order to

accommodate additional tension. The average distance between poles will be approximately 200 m.

The two proposed route alternatives are currently mapped out as corridors of 200m in width. A ~30m wide servitude will be required for the final route. Eskom proposes to register a right of way along the eventual servitude, pay compensation for its use, but not to acquire ownership. Some leeway in the final siting of the power line (i.e. in response to existing conditions on the ground) is provided by the following factors:

- Lateral movement of the required 30m servitude is possible within the wider 200m corridor;
- The 200m average distance between poles can be increased or decreased in order to avoid features such as streams or cultivated areas. However, increases in span between towers will require heightening of the towers for the relevant segment.

1.5 ASSUMPTIONS AND LIMITATIONS

1.5.1 Assumptions

Identification of area for the wind energy facility

The identification of the area where the site is located was informed by the criteria-based methodology proposed in the Strategic Environmental Assessment undertaken by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), as well as from information available regarding local climatic and environmental conditions within the Western Cape.

Strategic importance of the project and no-go option

The strategic importance of wind energy at a national and provincial level is confirmed by the national and provincial energy policies. The no-go option has therefore not been considered. However, the study recognises the need to ensure that due process is followed when assessing the impacts associated with the proposed assessment process.

Technical suitability

It is assumed that the proposed development site identified by ESKOM represents a viable and acceptable site, and that this site meets the technical criteria required for the establishment of a wind energy facility.

Fit with planning and policy requirements

Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

However, the study recognises the strategic importance of wind energy and the technical, spatial and land use constraints required for wind energy facilities.

1.5.2 Limitations

Demographic data

The demographic data used in the study is largely based on the 2001 Census. While this data does provide useful information on the demographic profile of the affected area it is in some cases dated.

Assessment of Alternative 1A

Due to the late inclusion of Alternative 1A the identification of land uses was based on secondary data sources, specifically maps and satellite images from Google Earth.

1.6 APPROACH TO STUDY

The approach to the study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February, 2007). The key activities in the SIA process embodied in the guidelines include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the communities likely to be affected and determining the need and scope of the SIA;
- Collecting baseline data on the current social environment and historical social trends;
- Identifying and collecting data on the Social Impact Assessment variables and social change processes related to the proposed intervention. This requires consultation with affected individuals and communities;
- Assessing and documenting the significance of social impacts associated with the proposed intervention;
- Identifying alternatives and mitigation measures.

In this regard the study involved:

- Review of demographic data from the 2001 Census Survey;
- Review of relevant planning and policy frameworks for the area;
- Site specific information collected during the site visit to the area on 7 and 8 March 2007;
- Review of information from similar studies in South Africa, including the Klipheuwel and Darling Wind Farm EIAs, and international wind energy projects, specifically those in Europe;
- Interviews with key interested and affected parties undertaken during November 2007;
- Review of findings from other SIAs carried out in the area for mining projects;
- Identification of social issues associated with the proposed project.

The identification of potential social issues associated with proposed wind energy facility is based on observations during the project site visit, review of relevant documentation, experience with similar projects, namely the Darling Wind Farm, work undertaken in the area for mining projects and interviews with key stakeholders in the area. Annexure A contains a list of the people interviewed during the study.

The methodology for assessing the significance of the impacts is based on considering the nature of the impact, extent, duration, magnitude and probability. Annexure B contains a detailed description of the methodology and criteria used.

1.6.1 Definition of social impacts

Social impacts can be defined as “The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as a physical reality, while other social impacts are perceptual or emotional.” (Vanclay, 2002).

When considering social impacts it is important to recognise that social change is a natural and on-going process (Burdge, 1995). However, it is also important to recognise and understand that policies, plans, programmes and/or projects implemented by government departments and/or private institutions have the potential to influence and alter both the *rate* and *direction* of social change. Many social impacts are not in themselves “impacts” but change process that may lead to social impacts (Vanclay, 2002). For example the influx of temporary construction workers is in itself not a social impact. However, their presence can result in range of social impacts, such as increase in antisocial behaviour. The approach adopted by Vanclay stresses the importance of understanding the processes that can result in social impacts. It is therefore critical for social assessment specialists to think through the complex causal mechanisms that produce social impacts. By following impact pathways, or causal chains, and specifically, by thinking about interactions that are likely to be caused, the full range of impacts can be identified (Vanclay, 2002).

SIA should therefore enable the authorities, project proponents, individuals, communities and organisations to understand and be in a position to identify and anticipate the potential social consequences of the implementation of a proposed policy, programme, plan or project. The SIA process should alert communities and individuals to the proposed project and possible social impacts, while at the same time allowing them to assess the implications and identify potential alternatives. The assessment process should also alert proponents and planners to the likelihood and nature of social impacts and enable them to anticipate and predict these impacts in advance so that the findings and recommendations of the assessment are incorporated into and inform the planning and decision-making process.

However, the issue of social impacts is complicated by the way in which different people from different cultural, ethnic, religious, gender, and educational backgrounds etc view the world. This is referred to as the “social construct of reality”. The social construct of reality informs people’s worldview and the way in which they react to changes.

1.6.2 Timing of social impacts

Social impacts vary in both time and space. In terms of timing, all projects and policies go through a series of phases, usually starting with initial planning, followed by implementation (construction), operation and finally closure (decommissioning). The activities, and hence the type and duration of the social impacts associated with each of these phases are likely differ.

1.7 SPECIALIST DETAILS

The author of this report is an independent specialist with 18 years experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 20 SIA’s and is the author of the Guidelines for Social Impact Assessments for EIA’s adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. These

guidelines have also been endorsed by DEAT. Tony Barbour has also developed SIA Guidelines for the Department of Water Affairs and Forestry.

1.8 DECLARATION OF INDEPENDENCE

This is to confirm that Tony Barbour, the specialist consultant responsible for undertaking the study and preparing the Draft SIA Report, and Schalk van der Merwe, are independent and do not have vested or financial interests in the proposed wind energy facility being either approved or rejected.

1.9 REPORT STRUCTURE

The report is divided into four sections, namely:

- Section 1: Introduction;
- Section 3: Description of the study area;
- Section 3: Identification and assessment of key issues;
- Section 4: Key Findings and recommendations.

SECTION 2: DESCRIPTION OF STUDY AREA

2.1 INTRODUCTION

The proposed wind energy facility is located in the West Coast District Municipality (WCDM) of the Western Cape Province. The WCDM is bordered by the Northern Cape Province to the north, and the Cape Metro and Cape Winelands Districts to the south and south-east. The western border is formed by the Atlantic Ocean, which forms the basis of the district's large and established fishing sector. The district includes five local municipalities, namely Matzikama, Cederberg, Bergriver, Saldanha Bay and Swartland, as well as four District Management Areas (DMAs).

In terms of its specific location, the northern half of the site falls within the within the DMA of Western Cape Municipal Area 1 (WCMA01). The southern section of the site falls within the Matzikama Local Municipality (LM) area. Vredendal, the largest town in the region, is located approximately 60 km east of the site.

The Matzikama LM is an, arid, sparsely populated area. However, it does host the life-giving arterial, namely the Olifants River. The river, with its associated canal systems, supports a flourishing agricultural sector that is largely linked to viticulture (the cultivation of grapes for wine production). A number of larger potentially affected communities are located in the Matzikama LM area to the south of the project area. The majority of these settlements are located along the Olifants River. Of these, Vredendal is the largest town and functions as the administrative seat of the Matzikama LM. Other significant settlements within a 50 km radius of the proposed site include Lutzville, Koekenaap, Ebenhaeser, Papendorp, Strandfontein and Doringbaai. Lutzville and Koekenaap are located on the R363 approximately 25-40 km inland from the coast. Ebenhaeser is located on the southern bank of the Olifants River and approximately 10 km inland from the mouth of the river. Papendorp is situated approximately 10 km downstream of Ebenhaeser near the mouth of the Olifants River. Strandfontein and Doringbaai and are located on the coast, approximately 25 and 40 km south of the site respectively. The towns of Klawer and Vanrhynsdorp are also located within the Matzikama LM area.

The WCMA01 is also an arid, sparsely populated area that is predominantly rural. Unlike the Matzikama LM area, no major rivers occur in the area, and consequently its sparse population is scattered over large farms (mainly small stock-farming) and a few settlements. Of these, Nuwerus, Bitterfontein and Rietpoort are of relevance to this study. These settlements all fall within a radius of approximately 75 km of the proposed wind energy facility site, with Rietpoort at the extreme limit (approximately 100 km+ by road). The WCMA01 is bisected by the N7 national road. Nuwerus and Bitterfontein are located on the N7. Rietpoort is a loose administrative term that is applied to a number of smaller settlements, which include Molsvlei, Put se Kloof and Stofkraal. The WCMA01 does not possess any dedicated local municipal structures of its own, and the local authority functions are carried out by the WCDM based in Moorreesburg. Large portions of the WCMA01 and Matzikama LM area fall within the demarcated boundary of the proposed Knersvlakte Biosphere Reserve area.

2.2 POLICY AND PLANNING ENVIRONMENT

For the purposes of the meeting the objectives of the SIA the following policy and planning documents were reviewed, namely:

- The White Paper on the Energy Policy of the Republic of South Africa, December 1998;
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (May 2006)
- Draft Western Cape Integrated Energy Strategy. Provincial Government Western Cape Department of Environmental Affairs and Development Planning (January 2007);
- The West Coast District Municipality Spatial Development Framework (SDF) (2006);
- The Matzikama Integrated Development Plan (IDP) (2005-2006).

A detailed description of the key components of each of these policy and planning documents is contained in the Social Assessment undertaken for the Scoping component of the study. The overall findings of the review of policy and planning documents pertaining to the energy sector indicate that wind energy and the establishment of wind energy facilities are supported at both the national and provincial level. At a provincial level, the wind energy potential along the west coast of the Western Cape Province is recognised. The proposed Eskom wind energy facility is therefore supported by national and provincial energy policies and is located in an area that has been identified as having high wind energy potential. The fit with the national and provincial policies and planning guidelines therefore supports the proposed site for the establishment of the wind energy facility.

2.3 BASELINE SOCIO-ECONOMIC DATA

2.3.1 Population

The demographic overview presented in this section is based on data from the most recent national Census (2001). Data from the Socio-Economic Profile: West Coast District (2006) is also presented. In summary, education rates are low, poverty rates are high, and the dominance of primary sectors such as agriculture and fisheries for employment provision are linked to the high, seasonal unemployment rates during large parts of the year.

WCMA01

The area is sparsely populated with a total population of 4 255 people in 2001. Approximately 50% of the population resides in the settlements of Bitterfontein (906), Rietpoort (682) and Nuwerus (572). In terms of the remaining 50%, 40 % live on farms and 10 % in a number of smaller settlements. A large percentage of the population is therefore rural. The majority of the population is Coloured (87%), followed by Whites (11%) and Black Africans (2%) (Table 2.1). Afrikaans is the dominant language, with 98% of the population listing Afrikaans as their first language (Table 2.2).

Matzikama

With the exception of the Olifants River valley, the Matzikama LM area is also sparsely populated with an estimated population of 50 207 in 2001. Vredendal is the most significant urban settlement in the area and accounts for more than 32% of the total population. As in the case of the WCMA01 area, 40% of the population

lives on farms or smallholdings. The agricultural areas in and around Vredendal account for almost 30% of the remaining population. After Vredendal, Lutzville is the second most populous town, with an estimated 8.5% of the total population. The communities of Doringbaai (2%), Koekenaap (2%), and Ebenhaeser (1%) are all relatively small.

The overwhelming majority of the population is Coloured (76%), followed by White (18%) and Black Africans (6%) (Table 2.1). Afrikaans is the dominant first language in the area, with an estimated 95% being native speakers. IsiXhosa was the second most dominant (3.5%), and English third (1%) (Table 2.2).

Table 2.1: WCDMA01 and Matzikama LMA Population Numbers (2001)

	WCDMA01		Matzikama LMA	
	Number	% of total	Number	% of total
Black African	99	2	2825	6
Coloured	3691	87	38118	76
Indian or Asian	-	0	75	0
White	465	11	9192	18
Total	4255	100	50210	100

Source: Census 2001

Table 2.2: WCDMA01 and Matzikama LMA Language Breakdown (2001)

	WCDMA01		Matzikama LMA	
	Number	% of total	Number	% of total
Afrikaans	4174	98	47628	95
English	24	0.5	525	1
isiNdebele	-	0	3	<0.5
isiXhosa	30	0.5	1659	3.5
IsiZulu	-	0	36	<0.5
Sepedi	3	<0.5	6	<0.5
Sesotho	9	<0.5	111	<0.5
Setswana	3	<0.5	99	<0.5
SiSwati	-	-	3	<0.5
Tshivenda	-	-	18	<0.5
Xitsonga	3	<0.5	15	<0.5
Other	9	<0.5	108	<0.5
Total	4255	100	50210	100

Source: Census 2001

Between 2001 and 2006 the population increased from 50 088 to 58 840, at an annual average growth rate of 3.3%. This represents the highest growth rate in the West Coast District Municipality. Population growth is expected to slow down to an average annual rate of 2.5 % between 2006 and 2010 (Source, Socio-Economic Profile: West Coast District, 2006).

The 2006 data indicates that Coloured Group with 74 % of the population, still make up the majority of the municipality's population, followed by Whites (19%) and Black Africans (7%) (Source, Socio-Economic Profile: West Coast District, 2006).

In 2001 in-migration was projected to have dropped from 2 262 to 800 in 2005. It has, however, increased to 1 129 in 2006, but is projected to remain steady around the 1 000 mark up to 2015 (Source, Socio-Economic Profile: West Coast District, 2006). The majority of the people moving to the area are from the Coloured population group. Coloured in-migration in 2006 is projected to be in the region of

688. African in-migration (second largest) declined between 2001 (444 in-migrants) and 2005 (140 in-migrants), but is expected to increase again gradually between 2006 and 2025 (454). In-migration by Whites to the area is low (Source, Socio-Economic Profile: West Coast District, 2006).

The West Coast District's total population projection for 2006 is 320 929. Between 2001 and 2006 the district's population grew at an annual average rate of 2.38 %. Of all the local municipalities in the district, Saldanha Bay (25.3%) and Swartland (23.8%) had the largest populations in 2006 (Source: Socio-Economic Profile: West Coast District, 2006).

Gender and age

WCMA01

The population breakdown in terms of gender is roughly equal with 50.5% of the total population female and 49.5% male (Table 2.3). The 2001 census data on age indicates that approximately 59 % of the population fell within the economically active age group of 15-65, 33% were 14 or younger and 8% 65 years or older (Table 2.4).

Matzikama

The population breakdown for the Matzikama area in terms of gender is roughly equal and is therefore similar to the WCMA01 area (Table 2.3). Approximately 65 % of the population fell within the economically active age group of 15-65, 30% were 14 or younger in 2001 and 5% 65 years or older (Table 2.4).

Table 2.3: WCDMA01 and Matzikama LMA gender breakdown (2001)

	WCDMA01		Matzikama LMA	
	Number	% of total	Number	% of total
Male	2110	49.5	24965	49.7
Female	2145	50.5	25246	50.3
Total	4255	100	50210	100

Source: Census 2001

Table 2.4: WCDMA01 and Matzikama LMA age Distribution (2001)

	WCDMA01		Matzikama LMA	
	Number	% of total	Number	% of total
0-4	436	10	4724	9.5
5-9	522	12	5152	10
10-14	478	11	4913	10
15-19	351	8	4646	9
20-24	264	6	3809	7.5
25-29	295	7	4056	8
30-34	303	7	4252	8.5
35-39	296	7	4152	8
40-44	218	5	3611	7
45-49	210	5	2855	6
50-54	168	3	2186	4
55-59	218	4	1692	3.5
60-64	154	3	1427	3
65-69	135	3	1061	2
70-74	92	2	723	1.5
75-79	61	1	483	1
80-84	42	1	297	1
85+	18	0.5	174	0.5
Total	4262	100	50213	100

Source: Census 2001

The demographic data for 2006 indicates that the population pyramid for the Matzikama LM has a broad base, which reflects a large young population with a median age of 28. The 20 to 24-year age group is much smaller, with larger population numbers between 25 and 35 years. The dependency ratio in 2006 is 0.50, down from 0.52 in 2001, and is projected to decline even further to 0.49 later in 2006 (Source: Socio-Economic Profile: West Coast District, 2006).

2.3.2 Education levels

The education levels in both areas are relatively low. Based on the 2001 data for persons over the age of 5 years, approximately 13.5% of the WCMA01 and 12% of the Matzikama populations had never received any schooling. Only 7% of the WCMA01 and 12% of the Matzikama populations had completed secondary schooling, and 3% and 4% respectively, had obtained a tertiary qualification (Table 2.5).

Table 2.5: WCDMA01 and Matzikama LMA Education levels (2001)

	WCDMA01		Matzikama LMA	
	Number (age 5 and older)	%	Number (age 5 and older)	%
No schooling	518	13.5	5485	12
Some Primary	1360	35.5	14702	32
Complete Primary	469	12	4391	10
Some Secondary	1089	28	13505	30
Complete Secondary	281	7	5518	12
Higher	109	3	1888	4
Total	3825	100	45488	100

Source: Data derived from Census 2001

2.3.3 Employment

Based on the 2001 Census data approximately 14% and 10.5 % of the WCMA01 Matzikama respectively were unemployed (Table 2.6). Compared with the estimated June 2006 national employment rate (26.5%), unemployment rates for the two municipal areas appear low. However, the actual seasonal unemployment rates may be significantly higher due to the seasonal nature of the demand for labour associated with the fruit and vegetable cropping operations along the Olifants River Valley. The unemployment rates out of season may therefore be significantly higher than the 2001 Census data indicates. In this regard a study undertaken for the WCDM in 2001 estimated that at least 50% of people employed in elementary work were effectively unemployed or underemployed. Significantly, the unemployment rate for the Historically Disadvantaged (HD) community of Aiville Park (Vredendal) was estimated at over 53%.

In the Matzikama LM, females, Africans, young people and those with lower levels of formal education — especially those with incomplete secondary education — are highly affected by unemployment. Youth unemployment is particularly high, with 70 % of the unemployed being between the ages of 15 and 34 (Source: Socio-Economic Profile: West Coast District, 2006).

Table 2.6: WCDMA01 and Matzikama LMA Employment status (2001)

	WCDMA01		Matzikama LMA	
	Number	% of total	Number	% of total
Employed	869	34.5	18705	57
Unemployed	349	14	3511	10.5
Not economically active	1294	51.5	10712	32.5
Total	2512		32928	100

Source: Data derived from Census 2001

2.3.4 Income levels

Based on the 2001 Census data poverty rates in both the WCMA01 and Matzikama LM areas are high. Of the total number of households, an estimated 38% of those in the WCMA01 and 30% of those in the Matzikama LM had an income of R800 or less per month in 2001 (Table 2.7). Given the seasonal nature of the agriculture and fishing industry many of the people in the area do not have access to income throughout the year.

Table 2.7: Household incomes (2001)

	WCDMA01		Matzikama LMA	
	No. of households	% of households	No. of households	% of households
No income	119	10	858	6
R1 – R4800	96	8	620	>4
R4801 – R9600	240	20	2858	20
R9601 – R19200	300	25.5	3682	25.5
R19201 – R38400	211	18	2875	20
R38401 – R76800	105	9	1742	12
R76801 – R153600	70	6	1056	7
R153601 – R307200	27	2	487	3
R307201 – R614400	3	<0.5	122	<1
R614401 – R1228800	3	<0.5	57	<0.5
R1228001 – R2457600	3	<0.5	84	0.5
R2457601 and more	-	-	21	<0.5
Total	1178	100	14463	100

Source: Census 2001

2.4 KEY ECONOMIC ACTIVITIES

The sub-regional economy in the area is traditionally based on primary sector activities such as agriculture, fishing and mining both in terms of employment provision and economic throughput. The key economic activities in the Matzikama LM are linked to Agriculture, Forestry and Fishing (18.3%), Wholesale and Retail Trade, Catering and Accommodation (17.7%), and Manufacturing (13.1%), followed by Finance and Business Services (11.7%) and General Government

Services (11.2%). Together, these sectors make up 72 % of Matzikama's economic output in 2004 (Source: Socio-Economic Profile: West Coast District, 2006).

Between 1995 and 2004, the largest proportional increases were in the Community, Social and Personal Services (3.7%), Transport & Communication (3.3%) and Wholesale & Retail, Catering and Accommodation sectors (2.9%). The sectors showing the greatest proportional losses over this period were Mining (9.6%) and Agriculture, Forestry & Fishing (1.7%) (Source: Socio-Economic Profile: West Coast District, 2006).

In terms of growth, the Community, Social and Other Personal Services (8.6%), Transport and Communication (6.6%), Wholesale and Retail Trade, Catering and Accommodation (3.3%), Construction (3.2%) and Manufacturing (3%) all recorded relatively high growth rates between 1995 and 2004. Agriculture, Forestry and Fishing, the largest sector in the area in 2004, recorded growth of only 0.33 % for this period. In recent years growth has improved, with an average annual growth of 2.4 % between 2000 and 2004 and 3.8 % in 2004 (Source: Socio-Economic Profile: West Coast District, 2006).

2.4.1 Agriculture, forestry and fishing

The agriculture, forestry and fishing sector is the largest economic sector in the Matzikama LM. Its total contribution to Matzikama's GDP in 2004 was R150.5 million or 18.3 %. Intensive farming activities, such as vineyards and tomatoes are concentrated along the Olifants River. Many of the casual employment opportunities associated with cropping operations in the region's irrigation agriculture sub-sector are seasonal in nature. The region's reliance on the agricultural sector has been identified as a key concern by the local authorities in the area. As a result in 2001 the Vredendal Chamber of Commerce identified economic diversification as a key economic imperative for the subregion.

Two communities located in the vicinity of the site rely heavily on fishing for their economic well-being, namely Doringbaai and Ebenhaeser (including Papendorp). An estimated 200 Ebenhaeser and 51 Doringbaai households rely on harder (a local fish species) fishing as their main source of income. The harder fishery is highly seasonal, peaking over the summer months. The winter fishing off-season coincides with the agriculture off-season in the Olifants River Valley. As a result seasonal unemployment in Doringbaai and Ebenhaeser over the winter months is exacerbated.

On average, growth in the agricultural sector has been under-performing with a growth rate of only 0.3 % per annum between 1995 and 2004. Between 2000 and 2004 the average growth rate was negative (-0.6 %), indicating a decline in economic activity (Source: Socio-Economic Profile: West Coast District, 2006).

2.4.2 Wholesale and retail trade, catering and accommodation

In 2004 this sector, with a contribution of R 146 million (17.7 %) to GDP, was the second largest contributor to economic growth in the Matzikama LM. The average annual growth for the sector over a 9 year period ending in 2004 was 3.3 %. Growth between 2000 and 2004 was relatively unchanged at 3.2 %, although growth picked up on a year-on-year basis to 4.3 % for 2003 and 6.9 % for 2004 (Source: Socio-Economic Profile: West Coast District, 2006).

2.4.3 Manufacturing

The Manufacturing sector contributed R 107.9 million (13.1%) to the GDP in 2004 making it the third largest sector in the Matzikama LM. The sector is strongly linked to the agriculture sector, with focus on the manufacture of food and beverages.

This sub-sector accounted for 67.1 % of the total manufacturing in the sector for 2004. The next largest contributing sub-sectors were Metals with 7.8 % and Transport Equipment with 7.6 %. These two sub-sectors are closely linked to the mining and agricultural sectors (Source: Socio-Economic Profile: West Coast District, 2006).

Growth in the manufacturing sector as a whole was relatively strong between 1995 and 2004 with 3% average annual growth. The average annual performance between 2000 and 2004 also remained above the 3% mark. However, year-on-year growth in this sector has been fairly erratic, with growth rates of 9.1 % in 2004 and -4.6 % in 2003 (Source: Socio-Economic Profile: West Coast District, 2006).

2.4.4 Transport and communication

The Transport and Communication sector contributed R 74.2 million (9%) to the GDP in 2004. As a sector it plays a critical role in terms of facilitating access to markets and opportunities in the area. Between 1995 and 2004 the sector grew strongly at an average annual rate of 6.6 %, slowing down between 2000 and 2004 to 5.3 %. The sector is dominated by the Communication sub-sector that contributed 59 % of the sector total in 2004, with Transport contributing 41 % (Source: Socio-Economic Profile: West Coast District, 2006).

2.4.5 Mining

A number of mining operations are located in the area. Of these, the diamond mining operations of Trans-Hex at Die Punt (Matzikama) and the Namakwa Sands heavy minerals sand mining operations at Brand se Baai (WCMA01) are the most significant. Based on 2001 estimates the Trans Hex operations at Die Punt employ 38 permanent staff members and 44 contractors. The contractors employ in the region of 300-350 workers. The estimated annual turnover in 2000 for the Trans Hex operations at De Punt was in the region of R50 million.

The Namakwa Sands operations at Brand se Baai and associated processing activities near Koekenaap currently employ approximately 700 people. The minimum qualification for the Namakwa Sands personnel is Grade 10 and approximately 80% of the employees are from the WCDM area. Namakwa Sands also creates indirect employment opportunities for a large number of sub-contractors including cleaning, security and rehabilitation companies. In this regard the service and engineering sectors in Vredendal and Lutzville have benefited significantly from the mining industry in the area.

2.5 MUNICIPAL SERVICE LEVELS

Information on current levels of municipal service provision was obtained from relevant planning officials in the WCDM and Matzikama LM. Information on policing was obtained from the Institute for Security Studies' website and from interviews with relevant SAPS officials for the potentially affected communities.

2.5.1 Housing

The current estimates for RDP housing backlogs in the WCMA01 are 300-350 units for Rietpoort, 50-60 for Bitterfontein, and 20-30 for Nuwerus. Included in these estimates is the conversion from informal to formal structures.

In 2001 the Matzikama municipality had 14 090 households under its jurisdiction, of which 39.3 % were rural. This is higher than the average for the West Coast District, namely, 30.1 %. The number of households in the Matzikama area that live in informal structures is estimated at 1 500. This number appears to be increasing on a monthly basis. Informal settlements and housing backlogs for other potentially

affected communities appear to have been largely eradicated, with the exception of Lutzville. By the beginning of 2006 almost all of the families that had been living in informal settlements in Lutzville had been relocated to RDP houses. However, a new informal community of approximately 100 households has recently developed in the town. With the exception of Vredendal and Lutzville, housing backlogs for the rest of the area are small, with 7-8 for Lutzville (West), 10 for Koekenaap and none for Ebenhaeser or Doringbaai.

2.5.2 Potable water

The area in the vicinity of the site is arid. The majority of the potable water for urban use in the Matzikama LM is derived from the Olifants River and associated Clanwilliam Dam. Supplies in the area are supplemented by groundwater sources.

According to relevant local authority representatives all potentially affected communities have been provided with basic access to treated potable water. Koekenaap is currently experiencing some problems with the storage of sufficient water supplies. This is mainly the result of the community's conversion to flush toilets. The Matzikama LM is currently investigating a range of solutions for addressing this problem.

2.5.3 Electricity

All of the surrounding communities in the vicinity of the proposed mining area have access to ESKOM power. However, this does not imply that all of the households in the area are provided with electricity.

2.5.4 Health care

The only hospital in the sub-region is situated in Vredendal. The facility has approximately 60-70 beds and a staff compliment of 15 doctors. A maternity ward forms part of the facility. The sub-region is also serviced by 9 satellite clinics and 4 mobile clinics with a focus on primary, preventative and pediatric care.

In terms of health related issues TB is poses a significant health threat. Reported incidences of HIV/AIDS are currently relatively scarce, however, they are on the increase. Injuries associated with assault are common.

2.5.5 Policing

Four police stations are located in the area (Doringbaai, Lutzville, Vredendal and Nuwerus). Crime profiles differ between communities that live in the Olifants River Valley (Vredendal, Lutzville) and those that are located outside of the valley (Doringbaai, Nuwerus). The communities that live in the Olifants River Valley (Vredendal, Lutzville) display clear seasonal trends with regard to the prevalence of assault (common and with the intent to cause grievous bodily harm) during the agricultural harvesting season (summer), and economic crimes (theft, burglary) during agricultural off-season (associated with unemployment). The crime statistics in Doringbaai and Nuwerus do not display this seasonal trend linked to the agricultural sector.

However, in all four communities assault and theft are the most common categories of serious (that is excluding misdemeanors) crime over the past decade. In all four communities a clear link between crime and alcohol abuse exists. This is especially true for assault, where approximately 80 % of all assaults are linked to alcohol abuse. Alcohol abuse appears to be an endemic social problem in the sub-region, and is also linked to a high prevalence of domestic violence. Very serious crimes such as murder, rape and armed robbery appear to be relatively infrequent within the relevant communities.

2.6 GROWTH POTENTIAL OF THE AREA

The Western Cape Growth Potential of Towns Study (2004) reveals that the towns in Matzikama area have a mix of low and high development potential. Of the eight towns in the Matzikama LM, Vredendal and Strandfontein were identified as having high development potential. The other towns in the area that have the potential to attract tourist are Doringbaai, Koekenaap, Ebenhaeser, Klawer, Lutzville and Vanrhynsdorp. The type of tourism potential is, however, not clearly defined in the study.

The findings of the study confirm that the potential future development in the area is likely to be confined to the established towns, specifically Vredendal and Strandfontein. The future development of Vredendal is linked to the role that this town plays in terms of being the economic hub of the area. The development of Strandfontein, on the other hand, is linked to its location next to the sea and the tourism industry. The area where the proposed wind energy facility is located is unlikely to become an area of high development in the foreseeable future.

2.7 AFFECTED LANDOWNERS AND INTEREST GROUPS

2.7.1 Directly affected landowners

The final footprint of the proposed Eskom wind energy facility will be in the region of 25km². In terms of directly affected landowners, three farms are affected namely:

- Portion 5 of Gravewaterkop 158;
- A portion of Portion 620 of the farm Olifants River Settlement;
- A portion of Portion 617 of the farm Olifants River Settlement.

The common names for these farms are:

- Skilpadvlei Farm, owned by Mr. Ernie de Waal;
- Nooitgedag Farm, owned by Mr. Nakkie Pienaar, and;
- Skaapvlei Farm, owned by Mr. Hansie and Hennie Visser.

Skilpadvlei Farm

The northeastern portion of the proposed wind energy facility site comprises the western-most quarter of Portion 620 Olifants River Settlement. Portion 620 is known as Skilpadvlei Farm, which belongs to Mr. Erie de Waal. Skilpadvlei is roughly rectangular in shape, and approximately 5300 hectares (ha) in extent. The Skaapvlei gravel road provides access to the farm from the R363 at Koekenaap, situated approximately 12 km towards the east. Mr. de Waal currently utilises Skilpadvlei for grazing for approximately 500 dorper ewes. Vegetation on the farm consists of mainly Sand Fynbos, and as a result the grazing régime is determined by factors of rotation rather than seasonality (that is, no areas are specifically designated as either summer or winter pasture). The estimated average carrying capacity is 1 small stock units per 4 hectares (SSU/ ha) in good rainfall years, and 1SSU/ 7 ha in dry years. Stock is watered from 3 boreholes on the farm via an internal pipeline network to watering points located in the various camps.

De Waal farms on a part-time basis, and currently resides in Koekenaap. One permanent labourer is associated with operations on Skilpadvlei. The relevant labourer and his family permanently reside on Skilpadvlei. One farmhouse and a number of outside buildings are located on Skilpadvlei (de Waal, *pers. comm*).

Nooitgedag Farm

The southwestern portion of the proposed wind energy facility site is located on the northern-most third of Portion 617 Farm Olifants River Settlement. Portions 617

(north) and 615 (south) together constitute what is known as the consolidated farming unit Nooitgedag. Nooitgedag covers an area of approximately 5044 ha, with Portions 615 and 617 making up 2721 ha and 2323 ha respectively. The Nooitgedag gravel road provides the main access to the farm. The road turns off the Robeiland gravel road which links Trans Hex's diamond mining operations at Die Punt (just south of Nooitgedag Farm) with Koekenaap to the east. Trans Hex currently has a registered road servitude across Portion 615. This road runs from the Skaapvlei farmstead (adjacent to the Skaapvlei road) in the north, parallel and adjacent to the coast south to Die Punt. 9 km of Portion 615 borders onto the Atlantic Ocean – virtually the last stretch of land in the area that is still privately owned (Samuel Agenbach, pers. comm). In addition, approximately 2 km of Portion 615 borders onto the northern bank of the Olifants River.

Formally, Portion 615 belongs to Mrs. J.C. Pienaar (remarried as Wentzel), and Portion 617 to Hanekraai Beleggings (owned by the Pienaar family). In practice both portions are utilised as one unit, effectively managed and owned by Mr. Nakkie Pienaar, Ms. Wentzel's son. It is understood that Mr. Pienaar will eventually inherit Portion 615 from Ms. Wentzel. In the meantime, Mr. Pienaar has assumed financial and managerial responsibility for Nooitgedag farm (Pienaar, pers. comm). The properties were originally acquired by Mr. Pienaar's father in the early 1970's, together with irrigation smallholdings 46B/4 and 46B/5 in the Olifants river irrigation area (24.8 ha in total). . Mr Pienaar resides and farms in the Potchefstroom area. Nooitgedag and the associated irrigation area smallholdings are currently leased to Mr. Samuel Agenbach. Mr. Agenbach and Pienaar are currently in the final stages of negotiating the potential sale of the smallholdings to Mr. Agenbach. Should the sale proceed, Nooitgedag will retain a water servitude to and limited extraction rights from the water currently allocated to the smallholdings (Samuel Agenbach, pers. comm). Mr. Pienaar has further indicated that he, at some future date, intends to develop the property for wilderness based tourism purposes.

Mr. Samuel Agenbach has been renting Nooitgedag and associated irrigation area smallholdings since 1998. Mr. Agenbach currently farms with a core flock of 600 dorper ewes. The flock belongs to Mr. Pienaar, from which Mr. Agenbach is entitled to the new-born animals (approximately 500 lambs per annum). The northern half of Portion 617 is utilised for summer grazing. The remainder of Portion 617 and the whole of Portion 615 consists largely of Strandveld vegetation, and is utilised for winter grazing. The two portions are therefore inherently part of one single viable unit. The estimated average carrying capacity is 1 SSU/ 9 ha.

Operations on Nooitgedag are vitally dependent on water from the irrigation area smallholdings as no functional boreholes are located on Nooitgedag. Water for stock is piped 14 km (following the Nooitgedag gravel road reserve) from the smallholdings, and then distributed via an internal piping network to watering points located in individual camps. Drought fodder for Nooitgedag is sourced from the irrigation area smallholdings. One farmhouse is located on Nooitgedag. However, it is currently unoccupied. Mr. Agenbach resides on one of the irrigation area smallholdings near Koekenaap, where his other farming operations include the cultivation of fodder crops, seed vegetables and tomatoes. The irrigation area smallholdings alone are considered to be too small to constitute an economically viable operation, and Mr. Agenbach is, therefore, dependent upon the Nooitgedag sheep farming operation for economic survival (Samuel Agenbach, pers. comm).

Currently, one permanent and tenured farm worker is associated with Nooitgedag. Mr. Agenbach employs a further 25 permanent workers on the irrigation area smallholdings. A further estimated 65 casual opportunities are associated with planting and harvesting (October to May). Workers on the irrigation area

smallholdings reside on the smallholdings or in the settlement of Koekenaap (Samuel Agenbach, pers. comm).

Skaapvlei Farm

The northern half of the proposed wind energy facility site is comprised of roughly the southern half of Portion 5 Farm Elsie Erasmus Kloof 158 (Gravewaterkop), known as Skaapvlei. Portion 5/158 is located on both sides of the Skaapvlei Road, with approximately two thirds located on the northern side of the road and the remainder to the south. Skaapvlei covers an area of approximately 5200 ha and is owned by two brothers, namely Mr. Hansie and Hennie Visser. The Visser brothers acquired the land from their cousin, Mr. Hermie Visser, approximately 2 years ago. In addition to Portion 5/158, the Vissers also have grazing rights on approximately 2000 ha of coastal land on a portion of the farm Klipvalley Karoo Kop 153, and a small narrow portion of State land (Farm 157 Skaap Vley hills), both properties are situated adjacent to and west of Skaapvlei (5/158).

The Visser brothers therefore have access to approximately 7200 ha of grazing – collectively known as Skaapvlei Farm. The farm is divided into 9 camps. Karookamp, Pikkelsbaai and three further camps are utilised for winter grazing. The northeastern-most portion of 5/158 as well as most of the land south of the Skaapvlei road is utilised for summer grazing. The current operation is comprised of a core flock of approximately 650 dorper ewes. The average carrying capacity of Skaapvlei has been formally assessed at 1 SSU/7 ha (Hansie Visser, pers. comm). Stock is watered from 3 boreholes on the farm via an internal pipeline network to watering points located in the various camps. The Trans Hex compound has additional access to water from one of the boreholes. One permanent laborer is associated with the operation. One further casual opportunity is associated with the operation for 1-2 days every month for 6 months of the year.

Access to Skaapvlei is obtained via the Skaapvlei Road from Koekenaap. The distance from Koekenaap to the Skaapvlei farmstead is approximately 22 km. Gert du Toit se Baai, a traditional camping area for the farmers of the region, is located approximately 8 km northwest of Skaapvlei Road in the northwestern corner of the Karookamp. Mr. Hansie Visser currently resides near Lutzville, and Mr. Hennie Visser in Hermanus. Two farmhouses are associated with Skaapvlei. One of the farmhouses is permanently occupied by Mr. Hermie Visser and his family. The second house is used as a second home by Mr. Hansie and Hennie Visser. Two Coloured families currently reside on the property, one of which is the permanent worker on Skaapvlei. A number of outbuildings – including storage facilities for fodder – are also associated with Skaapvlei Farm.

2.7.2 Adjacent landowners

Three distinct properties are located adjacent to the proposed site for the wind energy facility, namely:

- Elsie Erasmus Kloof, owned by Mr. Frits Visser;
- Geelwal Karoo, owned by Namakwa Sands;
- Skaapvley Hills (Trans Hex), state owned land.

Elsie Erasmus Kloof

Elsie Erasmus Kloof covers an area of approximately 3000 ha and is owned by Mr. Frits Visser. The farm (Portion 18 of Farm 158) is located to the north of the Skaapvlei Road, and northeast of the study site. The farmstead and associated outbuildings are located immediately across the road from the farm buildings on Skaapvlei Farm, the relevant buildings effectively forming what the owner of Elsie Erasmus Kloof has described as the “Skaapvlei compound” (Frits Visser, pers. comm). As such, the farmyard is located immediately adjacent to the northwestern point of the study site. Access to Elsie Erasmus Kloof is obtained via the Skaapvlei

road from Koekenaap. The distance from Koekenaap to the farmstead is approximately 22 km.

The current flock of dorper sheep (including lambs still to be sold off) is approximately 700 animals. The farm's estimated average carrying capacity is 1SSU/ 6-8 ha. Stock is watered from a number of brackish boreholes on the farm. Mr. Visser grew up on Elsie Erasmus Kloof, but currently resides on an agricultural smallholding near Koekenaap. He visits the farm on average 3 times per week. The farmhouse is used on a temporary basis by Mr. Visser. No permanent labour is employed on the farm. Labour associated with the agricultural smallholding is transported to the farm on an as-need be basis (Frits Visser, pers. comm).

Geelwal Karoo

Geelwal Karoo covers an area of 1741 ha and is located to the west of the proposed wind energy facility site. Geelwal Karoo consists of a narrow strip of land (2.5 – 4 km wide) that stretches along the Atlantic coastline. Access to Geelwal Karoo is obtained via the Skaapvlei Road from an intersecting private gravel road located approximately 2 km west of the Skaapvlei farmyard. The intersection is located at the "compound" on Skaap Vley Hills 157 (Trans Hex), and runs south along the coast across two properties (Geelwal Karoo and Portion 615 Olifants River Settlement) before terminating at Trans Hex's facility at Die Punt. Based on the interviews undertaken during the SIA Trans Hex currently has permission from Namakwa Sands to make use of the portion across Geelwal Karoo (Willem Agenbach, pers. comm). However, this statement has not been confirmed with Trans Hex and/or Namakwa Sands.

Geelwal Karoo is owned by Namakwa Sands and is currently being farmed by Mr. Willem Agenbach. Mr. Agenbach has been farming on Geelwal Karoo for the past 29 years, and currently has a 5-year lease with Namakwa Sands. Mr. Agenbach is a part-time farmer, and resides in Koekenaap. The carrying capacity on Geelwal Karoo is estimated at around 1 SSU/10 ha. The farming operations consist of a core flock of approximately 120 ewes plus lambs. Water for the farming activities on Geelwal Karoo is provided via a 37.5 km pipeline and watering infrastructure established by Mr. Agenbach at his own cost. A permanent herder currently resides on Geelwal Karoo. No farmhouse or other buildings are associated with Geelwal Karoo.

Trans Hex currently has a number of registered concessions along the coast on Geelwal Karoo. These concession areas are currently mined by a number of subcontractors. In addition, MSR (sand mining company) is currently in the process of applying for authorisation to mine heavy mineral sand deposits on beaches adjacent to Geelwal Karoo ("Tormin sand mining operation").

Skaapvley Hills (Trans Hex)

Skaapvley Hills 157 is a long narrow (1 km at its widest) section of land owned by the state, but which has historically been used by the Visser family for grazing, and is currently still used by the Visser brothers and Mr. Frits Visser for grazing. A small portion of the study site (the northwestern most corner) is located on the portion of Skaapvley Hills effectively forming part of the Visser brothers' farming operation. Geelwal Karoo borders Skaap Vley Hills to the west. In addition to grazing a portion of the land is leased from the state by Trans Hex. This portion accommodates a cluster of buildings located at the intersection of the public road portion of the Skaapvlei Road. A total of 16 households, associated with Trans Hex operations, currently reside in a number of buildings associated with this node. At least one household has been living here for 7 years (Kobus and Zelda, pers. comm).

2.7.3 Skaapvlei Road interest groups

Skaapvlei road is a proclaimed public road (Divisional Road 2225), and is approximately 24 km in length. The entire road is a gravel road and in many areas crosses unstable sandy areas. Numerous interviewees indicated that the most of the road's clay surface has been eroded away and, and maintenance is problematic. As a result the road only remains in good shape for a few days after it has been graded. For the rest of the time the road is in a poor condition. The road is currently maintained by the Matzikama Local Municipality. However, due the heavy vehicles from the current mining operations in the area many sections of the road are in a poor state of repair.

The road currently provides access to properties and land uses associated with a number of interest groups. These are briefly described below.

Properties and farmhouses located adjacent to the road

A number of Koekenaap smallholdings currently gain access from the Skaapvlei road. In addition, the road provides sole road access to five active farming operations. These are (from Koekenaap in the east to Skaapvley Hills in the west):

- Kommandokraal Farm (Mr. De Klerk);
- Skilpadvlei (Mr. De Waal);
- Skaapvlei (Mr. Hansie and Hennie Visser);
- Elsie Erasmus Kloof (Mr. Frits Visser);
- Geelwal Karoo (Mr. Willem Agenbach).

Two permanently inhabited houses are located adjacent to the road on Kommandokraal, and one further (that of Mr. Hermie Visser) on Skaapvlei. In addition, a further two farm houses currently utilised as second homes, are located adjacent to the road on Skaapvlei and Elsie Erasmus Kloof respectively.

The Trans Hex housing node on Skaapvley Hills is located at the western terminus of the road. The road provides sole road access to sixteen associated households.

Mining activities

The Skaapvlei Road currently provides access to a number of Trans Hex subcontractors involved in mining concessions along the coast to the north and south of Baai Vals. Operations are small-scale and typically consist of a small labour force, a gravel pump, mechanised separator and bakkie and trailer to transport potentially diamondiferous gravel for selling to Trans Hex. In addition, Trans Hex trucks also make use of the road one to two days out of every month (De Waal, pers. comm). Should MSR obtain authorisation for the proposed Tormin mine, it seems likely that the sorted product will also be transported along the Skaapvlei Road. The number of potentially associated trips and the status of the authorisation process has not been finalised at this stage.

Kelp harvesting

A number of kelp harvesting subcontractors currently make use of the road to access the coast. Eckloweed Industries, a medium-term harvesting rights holder based in Vredendal currently holds the concession for the relevant area. Eckloweed uses the resource to manufacture products for the personal health industry. Products are exported to the EU, US and Japan. Eckloweed has appointed a number of subcontractors to collect the washed-up kelp, to dry it, and to process (chip and bag) it *in situ*.

Recreational road users

Over summer holidays (roughly mid-December to mid-January) and the Easter weekend the stretch of coastline west of the Skaapvlei Road terminus is extensively

used for camping (Gardner, pers. comm). These camping sites are traditionally associated with inland farmers of the region. However, visitors from other parts of the country also make use of them.

Of specific relevance to this study is the camping site at Gert du Toit se Baai. This camping site is situated on the farm Klipvalley Karoo Kop (Farm 153), used by the Visser brothers for winter grazing. Gert du Toit se Baai has been used for a number of decades by the farmers of the region, and a number of extended families from the region have habitual stands. No formal user rights are associated with the site, no permits are required to make use of Gert du Toit se Baai, and site access is not controlled. A number of traditional stands have been informally demarcated with numbered cement plaques. Stand sizes vary according to the number of people associated with each individual extended family, as does the number of caravans and tents associated with each stand. On average, a total of 50 caravans plus additional tents are present on the site on any given day over the summer holidays.

Stands are concentrated along the Bay, but additional small groups of campers may set up camp further to the north. No ablution or potable water infrastructure is available at Gert du Toit se Baai. Campers typically bring along portable toilets and their own supplies of drinking water. Refuse is informally collected by the camp committee for transportation to the landfill site at Koekenaap, but campers typically remove their own refuse themselves. Activities at Gert du Toit se Baai are mainly associated with angling, bathing and socialising. The area appears to fulfill an important function in cementing bonds between farming families of the region. The site is also used during the off-season by smaller groups and or individual campers for the purpose of crayfish diving and seaside braais (Lategaan, pers. comm). The coast in the area also witnesses *ad hoc* and unauthorised recreational use by anglers, divers and bathers throughout the year (Willem Agenbach, pers. comm).

Angling and crayfish diving along the nearby coast takes place with apparently little control at present. Crayfish poaching in particular is said to be rife. Illegal off-road driving and driving on beaches in the area have also been identified as a major source of concern. These problems are mainly the result of the location of the area, limited manpower available to Marine and Coastal Management (Doringbaai), the presence of uncontrolled access roads, and the fact that most of the area is not permanently inhabited (Willem Agenbach; Schreuder, pers. comm). The farmers in the area indicated that the recreational and other non-farming users did leave rubbish behind that was not only unsightly, but also posed a safety threat to their livestock. In this regard, plastic bags were considered extremely problematic.

Ecotourism

Due to the relative inaccessibility of the area, most of the associated tourism use is on an *ad hoc* "self-drive" basis (Gardner, pers. comm). A 4x4 vehicle is generally required in order to make use of the available road infrastructure along the coast, and until recently access control exercised by Trans Hex prevented members of the general public from accessing the land south of Skaapvlei. The absence of ablution facilities and potable water infrastructure also acts as a deterrent (Paulsen, pers. comm). Very few tour operators currently make use of the area. The most notable exception is Mr. Wynand Wiggins, a local farmer and tour operator, who has developed the Swart Tobie hiking trail. The trail is 92 km long, and stretches from Brand se Baai in the north to the Olifants river estuary in the south (Wiggins, pers. comm).

SECTION 3: ASSESSMENT OF KEY SOCIAL ISSUES

3.1 INTRODUCTION

Section 3 identifies the key social issues identified during the SIA study. The identification of social issues was based on:

- Review of the Final Scoping Report (Savannah Environmental, 2007);
- The Social Scoping Report prepared for the Scoping Report (Tony Barbour, 2007);
- Review of project related information, including other specialist studies;
- Interviews with key interested and affected parties;
- Experience of the authors of the area and the local conditions;
- Experience with similar projects, including the Darling Wind Farm.

3.2 IDENTIFICATION OF KEY SOCIAL ISSUES

The key social issues identified during the SIA can be divided into:

- The policy and planning related issues;
- Local, site-specific issues

The local site-specific issues can in turn be divided into construction and operational related issues. These issues are discussed and assessed below. The potential impacts associated with the power line routes are also assessed.

3.2.1 Policy and planning issues

As indicated in Section 1.6, legislative and policy context plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents.

The review of the relevant planning and policy documents was undertaken as a part of the Scoping Study assessment. The key documents reviewed included:

- The White Paper on the Energy Policy of the Republic of South Africa, December 1998;
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (May 2006)
- Draft Western Cape Integrated Energy Strategy. Provincial Government Western Cape Department of Environmental Affairs and Development Planning (January 2007)

The findings of the review indicated that wind energy was strongly supported at both a national and provincial level.

At a national level the White Paper on Energy Policy (1998) notes:

- Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future;

- The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and **wind** and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

At a provincial level the Draft Western Cape Integrated Energy Strategy (January 2007) notes:

- Wind energy potential in the Western Cape is high. IN this regard the study makes reference to a figure of 3 000MW. The potential advantages associated with wind include:
 - Technology & capital costs are reducing rapidly.
 - Low maintenance.
 - Clean, renewable energy option;
 - Can be quickly installed in areas needing new supply.
- The Provincial Government of the Western Cape (PGWC) is committed to energy efficiency and renewable energy, and to reducing the Province's carbon footprint and eradicating energy poverty. In order to achieve this vision, the PGWC will:
 - Support an approach to energy planning, which takes into account environmental, social and economic considerations.
 - Support research and development around renewable energy and energy efficiency technologies.

The Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (May 2006) commissioned by DEA&DP notes:

- It is important that at the national level (SA being signatories to the Kyoto Protocol) that positive policy is enacted to encourage wind energy (and indeed all renewable) development. A national perspective should ensure that wind resource rich provinces and regions are identified in order to ensure a co-ordinated and holistic national strategy. ***In this regard, it is accepted that the Cape West Coast (the study area and beyond to the north – indeed to the Orange River) will inevitably be attractive to wind energy developers due to the prevalence of coastal wind regimes.*** However, the importance of employing an effective cumulative impact model must be emphasised.

The findings of the review of the relevant policies and documents pertaining to the energy sector indicate that wind energy and the establishment of wind energy facilities are supported at both the national and provincial level. At a provincial level the wind energy potential along the west of the coast of the Western Cape Province is recognised. The proposed ESKOM wind energy facility is therefore supported by national and provincial energy policies and is located in an area that has been identified as having high wind energy potential. It is therefore the opinion of the author that the proposed site is supported by national and provincial policies and planning guidelines.

3.3 CONSTRUCTION PHASE

The key issues pertaining to the construction phase include:

- Presence of construction workers on site (including access), and the potential increase in stock theft, trespassing and illegal hunting;
- Impact on the natural vegetation;

- Impact on Skaapvlei Road due to heavy vehicle traffic;
- Impact of heavy vehicles on Vredendal and Lutzville;
- Impact on farm infrastructure;
- Creation of local employment and business opportunities.

3.3.1 Presence of construction workers on the site

Description of the effect

The concerns raised relate to the introduction of construction workers into a relatively remote area during the construction phase. The potential risks associated with construction workers on the adjacent landowners include:

- Stock theft;
- Illegal hunting;
- Trespassing (e.g. vehicles in veld);
- Damage of farm infrastructure, such as fences gates etc;
- Increased risk of veldfire.

At least two farmers in the area indicated that stock losses on their properties were directly related to the presence of workers during the operations of NDC diamond mining (Willem Agenbach; Hansie Visser, pers. comm). In some instances, sheep were hunted at night with .22 cal (low noise) rifles and spotlights.

Assessment of the impact

The construction period for the first phase (50 wind turbines) is expected to last 12 months. In terms of the proposed activities small teams of between 6-15 skilled to semi-skilled workers will be deployed – sometimes more than one team of workers will be deployed on the site. Based on the information provided by Eskom the total maximum number of workers on site during the construction phase will be in the region of 300. This includes construction workers associated with the wind energy facility, access roads and the power line. These workers will be housed in the nearby towns and not on the site. The potential risks associated with construction workers on the site are therefore likely to be low.

Table 3.1: Impact of the presence of construction workers on the site

	No Mitigation	With Mitigation
Extent	Local (3)	Local (1)
Duration	Short (2)	Short (2)
Magnitude	Minor (2)	Small (1)
Probability	Probable (3)	Probable (3)
Status	Negative	Negative (Negative for those farmers who may be affected. In this regard it may not be possible to completely prevent potential stock losses or damage to infrastructure)
Significance	Low (21)	Low (12)

Recommended mitigation measures

All of the directly affected and adjacent landowners interviewed indicated that the overnight presence of construction workers on the site would be **completely unacceptable**. At this stage, it is Eskom's intention to transport workers to and from site on a daily basis. These workers will be housed in the nearby settlements,

such as Lutzville and Vredendal. This will significantly reduce the potential risks, especially those associated with stock theft, illegal hunting and veld fires.

In addition the following mitigation measures should be included in the Environmental Management Plan (EMP) for the Construction Phase.

- Eskom should establish a liaison committee made up of representatives from Eskom, the contractors and adjacent landowners to devise a code of conduct for workers to address conflicts that may arise;
- Eskom should compensate farmers in full for any stock losses and or damage to farm infrastructure that can be positively linked/proven to be linked to construction workers. This should be contained in the agreement of good conduct to be signed between Eskom, the contractors and adjacent and neighbouring landowners;
- Eskom and contractors should ensure that all construction workers are appropriately informed of the consequences of stock theft, illegal hunting and trespassing on adjacent farms at the outset of the construction phase;
- The contractor should ensure that construction workers who are found guilty of stealing livestock, illegal hunting and or damaging farm infrastructure are dismissed and charged;
- No open fires for cooking or heating should be allowed on the site during the construction phase;
- Fire fighting equipment should be provided on site for fighting veld fires and other fires that may develop on site;
- Fire fighting training should be provided to selected construction staff at the outset of the construction phase.

3.3.2 Impact on the natural vegetation

Description of the effect

The concern relates to the disturbances to the land beyond the project footprint associated with the activities during the establishment and construction phase. Due to the climatic and soil conditions the natural vegetation in the area takes a long time to recover.

This issue was identified as a concern by all of the directly affected landowners. Some of the adjacent landowners also identified it as a concern. Given their links with the land most of the farmers indicated that this was a very emotional issue. Potential impacts on natural vegetation are linked to:

- Site investigations associated with determining the final location for the turbines and associated infrastructure, including access roads;
- Construction related activities;
- Off-road driving in the study site and adjacent areas.

While it is accepted that some disturbance to the natural vegetation is inevitable, the general sentiment is that the disturbances need to be strictly managed and minimised.

Assessment of the impact

The impact on the natural vegetation associated with the construction phase is assessed in detail as part of the specialist vegetation study. As such, the SIA does

not attempt to comment on the ecological significance of this impact, it merely seeks to comment on the response of the local farmers to the loss of natural vegetation. In this regard the loss of natural vegetation is an emotional issue for many of the farmers whose livelihoods are dependent upon the land.

Table 3.2: Impact associated with the loss of natural vegetation

	No Mitigation	With Mitigation
Extent	Local (3)	Local (2)
Duration	Medium (3)	Medium (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Status	Negative	Negative (Negative for those farmers who may be affected. In this regard it may not be possible to completely prevent the loss of natural vegetation)
Significance	Medium (36)	Low (27)

Recommended mitigation measures

The mitigation measures identified in the specialist botanical study to minimise disturbances to the natural vegetation should be implemented. In addition the following mitigation measures should be included in the Environmental Management Plan (EMP) for the Construction Phase.

- The construction area, including access roads, assembly areas etc should be clearly demarcated and fenced off during the construction phase;
- The movement of all construction related vehicles should be limited to the demarcated areas both on the site and on adjacent farms;
- Contractors that move beyond the demarcated areas should be fined and required to rehabilitate damaged areas. The issue of fines should be referred to in the Construction EMP;
- Eskom should compensate landowners for damage caused to natural vegetation during the construction phase;
- A rehabilitation programme should be implemented to rehabilitate all disturbed areas. The rehabilitation programme should be informed by the findings of the specialist botanical study.

3.3.3 Impact of heavy vehicles on Skaapvlei Road

Description of the effect

The concern raised by the farmers in the area and local authorities interviewed is that the movement of heavy vehicles along the Skaapvlei Road during the construction phase will have a major impact on the road surface, and affect the driving surface for other vehicles. The construction phase will require the transport of heavy equipment to the site and large, abnormal-sized loads. The impact will be exacerbated by the current poor state of the road. During the wet, winter months the road surface deteriorates even further and it poses a serious safety threat to road users.

The following interest groups and activities stand to be negatively affected by any deterioration in the quality of the road surface:

- Access to a number of smallholdings near Koekenaap, the Skaapvlei Road smallholdings;
- The road acts as the sole road access for 5 farms;

- Primary road access to 19 households (Skaapvlei Farm, Kommandokraal and Trans Hex compound);
- Access to recreational activities on the coast, including Gert du Toit se Baai;
- Coastal access for kelp harvesting subcontractors;
- Coastal access for Trans Hex subcontractors;
- A small number of wilderness-based self-drive tourists.

The potential impact on Skaapvlei Road will be exacerbated by the proposed transportation of heavy mineral sand concentrate from the proposed Tormin Heavy Mineral Sand mining operations on Geelwal Karoo.

Assessment of the impact

This issue was raised as a key concern by all interviewees that currently use Skaapvlei Road. The major impacts on the road surface are linked to the weight of construction machinery (750 tonne main lift crawler crane) and components (the nacelle weighing approximately 60t). The option of establishing a cement batching plant at Lutzville has also been mooted. If this is the case the transport of cement from the proposed batching plant will also impact on the road surface. Any further deterioration in the already poor quality of the road is regarded as a key issue.

Based on the technical road assessment minimal straightening will be required in order to enable the transportation of the 45 m rigid components along the road. In terms of the work programme the road will need to be upgraded before construction can commence.

The need to upgrade the Skaapvlei road (DR 2225) was identified by the majority of road users as a key condition associated with the establishment of the proposed development. The majority of stakeholders interviewed indicated that the road should be upgraded to a tar road. All of the stakeholders interviewed indicated that an upgrade would benefit all of the current road users and also visitors to the area, including tourists. The current poor condition poses a safety threat to road users and increases wear and tear on personal vehicles. In terms of safety, one of the farmers interviewed indicated that the current alignment of the DR 2225 regularly causes drivers at night to crash through his boundary fence.

A number of respondents did, however, as indicate that there were also potential risks associated with the upgrading Skaapvlei Road and improving access to the area. These include:

- An increased risk of poaching of marine resources (crayfish and line fish) in a sparsely populated, relatively remote area that is difficult to police effectively. The capacity of Marine and Coastal Management in the area is limited;
- An increased risk of trespassing onto farms along the coast. Negative impacts include littering (with potential fatal plastic ingestion by livestock) and damage to natural vegetation and farm infrastructure linked to off road driving by 4X4 vehicles;
- An increased risk of stock theft associated with an increased presence of people and trespassing in the area.

Table 3.3: Impact on Skaapvlei Road

	No Mitigation	With Mitigation
Extent	Local and Regional (4)	Local and Regional (4)
Duration	Short (2)	Long Term (4) (if road is up-graded and or surfaced)
Magnitude	High (8) (Negative impact on system)	High (8) (Benefit to system)
Probability	Highly Probable (4)	Highly Probable (4)
Status	Negative	Positive (If road is upgraded and or surfaced as part of the project)
Significance	Medium (56)	High (64)

Recommended mitigation measures

The findings of and recommended mitigation measures contained in the preliminary technical assessment undertaken by Eskom of the Skaapvlei Road should be considered. However, it should be borne in mind that there is an expectation amongst some members of the community that the road will be tarred. This expectation may need to be managed by Eskom.

It should also be noted that the DR2225 is a proclaimed road and that should any potential upgrade result in an increase in the capacity of the road, consultation with PGWC would be required, and may require a separate EIA process. The potential time implications of this will need to be borne in mind by Eskom.

3.3.4 Impact of heavy vehicles on R363

Description of the effect

The concern raised by members from the local community is that the movement of heavy vehicles used to transport the components for the wind energy facility (towers, turbine blades etc) will have a negative impact on traffic using the R363 that links the towns of Koekenaap, Lutrville and Vredendal with the N7.

Assessment of the impact

Due to the large size of the vehicles required the impact on road users using the R363 has the potential to be significant. The impacts are linked to delays and disruptions for other road users. The road users who stand to be most affected are the local farmers in the area, specifically during the grape harvest time.

Table 3.4: Impact of heavy vehicles on the R363

	No Mitigation	With Mitigation
Extent	Local and Regional (4)	Local and Regional (4)
Duration	Short (2)	Short (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Highly Probable (4)
Status	Negative	Negative
Significance	Medium (48)	Medium (40)

Recommended mitigation measures

The timing of the movement of heavy vehicles used to transport the turbine components should be timed to minimise the potential impact on other road users, specifically farmers during the harvest time. In this regard Eskom should liaise with representatives from the local farming association and traffic officials from the

Matzikama Municipality to identify the best time of the day to transport heavy equipment to the site in order to minimise impacts/disturbance to other road users.

3.3.5 Impact on farm infrastructure

Description of the effect

The concern relates to the potential impacts associated with the construction activities and movement of heavy vehicles and construction workers on farming infrastructure such as:

- Camp fences and gates;
- Boreholes and wind pumps;
- Water distribution networks.

Assessment of the impact

The area identified for the proposed Wind Energy Facility potentially impacts upon the farm infrastructure on all three of the potentially affected properties, namely Nootgedacht, Skilpadvlei and Skaapvlei Farms.

However, the potential impacts can be effectively avoided and or mitigated through by consulting with the affected farmers before the construction phase commences.

Table 3.5: Impact on farm infrastructure

	No Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Short (4) (If damage is not repaired)	Very Short (1) (If effective mitigation measures are implemented and or compensation is paid)
Magnitude	High (8) (if damage is not repaired)	Minor (2)
Probability	Probable (3)	Probable (3)
Status	Negative	Neutral (If effective mitigation measures are implemented and or compensation is paid)
Significance	Medium (39)	Low (12)

Recommended mitigation measures

The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the Construction Phase. The mitigation measures that can be considered to address the potential impact on farm infrastructure include:

- Eskom and the contractors should liase with the local farmers to identify and map the location and condition of the farm infrastructure on the affected farms;
- Eskom and the contractors should ensure that the location of all farm infrastructure on the affected farm is made available in map form to the contractors;
- The contractors should undertake to repair and replace any farm infrastructure damaged or destroyed as a result of the construction phase. In order to ensure that claims are legitimate it is recommended that Eskom in consultation with the affected farmers undertake an audit of farm infrastructure before the construction phase commences. The same should apply to the operational phase;

- Where critical components of the farm infrastructure will be disrupted, such as water supply, Eskom and the contractors should liaise with the affected farmer/s to ensure that the disruptions are minimised and agree on the timeframe for repairing the damage;
- The contractors should ensure that construction workers who are found guilty of damaging farm infrastructure are dismissed and charged.

3.3.6 Creation of employment and business opportunities

Description of the effect

The construction phase for phase 1 (50 turbines) is expected to last approximately 12 months. During this period the project will create a number of employment and business opportunities associated with the construction of the components of the wind turbines, the transport of the various components of the wind turbines to the site, the preparation of the site for establishment of the turbines and the actual process of establishing the wind turbines on site. In addition, employment and business opportunities will be created by the required upgrading of Skaapvlei Road and the installation of a 132 KV from the site to Juno Substation.

Assessment of the impact

The following information was available at the time of compiling the SIA:

- The construction period for the first phase is expected to last 12 months. During the erection and commissioning approximately 6-8 crane crew will be employed and 6-10 from the turbine supplier. Small teams of between 6-15 skilled to semi-skilled workers will therefore be deployed on the site to establish the wind turbines. More than one team at a time may be deployed. Based on the information provided by Eskom the maximum number of construction workers in the area at any one time, including workers for the power line and access roads, will be in the region of 300. The number of construction persons on the site will vary during the construction phase. A number of these employment opportunities will be for unskilled and semi-skilled workers and will therefore be available to members from the local historically disadvantaged community;
- The local tower for the V66 wind turbine at Klipheuwel was built by John Thompson (Alstom) in Bellville. John Thompson have a throughput capacity of about one tower per month and a 78m tower would cost approximately R3.8 million, compared to just more than R 2.5 Million imported and landed in Saldanha. Based on this information the cost of the turbines on their own would be in the region of R 300 million;
- The foundation sections for the Klipheuwel site were done by Ring Rollers in Springs and their throughput is in the region of 15 per week.
- In terms of concrete for the foundations, a batching plant capable of producing 60 tonnes an hour will be required. The foundations for the turbines must be cast in one pour and require approximately 300 to 400 m³ of concrete.

It should be noted that the above information is based on the Klipheuwel experience and research information. This information may change depending on the wind turbine supplier appointed.

Detailed information on the opportunities for local South African companies will only become available when Eskom go out to tender. However, as a Government parastatal, Eskom would be required to meet Government tender requirements, which, in turn, would support the involvement of BEE companies.

However, despite the lack of information, the project and its associated components will create employment and business opportunities for both local and other South African companies. These opportunities are regarded as moderately positive in terms of the assessment. Measures to enhance the potential benefits for local companies are listed below.

The project will also create an opportunity for local business to develop the necessary skills and expertise for future wind energy projects.

Table 3.6: Creation of employment and business opportunities

	No Mitigation	Enhancement
Extent	Local-Regional-National (3)	Local-Regional-National (3)
Duration	Short (2)	Short (2)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Status	Positive	Positive
Significance	Low (27)	Medium (33)

Recommended enhancement measures

In order to enhance local employment and business opportunities associated with the construction phase of the project the following measures should be implemented:

- Eskom should develop a database of local firms that qualify as potential service providers (construction companies, catering companies, waste collection companies etc) prior to the commencement of the tender process. These companies should be notified of Eskom’s tender requirements, added to Eskom’s database of suppliers and invited to bid for project related work;
- Where necessary, Eskom should assist local firms to fill in and submit the required tender forms;
- The local authorities, community organisations and leaders should be informed of the project and the potential job opportunities for locals;
- The employment selection process should seek to promote the employment of locals and the women wherever possible;

In terms of employment opportunities the baselines data from the 2001 Census indicates that approximately 14% and 10.5 % of the WCMA01 and Matzikama respectively were unemployed (Table 2.6). Compared with the estimated June 2006 national employment rate (26.5%), unemployment rates for the two municipal areas appear low. However, the actual seasonal unemployment rates may be significantly higher due to the seasonal nature of the demand for labour associated with the fruit and vegetable cropping operations along the Olifants River Valley. The unemployment rates out of season may therefore be significantly higher than the 2001 Census data indicates. In this regard a study undertaken for the WCDM in 2001 estimated that at least 50% of people employed in elementary work were effectively unemployed or underemployed. Significantly, the unemployment rate for the Historically Disadvantaged (HD) community of Aiville Park (Vredendal) was estimated at over 53%.

The creation of employment opportunities, even if they are temporary, would therefore represent a positive opportunity for the local community.

3.4 OPERATIONAL PHASE

The key impacts identified during the operational phase include:

- Impact of the proposed wind energy facility on the current farming activities, specifically the potential loss of valuable grazing land;
- The visual impacts and the associated impact on future land uses and sense of place;
- Impact on tourism and the creation of potential tourist opportunities;
- The promotion of clean energy as an alternative energy source and establishment of Cleaner Development Mechanism (CDM) project.

3.4.1 Impact on current farming activities

Description of the effect

This issue relates to the potential long-term impact of the Wind Energy Facility on existing farming activities, specifically grazing available for sheep and other livestock. The loss of land to the facility may result in:

- Affected farming operations being reduced to sub-economic farming units due to reduction in size;
- Affected farming operations becoming uneconomic due to the loss of important grazing areas and or grazing rights.

In terms of the project the proposed study site currently impacts upon :

- Approximately 66 percent of the available summer grazing land on Nooitgedag Farm (leased by Mr. Agenbach);
- Approximately 25 percent of total area of Skilpadvlei Farm;
- Approximately 50 percent of the land owned by the Visser brothers (i.e. 5/158), and more than half the summer grazing area of the total land utilised by the Visser brothers.

Assessment of the impact

In terms of impacts this is regarded at the most significant social issue affecting the project, specifically with regard to the three potentially affected farms, namely Skaapvlei, Nooitgedacht and Skilpadvlei Farms. The findings of the study also indicate that farming in the area is marginal and any loss of grazing land is likely to have a significant impact on the livelihoods of the affected farmers.

In terms of the potential impact on employment, the most significant potential impacts are associated with the activities of Mr. Agenbach on Nooitgedag Farm. The findings of the SIA indicate that the sheep farming activities on Nooitgedag form a critical component of the overall farming activities undertaken by Mr. Agenbach. As indicated above, the irrigation component on its own is not regarded as viable. The irrigation component currently employs 25 permanent workers and 65 temporary workers during 6 months of the year. The irrigation component also produces fodder for the stock-farming component. Mr. Agenbach also stands to lose approximately 66 % of the summer grazing that is currently available to him. The potential impact on Mr. Agenbach and his employees, both permanent and temporary, is therefore regarded as significant.

In terms of the future, Mr. Agenbach, the Visser brothers and Mr. De Waal all indicated that would still like to continue farming in the area provided they are adequately compensated for their losses. However, Mr. Pienaar has indicated that

his entire farming unit (Portions 615 and 617) would need to be brought out if the project proceeded.

The potential impact on farming activities is also compounded by the lack of available land for sale or rent in the general area. Substituting lost portions of land with equivalent land parcels outside the area is also unlikely to be economically viable due to the added costs (financial and time) involved in managing scattered operations, especially if this requires moving livestock between farms.

The impact on farming activities may also have a negative impact on farm workers who reside on some of the affected farms. In this regard the findings of the SIA indicate that four families stand to be affected (1 on Skilpadvlei, 1 on Nooitgedacht, and 2 on Skaapvlei). These families represent vulnerable members of the community and, as such, the impact on their livelihoods needs to be addressed.

Table 3.7: Impact on current and future farming activities, including farm workers

	No Mitigation	With Mitigation
Extent	Local (5)	Local (3)
Duration	Long term-Permanent (5)	Short term (2) (If effective mitigation measures are implemented and or compensation is paid to farmers and affected farm labourers))
Magnitude	High to Very High (8-10)	Low-Moderate (4-6)
Probability	Highly Probable (4)	Probable (3)
Status	Negative	Neutral (If effective mitigation measures are implemented and or compensation is paid to farmers and affected farm labourers)
Significance	High (72-80)	Low-Moderate (27-33)

Recommended mitigation measures

The option of granting grazing rights to the affected farmers should be considered by Eskom. However, given the long regeneration periods for disturbances to the natural vegetation it will take time for the areas disturbed by the construction activities to recover. This, combined with the low stock carrying capacity in the area (approximately 1 SSU/10 ha), will impact on the economic viability of the affected farms. However, in the absence of specialist agricultural assessment of the economic viability of the affected farms and until such time as the final footprint has been established it is not possible to comment with any degree of certainty as to how each of the affected farm owners will be affected. This issue will need to be assessed as part of Eskom's negotiation process with the affected farmers.

It is therefore recommended that an agricultural specialist be appointed once the final footprint for the proposed Wind Energy Facility has been finalised. The specialist should be involved in the negotiation process undertaken by Eskom with the affected farmers. Eskom have indicated that this study will form part of the land negotiations for purchase process.

The impact on farming activities also has the potential to impact on the livelihoods on the farm workers who reside on the affected farms. If the livelihoods of these families are negatively affected, Eskom must consider compensation and look at ways in which their livelihoods can be restored. This may require payment of resettlement packages for potentially affected families.

3.4.2 Visual impact and implications for future land uses and sense of place

Description of the effect

This issue was only raised by one interviewee, namely Mr. Nakkie Pienaar of the farm Nooitgedag. According to Mr. Pienaar the facility (100 x 80 m high towers with an additional 45 m in height added on by blades) will be visible from everywhere on his property.

Mr. Pienaar felt that this visibility of the project would impact on the farm's future potential to be developed as a wilderness based, coastal recreational tourism destination. In addition, the visual intrusion would detract from his personal enjoyment of the property, should he decide to retire on the property one day (Mr. Pienaar currently lives in Potchestroom). Mr. Pienaar did, however, indicate that the facility may also attract tourists to the area. However, he felt that the potential for tourism in the area would be limited and that he would not benefit.

Assessment of the impact

Due to the number of wind turbines (100) and their size (80 m high towers with an additional 45 m in height added on by blades) it will be impossible to screen the wind energy facility from the adjacent farms. The proposed development will therefore be highly visible. The impact on the current sense of place will therefore be significant.

The findings of the Visual Impact Assessment (Lourens du Plessis from MetroGIS (Pty) Ltd. December, 2007) indicate the following:

Visual impact on specific points of interest and individual homesteads

Homesteads within a 10km radius of the facility (Skilpadvlei, Nooitgedag and Kommandokraal) are expected to have a high to very high visual impact whilst homesteads beyond 10km (including Maurieskolk, Geluk, Geduld, Rooivlei, Graafwater and Baievlei) are expected to have a medium to low visual impact.

The findings of the SIA also found that the majority of the rural landowners and people living in the area interviewed did not feel strongly about preserving the "unspoilt, natural landscape".

Specific points of interest or scenic attractions (situated along the coast) affected by the WEF include Duiwegat, Die Toring and Gert du Toit se Baai. These areas are expected to experience a high visual impact due to their relative close proximity to the facility. Observers travelling to, or in the vicinity of these areas, are bound to have short distance views of the facility. Robeiland (10km from the facility) is expected to have a medium to low visual impact due to its relatively long distance from the WEF. Brand se Baai will not be visually influenced by the WEF.

Visual impact on agricultural areas and smallholdings

Agricultural areas and smallholdings west of the Olifants River (including the Skaapvlei road smallholdings) are not expected to be influenced by the WEF as visibility from these areas is highly unlikely. Areas east of the river (such as Ebenezer) can expect a medium to high visual impact. Visibility of the WEF will however be from a minimum distance of 10km.

Visual impact on local towns and settlements

The visual impact on major towns and settlements (Lutzville, Koekenaap and Papendorp) is expected to be low due to the relative long viewing distance from the facility and the presence of existing visual clutter within these areas.

Visual impact on road users

The construction and operation of the WEF is expected to have a low visual impact on users of the R362 and R363 and a negligible visual impact on users of the N7. The visual impact on the Skaapvlei road (functioning as the primary connecting road between Vredendal and the coastal/mining areas) is expected to be very high, as this road will have short distance views of the facility. The visual impact on other secondary/farm access roads within the 10km buffer radius of the WEF is expected to be high. The visual impact diminishes beyond the 10km and becomes medium and medium to low towards the 25km buffer radius.

Visual impact on the Olifants and Klein Goerap Rivers

The sunken nature of the Olifants River and the elevated topography of the area surrounding the Olifants River mouth (north of the river) shield the river from the proposed WEF. The Klein Goerap River, located approximately 35km northwest of the facility, will also not be influenced by the WEF. No significant visual impact is envisaged from these areas.

Visual impact on the coastline

Sections of the coastline that could be negatively influenced by the WEF and may experience a high to very high visual impact are situated within the 10km buffer radius from the facility. However, the VIA notes that the visual impact is more likely to occur on top of the coastal cliff rather than at sea level. This is due to the sudden drop of the topography (roughly 60m) to sea level effectively blocking views to the facility from beaches and the rocky shoreline.

Ocean views from the coastal cliffs looking west and/or south (i.e. towards the Atlantic Ocean and away from the facility) will not be influenced by the WEF. Ocean views from coastal areas south of the facility that include a northern aspect (e.g. Die Toring looking northwards along the coastline) will however experience a degree of visual interference. Setting the WEF further away from the coastline (e.g. from 2km to 4km) may go some way in mitigating these visual impacts although it would adversely affect the electricity generating capacity of the facility.

The author of the VIA is of the opinion that the construction and operation of the facility would not, from a visual point of view, limit or negatively influence this coastal region's future tourism development potential. The WEF may even become an attraction in this otherwise vast and desolate region.

Visual impact on nature reserves (Lutzille and Moedverloren nature reserves)

Both the nature reserves are located relatively far from the proposed WEF (Lutzville at approx. 20km and Moedverloren beyond 25km). Visual impacts on these reserves are highly unlikely due to the apparent distance between the reserves and the WEF and the presence of other infrastructure in the more immediate vicinity of the reserves.

In conclusion the VIA notes: "The placement of the wind energy facility and its associated infrastructure will have a visual impact on the natural scenic resources of this region. The natural and relatively unspoiled wide-open views surrounding the WEF will be transformed for the entire operational lifespan (approximately 30 years) of the plant. The author is however of the opinion that the WEF has an advantage over other more conventional power generating plants (e.g. coal-fired power stations). The facility utilises a renewable source of energy to generate

power and is therefore generally perceived in a more favourable light. It does not omit any harmful by-products or pollutants and is therefore not negatively associated with possible health risks to observers. The facility further has a novel and futuristic design that invokes a curiosity factor not present with other conventional power generating plants. The advantage being that the WEF can become an attraction or a landmark within the region that people would actually want to come and see. As it is virtually impossible to hide the facility, the only option would be to promote it”.

Table 3.8: Visual impact on specific homesteads/points of interest and implications for future land uses and sense of place

	No Mitigation	With Mitigation
Extent	Local (5)	Local (5)
Duration	Long-term (4)	Long-term (4)
Magnitude	High to Very High (10)	High (8)
Probability	Highly Probable (4)	Probable (3)
Status	Negative	Negative
Significance	High (76)	Moderate (51)

Recommended mitigation measures

The visual impact and the impact on sense of place are widely recognised as some of the most significant impacts associated with Wind Energy Facilities. The most severely affected are the people who live in close proximity to the facilities. Due to the large number and size of the turbines it will not be possible to effectively mitigate the visual impact and impact on sense of place associated with the proposed Wind Energy Facility. In this regard the VIA notes: “There are not many recommendations as to the mitigation of the visual impact of the core facility (mainly the wind turbines) as no amount of vegetation screening or landscaping would be able to hide structures of these dimensions”.

The severity of the visual impact and the implications for the existing sense of place will, however, differ from individual to individual. As indicated above, the majority of the rural landowners and people living in the area interviewed did not feel strongly about preserving the “unspoilt, natural landscape”.

3.4.3 Creation of tourism opportunities

Description of the effect

The current tourist related activities in the area where the proposed Wind Energy Facility will be located are low. In this regard the establishment of a Wind Energy Facility does have the potential to attract additional tourists to the area. . In this regard the author of the VIA is of the opinion that the construction and operation of the facility would not, from a visual point of view, limit or negatively influence this coastal region's future tourism development potential. The WEF may even become an attraction in this otherwise vast and desolate region.

Assessment of the impact

A number on interviewees indicated that they felt that the proposed project would create potential tourism benefits for the region as a whole as well as individual tour operators.

The Matzikama IDP Manager indicated that the establishment of one of the largest wind energy facility in Southern Africa had the potential to act as a draw card for

tourists to the Matzikama area (Phillips, pers. comm). The potential benefits are associated both with general curiosity value (an added attraction to the region's range of existing attractions) and environmental niche tourism. The stark contrast of the semi-arid, gently undulating landscape with the large, ultramodern turbines may provide a visual spectacle to offset the visual intrusion of the facility on an otherwise relatively undeveloped landscape.

Two of the farm owners interviewed also indicated that they would consider developing guest accommodation facilities on their properties should the development take place (De Waal; Hansie Visser, pers. comm). The owners of the popular 22 Nama Karoo in Koekenaap indicated that they felt that the establishment of the facility would enhance the general attractiveness of the area to tourists (Doug and Naide , pers, comm). However, a number of interviewees also noted that the potential of the area was closely linked to the upgrading and surfacing of Skaapvlei Road. The current poor state of the road impacts negatively on the tourist potential of the area.

However, two respondents indicated that they felt that the proposed facility would visually compromise the landscape and impact negatively on wilderness-based tourism. These included the Matzikama Tourism Manager (Mr. Kritzinger), and the owner of one of the directly affected farms (Mr. Pienaar).

The findings of the specialist tourism study undertaken by Dr Mike Fabricius as part of the EIA are summarized below.

- The potential reduction in tourism activity as a result of the proposed wind energy facility is regarded as low, since potential impacts are mainly of a local nature and the magnitude of the impact is considered as small. Proposals for mitigating the impact are mainly related to improving tourism facilities at existing fishing and camping spots in the vicinity of the area;
- The potential loss of nature and scenic qualities the significance is evaluated as of a medium status, since although impacts are expected to be slight and mainly of a local nature, they will be permanent and the probability of some visual and scenic disturbance is high. Proposals for mitigation largely relate to the routing of the Juno Distribution Line, with a preference for alternative 1 that crosses the R363 rather than running parallel to it;
- The potential positive economic impacts associated with the proposed facility have the potential to be of medium significance if Eskom develop a high quality renewable energy interpretation centre at the site. This will provide the local area and the region with a tourism magnet attraction, making it possible to package the WEF with other cultural and natural experiences as a tourism circuit. The development of such a centre is recommended.

The tourism study undertaken for the scoping phase of the EIA also notes that: "Such a facility could play a positive role in highlighting Eskom's leadership role and forward thinking in the area of renewable energy generation, while at the same time leaving a tourism legacy and providing a much needed major tourist attraction to the benefit of the area".

Table 3.9: Creation of tourism opportunities

	No Mitigation	With Enhancement
Extent	Local-Regional (2)	Local-Regional (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Low (4)
Probability	Probable (3)	Probable (3)
Status	Positive	Positive
Significance	Low (27)	Medium (36)

Recommended enhancement measures

In order to enhance the potential tourist opportunities associated with the proposed development the following mitigation measures are recommended:

- Eskom should liaise with representatives from the Matzikama Local Authority and the local tourism sector to raise awareness of the proposed wind energy facility;
- Eskom should establish a high quality renewable energy interpretation centre at the site. The centre should include covered viewing area where passing visitors can stop and view the site. A similar system is employed at Eskom's research facility at Klipheuwel neat Durbanville in the Western Cape. A similar facility is also provided at the Saldanha Steel steel mill near Saldanha. The viewing site should be equipped with information boards that provide visitors with information on the project and other relevant information, such as Eskom's policy with regard to renewable energy, South Africa's energy policy and needs, challenges associated with climate change and global warming etc;
- In order to maximise the benefits of the information board to the broader community it is recommended that the information be presented in the three official languages of the Western Cape, namely English, Afrikaans and Xhosa.

3.4.4 Promotion of clean, renewable energy

Description of the effect

South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. As a result South Africa is one of the highest per capita producer of carbon emissions in the world and Eskom, as an energy utility, has recently been identified as the world's second largest producer carbon emissions (Cape Times, 15 November 2007).

The establishment of a clean, renewable energy facility will therefore reduce, albeit minimally, South Africa's reliance on coal-generated energy and the generation of carbon emissions into the atmosphere.

A number of farmers along the Olifants River also indicated that power security was a key issue. In this regard it was hoped that the proposed wind energy facility would improve the current energy security situation in the area.

Assessment of the impact

The overall contribution to South Africa's total energy requirements of the proposed wind energy facility is small. However, the 100 MW produced will off-set the total carbon emissions associated with energy generation in South Africa. Also, given South Africa's poor track record to date with regard to the use and promotion of renewable energy the benefits in terms of perceptions and a commitment by Eskom to clean energy are regarded as significant.

Table 3.10: Promotion of clean, renewable energy

	No Mitigation	With Enhancement
Extent	Local-Regional-National (4)	Local-Regional-National (4)
Duration	Permanent (5)	Permanent (5)
Magnitude	High (8)	Very High (10)
Probability	Highly Probable (4)	Highly Probable (4)
Status	Positive	Positive
Significance	High (68)	High (76)

Recommended enhancement measures

In order to maximise the benefits of the proposed project Eskom should:

- Use the project to promote and increase the contribution of renewable energy to the national energy supply;
- Maximise the public's exposure to the project via an extensive communication and advertising programme.

In addition the facility has the potential to provide power to local communities and farmers and the Matzikama region. The IDP Manager indicated that the region would benefit significantly if the facility could provide cheaper electricity to the Matzikama region (L. Phillips, pers. comm). Cheaper electricity would provide a stimulus for much-needed local agri-industrial and other development in the area as well as an attraction to outside investors.

Local farmers also indicated that they hoped that the establishment of the facility would result in a more stable supply of electricity to the irrigation operations along the lower Olifants River valley. While farmers in the direct vicinity of Koekenaap draw power off the stable Namakwa Sands line, farmers in Lutzville and Vredendal have been severely affected by power outages as a result of Eskom load shedding. All of these enterprises are dependent on electricity for watering their crops. Water stresses caused by power outages can result in severe crop losses.

Virtually all the directly affected and site adjacent farmers have expressed an expectation that establishment of the facility may result in the provision of (currently non-existing) Eskom power to their farms. These farms are currently not linked to the Eskom grid. Power requirements are minimal, and mainly relate to domestic use and energy drive water pumps for watering stock. Based on the information provided by Eskom, the energy generated by the facility will be fed into the national power grid via the link to the Juno Substation.

Recommended enhancement measures

Eskom should consult with representatives from the Matzikama Local Authority and the relevant farmers and agricultural unions in the area to discuss the issues raised and indicate if any of the expectations are reasonable and or realistic. Failure to do so may lead to tension between the Eskom and the Matzikama Local Authority and the farming community and Eskom.

3.5 ASSESSMENT OF POWER LINE OPTIONS

Two route alternatives have been identified for the overhead 132 kV distribution line linking the site to the Juno Substation, namely:

- Alternative 1 (Northern route);
- Alternative 1A (Northern route);
- Alternative 2 (Southern route) (Figure 3.1).

The proposed alternatives follow as far as possible existing linear infrastructure such as roads, railway lines and power lines. This was done to minimise the potential impacts associated with the footprint as well as the need for additional access points (construction and maintenance).

The two proposed route alternatives and the amendment to Alternative 1, namely 1A, are currently mapped out as corridors of 200m in width. A 30m wide servitude will be required for the final route. Eskom proposes to register a right of way along the eventual servitude, pay compensation for its use, but not to acquire ownership.

Some leeway in the final siting of the power line (i.e. in response to existing conditions on the ground) is provided by the following factors:

- Lateral movement of the required 30 m servitude is possible within the wider 200m corridor;
- The 200m average distance between the towers can be increased in order to avoid features such as streams or cultivated areas. However, these increases will require heightening of towers for the relevant segment.

The section below provides a description of the three route alternatives followed by an assessment of the potential impacts associated with each route.

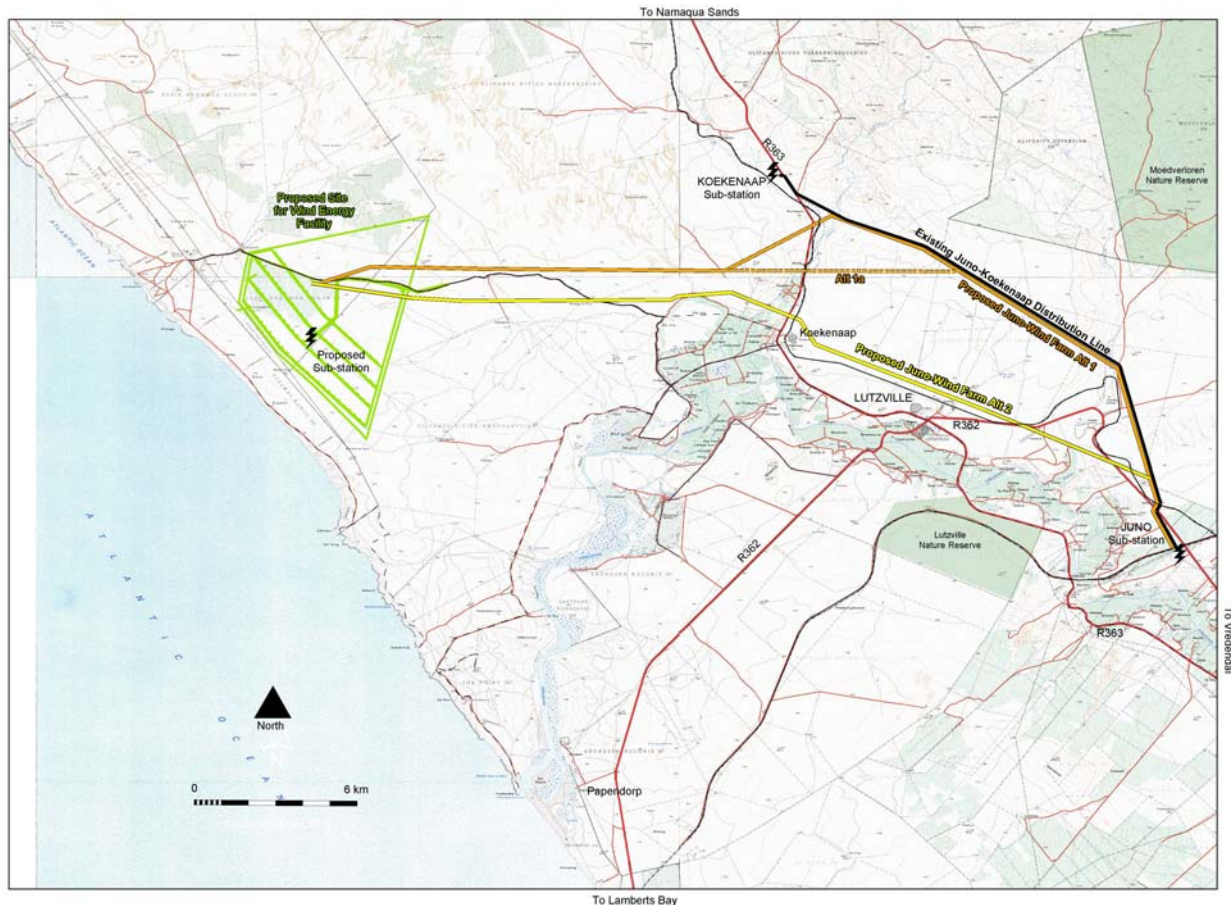


Figure 3.1: Power line route alternatives

3.5.1 Alternative 1 (Northern alternative)

Alternative 1 starts at a point approximately 2.8km south-east the Skaapvlei farmstead/housing complex, and just to the south of the Skaapvlei road (Figure 3.1). From here the proposed route crosses Skaapvlei Road, and runs in a north-easterly direction for approximately 3.5km to a point approximately 1km north of the Skaapvlei road and approximately 300m west of the boundary between Skaapvlei and Skilpadvlei. The route then runs due east for approximately 12km. This entire segment of the line is located to the north of Skaapvlei Road, varying in distance between a few hundred meters to approximately 2km. The line also skirts both the Skilpadvlei and Kommandokraal homesteads by approximately 2 km. A linear segment, approximately 4 km in length, running in a north-eastern direction links the first 12km section of the line to the existing Juno-Koekenaap line where the line crosses the Droeëleegte ephemeral stream. From this point the power line follows the existing line to the Juno substation located near Vredendal. This section is not discussed below given that it follows the existing line.

The majority of this route traverses privately owned farmland. Affected properties include those owned by the Visser brothers (Skaapvlei); Mr. Erie de Waal (Skilpadvlei)¹ and Ms. Annatjie de Klerk (Kommandokraal) – of which two are also potentially affected by the WEF site. The majority of the affected properties are currently used as grazing for small livestock. The closest dwellings are located approximately 2km from the proposed route (Skilpadvlei and Kommandokraal). The closest settlement is Koekenaap (approximately 3km).

Table 3.11: Assessment of Alternative 1 (Northern alternative)

	No Mitigation	With Mitigation
Extent	Local-Regional (4)	Local-Regional (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Status	Negative	Negative
Significance	Medium (36)	Low (27)

Recommended mitigation measures

Final location of the power line within the 200m corridor and the location of the 30m wide servitude should be negotiated with the affected landowners and the botanical specialist.

3.5.2 Alternative 1 (Northern alternative), with sub alternative 1A

Based on findings of the visual assessment Alternative 1 is the preferred option. Alternative 1 is also the preferred option from a technical perspective. However, the final, eastern segment of Alternative 1 traverses a botanically sensitive area. As a result Alternative 1A was proposed.

The route for Alternative 1A is essentially the same as Alternative 1 except for the last, eastern section segment that runs in a north-easterly direction before joining up with the Juno line. In this regard the preceding 12 km section extends due east to link up with the Juno-Koekenaap line approximately 7 km north north east of Koekenaap. In terms of land use the new alignment cuts across cultivated land immediately north of Keerweder for a distance of approximately 500m and passes within 300m of a cluster of farm buildings located to the south of the revised alignment. The dwellings appear to be associated with the cultivated that the power line cuts across. It is not clear how many of these are inhabited dwellings. Based on this Alternative 1A does affect a greater number of private landowners than Alternative 1. However, the number of landowners affected by both Alternative 1 and 1A is less than the number affected by Alternative 2. To the east of this area the Alternative 1A appears to cut across open veld².

Table 3.12: Assessment of Alternative 1 (Northern alternative), with sub alternative 1A

	No Mitigation	With Mitigation
Extent	Local-Regional (4)	Local-Regional (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Status	Negative	Negative
Significance	Medium (36)	Medium (30)

¹ The eastern boundary of Kommandokraal is unclear. A fourth owner east of Kommandokraal may also be affected.

² Due to the late inclusion of Alternative 1A the identification of land uses was based on review of maps of the area and satellite images from Google Earth. It was not possible to ground truth this information.

Recommended mitigation measures

Final location of the power line within the 200m corridor and the location of the 30m wide servitude should be negotiated with the affected landowners and the botanical specialist.

3.5.3 Alternative 2 (Southern alternative)

Alternative 2 essentially originates at the same point (or within 200 m of) as Alternative 1 (Figure 3.1). From this point the route runs in a south-easterly direction for approximately 3.5km towards a point approximately 300m south of the Skaapvlei Road on the eastern boundary of the proposed WEF site. From this point the route runs in an easterly direction for approximately 10km towards the northernmost point of the smallholding settlements on the Skaapvlei Road. Along this segment, the route passes within approximately 1km north of the Skilpadvlei farmstead, and cuts across the Kommandokraal farmyard (2 inhabited dwellings) – at which point the route crosses the Skaapvlei Road. From smallholding settlements on the Skaapvlei Road the route runs north-east for approximately 2km. The route then swings to the south-east for approximately 3km towards the Houklip smallholdings and ends at a point approximately 200 east of the Vredendal-Bitterfontein railway line, and approximately 800m north of the Koekenaap settlement. The next section of the line is approximately 1.5km in length and runs in a south-south-easterly direction across undeveloped land. From here the line follows south-easterly alignment from a point approximately 500m north of the Vredendal-Bitterfontein railway line, for approximately 13.5 km. This section runs parallel to and just to the north of the railway line. Approximately 2.5 km south-east of Lutzville station, the segment crosses the railway line and terminates at a point on the existing Juno power line approximately 1.5 km north of Liebendal station. From this point the distribution line follows the existing line to the Juno substation (Vredendal). Along the 13.5km length of this segment, it passes within 500m of the Uitkyk residential area of Lutzville (albeit separated from Uitkyk by the railway line); traverses a landing strip (see: 1:50 000 SG Lutzville and Google Earth), as well as approximately 500 m of cultivated land on the right bank of the Holrivier ephemeral stream (see: 1:50 000 SG Lutzville and Google Earth).

In terms of affected properties Alternative 2 runs across approximately 33.5km of privately owned land. While the number of associated property owners could not be established, the number of affected landowners is considerably more than Alternative 1. The three landowners affected by Alternative 1 are also associated with Alternative 2. However, Alternative 2 also cuts across a number of smallholdings and farms along the 15km stretch north of Koekenaap to Liebendal station. Alternative 2 also traverses land (in three places) that is either currently under cultivation, or has been cultivated in the past. The total linear distance of the affected lands is in the region of 2.5-3 km. All of the affected properties are located within convenient reach of existing canals and other irrigation infrastructure. Alternative 2 also passes within 800m of the Koekenaap settlement and 500m (or less) of the Uitkyk (Lutzville) residential area and passes within close proximity of an existing airstrip. It is not known whether the airstrip facility is registered and or currently in use.

Table 3.13: Assessment of Alternative 2 (Southern alternative)

	No Mitigation	With Mitigation
Extent	Local-Regional (4)	Local-Regional (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (4)	Minor (3)
Probability	Probable (3)	Probable (3)
Status	Negative	Negative
Significance	Medium (39)	Medium (333)

Recommended mitigation measures

Alternative 1 is the preferred alternative. However, if Alternative 2 is selected the final location of the power line within the 200m corridor and the location of the 30m wide servitude should be negotiated with the affected landowners.

3.5.4 Comparative assessment of power line route alternatives

In undertaking the comparative assessment of Alternative 1, 1A and 2 the following socio-economic factors were taken into account:

- Number of properties and owners affected. This has direct implications with regard to the number of people which may be adversely affected, as well as for the process required to negotiate compensation;
- The potential impacts on arable land and land under cultivation. In this regard arable land and land under cultivation should where possible be avoided. Arable land is scarce in the study area and as such more valuable than grazing land. Based on the comments from landowners in the area the value of established vineyards is in the region of R100 000/ ha. In addition, irrigation networks on cultivated land parcels may be disrupted, and the presence of power line infrastructure (poles) may impact on the movement of farm equipment. Cultivated lands in the study area are also significantly more labour intensive than areas used for grazing, and hence support a significantly larger number of livelihoods. In comparison, impacts on land used for grazing will be minimal. The impact on grazing land will be further reduced by the small width of the servitude (30m) and ability to use the servitude after the veld has recovered from construction phase disturbances
- Dwellings and residential areas should be avoided in as far as possible, mainly as a result of negative visual impacts.

Based on these considerations Alternative 1 (Northern Alternative) is the preferred route, followed by 1A and 2. In this regard Alternative 1 affects fewer properties, is located further away from farmhouses and settlements and impacts on land that is of lower agricultural potential value. The reasons are summarised in Table 3.14 below.

Based on the interviews with three of the potentially affected property owners, the construction of power lines across their properties is not regarded as an issue of major concern. Mr. Hansie Visser and Mr. Erië de Waal did not raise any issues in this regard, and Ms. Annatjie de Klerk (as well as her son Rinus, who runs the farming operation on Kommandokraal) specifically indicated that they do not have a problem with the construction of a power line.

Table 3.14: Comparative assessment of Alternative 1, 1A and 2

Criteria	Alternative 1	Alternative 1A	Alternative 2
Property owners affected	Least property owners affected	More than Alternative 1, but less than Alternative 2	Significantly more than for Alternative 1
Distance from dwellings	Approximately 2km from the dwellings located on 2 of the affected properties	Approximately 300m from a cluster of farm buildings. However, the number of inhabited dwellings unknown	Approximately 1km from Skilpadvlei farmstead and cuts across Kommandokraal farmstead (2 inhabited dwellings)
Distance from settlements	Approximately 3 km from Koekenaap	Approximately 2km from Koekenaap	Approximately 1km from Koekenaap and 500m from

			Uitkyk
Arable/ cultivated land	Alternative 1 does not cut across any cultivated land	Traverses approximately 500m of cultivated land north of Keerweder	Traverses approximately 2.5-3km of cultivated land in 3 distinct places along the route
Impacts on private infrastructure	No significant infrastructure affected	Potential impacts on irrigation infrastructure on the affected cultivated land	Located with in close proximity of a private airstrip

Recommended mitigation measures

In terms of social impacts Alternative 1 is the preferred power line option. In addition the following mitigation measures should be considered:

- Minimal disturbance of natural vegetation during construction phase;
- Consultation with affected land owners with regard to actual siting of servitude, power line towers and access routes within the 200m corridor (construction and maintenance);
- Consultation with affected landowners with regard to compensation mechanisms;
- Consultation with affected landowners with regard to procedures to ensure that farming operations are not affected by maintenance visits (e.g. farm gates and gates between camps).

SECTION 4: KEY FINDINGS AND RECOMMENDATIONS

4.1 INTRODUCTION

Section 4 lists the key findings and recommendations of the SIA. These key findings are based on:

- Review of project information;
- Review of relevant socio-economic baseline for the area;
- Interviews and discussions with local farmers, local authorities and other stakeholders in the area;
- Experience with similar projects.

4.2 SUMMARY OF KEY FINDINGS

The key social issues identified during the SIA can be divided into:

- The policy and planning related issues;
- Local, site-specific issues

The local site-specific issues can in turn be divided into construction and operational related issues. These issues are discussed and assessed below. The findings of the power line route assessment are also listed below.

4.2.1 Policy and planning issues

The review of the relevant planning and policy documents was undertaken as a part of the assessment. The key documents reviewed included:

- The White Paper on the Energy Policy of the Republic of South Africa, December 1998;
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (May 2006)
- Draft Western Cape Integrated Energy Strategy. Provincial Government Western Cape Department of Environmental Affairs and Development Planning (January 2007);

The findings of the review of the relevant policies and documents pertaining to the energy sector indicate that wind energy and the establishment of wind energy facilities are supported at both the national and provincial level. At a provincial level, the wind energy potential along the west coast of the Western Cape Province is recognised. The proposed Eskom wind energy facility is therefore supported by national and provincial energy policies and is located in an area that has been identified as having high wind energy potential. The fit with national and provincial policies and planning guidelines therefore supports the proposed site for the establishment of the wind energy facility.

4.2.2 Construction phase

The key issues pertaining to the construction phase include:

- Presence of construction workers on the site, and the potential increase in stock theft, trespassing and illegal hunting;
- Impact on the natural vegetation;
- Impact of heavy vehicles on Skaapvlei Road due to heavy vehicle traffic;
- Impact of heavy vehicles on R363 and other road users;
- Impact on farm infrastructure;
- Creation of local employment and business opportunities.

All of these issues can be effectively mitigated by the implementation of appropriate mitigation measures during the construction phase. Table 4.1 provides a summary of the social impacts identified for the construction phase.

Table 4.1: Summary of social impacts during construction phase.

Impact	Significance No Mitigation	Significance With Mitigation
Presence of construction workers	Low (21) (Negative impact)	Low (12) (Negative impact)
Impact on the veld	Medium (36) (Negative impact)	Low (27) (Negative impact)
Impact on Skaapvlei Road	Medium (56) (Negative Impact)	High (64) (Positive Impact if road is up-graded)
Impact on R363 and other road users	Medium (48)	Medium (40)
Impact on farm infrastructure	Medium (39) (Negative impact)	Low (12) (Negative impact)
Employment and business opportunities	Low (27) (Positive impact)	Medium (33) (Positive impact)

4.2.3 Operational phase

The key impacts identified during the operational phase include:

- Impact of the proposed wind energy facility on the current farming activities, specifically the potential loss of valuable grazing land;
- The visual impacts and the associated impact on future land uses and sense of place;
- Creation of additional tourist opportunities;
- The promotion of clean energy as an alternative energy source.

The potential impact of the proposed wind energy facility on the current farming activities, specifically the potential loss of valuable grazing land is regarded as a key issue. The visual impact and the associated impact on sense of place is also recognised as a significant impact.

Impact on farming activities

In terms of the impact on farming activities, future access to site for grazing will need to be discussed with Eskom. However, given the long regeneration periods for disturbances to the natural vegetation it will take time for the area disturbed by the construction activities to recover. This, combined with the low stock carrying capacity in the area (approximately 1 SSU/10 ha), will impact on the economic viability of the affected farms. The potential impact on farming activities is also compounded by the lack of available land for sale or rent in the general area. Substituting lost portions of land with equivalent land parcels outside the area is also unlikely to be economically viable due to the added costs (financial and time) involved in managing scattered operations, especially if this requires moving livestock between farms.

However, in the absence of specialist agricultural assessment of the economic viability of the affected farms and until such time as the final footprint has been established it is not possible to comment with any degree of certainty as to how each of the affected farm owners will be affected. It is therefore recommended that Eskom include agricultural specialists as part of the compensation negotiation team that will liaise with the affected farmers.

The impact on farming activities also has the potential to impact on the livelihoods on the farm workers who reside on the affected farms. If the livelihoods of these families are negatively affected Eskom must consider compensation and look at ways in which their livelihoods can be restored. This may require payment of resettlement packages for the affected families.

Visual impact and the associated impact on sense of place

The visual impact and the impact on sense of place are widely recognised as some of the most significant impacts associated with Wind Energy Facilities. The most severely affected are the people who live in close proximity to the facilities. Due to the large number and size of the turbines it will not be possible to effectively mitigate the visual impact and impact on sense of place associated with the proposed Wind Energy Facility. The severity of the visual impact and the implications for the existing sense of place will, however, differ from individual to individual. In this regard the findings of the SIA found that the majority of the rural landowners and people living in the area interviewed did not feel strongly about preserving the “unspoilt, natural landscape”.

Promotion of clean, renewable energy

The overall contribution to South Africa’s total energy requirements of the proposed wind energy facility is small. However, given South Africa’s poor track record to date with regard to the use and promotion of renewable energy the benefits in terms of perceptions and a commitment by Eskom to clean energy are regarded as significant.

Table 4.2 provides a summary of the social impacts identified for the operational phase.

Table 4.2: Summary of social impacts during operational phase.

Impact	Significance No Mitigation	Significance With Mitigation
Impact on future farming activities, including farm workers	High (72-80) (Negative impact)	Low-Moderate (27-33) (Negative impact)
Visual impact and impact on sense of place	High (76) (Negative impact)	Moderate (51) (Negative impact)
Creation of tourism opportunities	Low (27) (Positive impact)	Medium (36) (Positive impact)
Promotion of clean, renewable energy	High (68) (Positive impact)	High (76) (Positive impact)

4.2.4 Power line route alternatives

In undertaking the comparative assessment of Alternative 1, 1A and 2 the following socio-economic factors were taken into account:

- Number of properties and owners affected. This has direct implications with regard to the number of people which may be adversely affected, as well as for the process required to negotiate compensation;

- The potential impacts on arable land and land under cultivation. Arable land is scarce in the study area and as such more valuable than grazing land. In addition, irrigation networks on cultivated land parcels may be disrupted, and the presence of power line infrastructure (towers) may impact on the movement of farm equipment. Cultivated lands in the study area are also significantly more labour intensive than areas used for grazing, and hence support a significantly larger number of livelihoods. In comparison, impacts on land used for grazing will be minimal. The impact on grazing land will be further reduced by the small width of the servitude (30m) and ability to use the servitude after natural vegetation had recovered from construction phase disturbances
- Dwellings and residential areas should be avoided in as far as possible, mainly as a result of negative visual impacts.

Based on these considerations Alternative 1 (Northern Alternative) is the preferred route, followed by 1A and 2. In this regard Alternative 1 affects fewer properties, is located further away from farmhouses and settlements and impacts on land that is of lower agricultural potential value.

In addition, the three landowners affected by Alternative 1 will also be affected by Alternative 2. However, two of the affected landowners are likely to be more affected by Alternative 2 than 1 as a result of Alternative 2 being located closer to their farmhouses.

4.3 RECOMMENDATIONS

Based on the findings of the SIA it is recommended that the proposed Wind Energy Facility proceed. The measures aimed at enhancing the employment and business opportunities and highlighting the projects contribution to clean, renewable energy should be implemented. In terms of route alignment for the 132kV power line to the Juno Substation, Alternative 1 (Northern Alignment) is the preferred option. However, it is recognised that that Alternative 1A is the preferred botanical alternative. In this regard the social and economic impacts associated with Alternative 1 and 1A are not likely to differ significantly and can be addressed by effective compensation for the landowners affected by Alternative 1A.

The mitigation measure listed in the report to address the potential negative impacts during the construction and operational phase, specifically the loss of natural vegetation and impact on farming activities should also be implemented.

ANNEXURE A

LIST OF INTERVIEWS AND INFORMATION SOURCES

Personal sources

- Adams, Ms. Jaqueline (Community meeting: 03/07/07). Doringbaai multi-purpose resource centre.
- Agenbach, Mr. Samuel (Interviewed: 13/11/07). Rents Nooitgedag Farm from Mr. Nakkie Pienaar.
- Agenbach, Mr. Willem (Telephonic: 06/07/07; Interviewed: 14/11/07). Rents Geelwal Karoo from Namakwa Sands.
- Bezuidenhout, Mr. Cavyn (Community meeting: 02/07/07). Community member: Bitterfontein.
- Boois, Ms. Anna (Community meeting: 03/07/07). Doringbaai soup kitchen.
- Claasens, Mr. George (Interviewed: 04/07/07). Vice-principal: Uitkyk Primêr, Lutzville.
- Cloete, Mr. Austin (Community meeting: 03/07/07). Papendorp resident.
- Cloete, Mr. Andre (Community meeting: 03/07/07). Papendorp CBE tourism.
- Cloete, Mr. Hannes (Telephonic: 18 /08/06). Agri Weskaap Co-op, Vredendal.
- Cloete, Mr. Jacob (Community meeting: 02/07/07). Hardeveld Tourism and Bitterfontein community activist.
- Coetzee, Mr. Louis (Telephonic: 05/07/07). 55-year long recreational fisherman, Bitterfontein.
- Doug and Naide (Informal conversation: 14/11/07). Owners: 22 Nama Karoo B&B, Koekenaap.
- De Waal, Mr. Erie (Interviewed: 13/11/07). Affected landowner: Skilpadvlei Farm.
- De Klerk, Ms. Annatjie (Interviewed: 14/11/07). Adjacent landowner: Kommandokraal Farm.
- De Klerk, Mr. Rikus (Interviewed: 14/11/07). Farms on Kommadokraal.
- Dirkse, Mr. Cornelius (Community meeting: 03/07/07). Papendorp resident.
- Fieks, Insp. (Telephonic: 04/09/06). SAPS Nuwerus.
- Fortuin, Mr. Jakob (Community meeting: 03/07/07). Papendorp resident and local kelp collection subcontractor.
- Fortuin, Mr. Frederick (Interviewed: 03/07/07). Volunteer Ebenhaeser Community worker.
- Fortuin, Mr. William (Interviewed: 03/07/07). Ebenhaeser entrepreneur.
- Gardner, Ms. Melinda (Telephonic: 22/06/07). Hardeveld Tourism (Bitterfontein).
- Goliath, Ms. Alletta (Community meeting: 03/07/07). Papendorp resident.
- Hendriks, Mr. Jan (Community meeting: 02/07/07). Community member: Stofkraal.
- Keuler, Mr. Johan (Telephonic: 05/07/07). Canzi Development Services – co-author Draft West Coast District Spatial Development Framework (2007).
- Kobus and Zelda (Informal conversation: 14/11/07). Resident on site-adjacent Skaapvley Hills (Weskus Mynbou).
- Kok, Mr and Ms Willie and Joey (Interviewed: 03/07/07). Vriende van die Swart Tobie CBO, Strandfontein.
- Koopman, Mr. Nico (Interviewed: 04/07/07). Lutzville Community Policing Forum.
- Kritzinger, Mr. Kobus (Telephonic: 06/07/07). Cape Nature (Vanrhynsdorp).
- Langenhoven, Mr. Martin. (Telephonic: 18/08/06; 21/08/06; 20/06/07). (Then) Head: Planning; West Coast District Municipality, Moorreesburg.
- Lategaan, Mr. C (Telephonic: 05/07/07). Chairman: Gert du Toit se Baai kampkommittee.

- Lorenzo X (Community meeting: 02/07/07). Community member: Bitterfontein.
- Manell, Mr. Sarlon (Interviewed: 03/03/07). Project manager: Ebenhaeser community health (Department of Health).
- Mantame, Mr. Belly (Interviewed: 04/07/07). Chairman: Koekenaap Housing Committee and Marek Trust (community brickmaking project).
- Matus, Mr. (Telephonic: 27/06/07). Principal: Ebenhaeser Primary school.
- Moolman, Capt. (Telephonic: 04/09/06). SAPS Station Commander: Vredendal.
- Otta, Mr. Hans (Community meeting: 02/07/07). Community member: Molsvlei.
- Owies, Mr. Johan (Community meeting: 03/07/07). Doringbaai Old Age Club.
- Owies, Mr. Peter ((Community meeting: 03/07/07). Manager: Doringbaai multi-purpose resource centre.
- Paulsen, Mr. Christo (Interviewed: 02/07/07). Matzikama Tourism.
- Philips, Mr. Lionel (Interviewed: 12/11/07). IDP Manager, Matzikama LM.
- Pienaar, Mr. Nakkie (Telephonic: 15/11/07). Affected landowner: Nooitgedag Farm.
- Prins, Mr. Douw (Interviewed: 02/07/07). Chairman: Landplaas Boerevereniging, Koekenaap.
- Prins, Mr. Gerbrand (Telephonic: 04/09/06). Landplaas Boerevereniging, Koekenaap.
- Saunderson, Ms. Tini (Community meeting: 03/07/07). Papendorp Community health worker (employed by EU) and resident of Papendorp.
- Schreuder, Mr. Piet (Telephonic: 06/07/07). Marine and Coastal Management (Doringbaai).
- Skippers, Sgt. (Telephonic: 04/09/06). SAPS Doringbaai.
- Smith, Ms. Daleen (Community meeting: 02/07/07). Community member: Put se Kloof.
- Smuts, Mr. Riaan (Interviewed: 14/11/07). Owner of Keukenhof and Bloekombos farms, Koekenaap.
- Van der Pool, Capt. (Telephonic: 04/09/06). SAPS Station Commander: Lutzville.
- Van der Westhuizen, Ms. Annelie (Telephonic: 18/08/06; 06/09/06). Head: Planning;
- Van Zyl, Mr. Bertie (Telephonic: 21/09/06). Van Zyl Town Planners and consulting planners for the current revision of the West Coast District Municipality SDF.
- Visser, Mr. Frits (Telephonic: 17/11/07). Adjacent landowner: Elsie Erasmus Kloof farm.
- Visser, Mr. Hansie (Telephonic: 06/07/07; Interviewed: 14/11/07). Affected landowner: Skaapvlei farm.
- Wiggins, Mr. Wynand (Telephonic 07/07/07). Tour operator: Swart Tobie Hiking Trail; local farmer (Groenvlei).
- Witbooi, Councillor Maria (Interviewed: 04/07/07). Councillor for Matzikama Ward 1 (Lutzville and Koekenaap).

Correspondence

- Eskom. E-mail (16/10/07) from Morore Mashao to SIA study team re. socio-economic opportunities associated with wind farm project.

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- Centre for Geographical Research, University of Stellenbosch (2004). *Growth Potential of Towns in the Western Cape*. Prepared for the Department of Environmental Affairs and Development Planning, Western Cape.

- Draft Western Cape Integrated Energy Strategy. Provincial Government Western Cape Department of Environmental Affairs and Development Planning (January 2007);
- du Plessis, Lourens du Plessis, Metrogis (Pty) Ltd (December 2007). Wind Energy Facility in the Western Cape. Visual Impact Assessment Report, prepared for Savannah Environmental (Pty) Ltd.
- Dr Fabricius, Mike (November, 2007). Environmental Impact Assessment for the Proposed Wind Energy Facility and Associated Infrastructure at a Site in the Western Cape Province. , prepared for Savannah Environmental (Pty) Ltd.
- Savannah Environmental (September 2007). *Final Scoping Report: Proposed Wind Energy Facility and Associated Infrastructure Western Cape Province (DEAT Ref. No. 12/12/20/913)*. Prepared for Eskom Holdings.
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (May 2006);
- The West Coast District Municipality Spatial Development Framework (SDF) (2006);
- The Matzikama Integrated Development Plan (IDP) (2005-2006);
- The White Paper on the Energy Policy of the Republic of South Africa, December 1998.

Maps

- Chief Directorate: Surveys and Mapping (2000) *1: 250 000 Calvinia (3118)*.
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- Map Studio (2004) *Road Atlas of South Africa, 19th edition*.

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- www.demarcation.org.za (Census 2001 data).
- www.iss.co.za (Crime statistics 1994 – 2004).

ANNEXURE B

WIND ENERGY FACILITY EIA

Methodology for the Assessment of Potential Impacts

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, where it will be indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of 5 (high) is assigned to local impacts.
- » The **duration**, where it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;
 - * 8 is high (processes are altered to the extent that they temporarily cease); and
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.

- » the **status**, which will be described as either positive, negative or neutral.
- » the *degree* to which the impact can be *reversed*.
- » the *degree* to which the impact may cause *irreplaceable loss of resources*.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is determined by combining the criteria in the following formula:

$S=(E+D+M)P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).