Appendix 8.6

Social Impact Assessment

THE PROPOSED KERRIE FONTEIN AND DARLING WIND FARM

Draft Social Impact Assessment

DEA Ref: 12/12/20/1928

June 2011

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PROJECT INFORMATION

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REPORT TITLE:	Draft Social Impact Assessment Report
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ENVIRONMENTAL AUTHORITY:	The Department of Environmental Affairs (DEA)
DEA REFERENCE NO:	12/12/20/1928
APPLICANT:	Oelsner Group
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DATE:	27 June 2011, revised 12 July 2011

STATEMENT OF INDEPENDENCE

This is to confirm that the following requirements for specialists appointed in terms of the NEMA EIA Regulations to compile a specialist report or undertake a specialised process has been complied with, inter alia, the specialist must –

- *be independent;*
- *have the required expertise, including knowledge of the NEMA, the EIA Regulations and any guidelines that have relevance to the proposed activity and specialist input or study;*
- *perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;*
- *comply with NEMA, the EIA Regulations and all other applicable legislation; and disclose to the applicant, EAP and the Department all material information in the possession of the person that reasonably has or may have the potential of influencing –*

    (i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or

    (ii) *the objectivity of any report, plan or document to be prepared by the person in terms of these Regulations for submission to the competent authority;*

The EEU hereby confirms its independence as a social specialist practitioner in relation to the Kerrie Fontein and Darling Wind Farm and declares that the EEU does not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in terms of the National Environmental Management Act (Act No 107 of 1998) other than fair remuneration for work performed.

EXECUTIVE SUMMARY

The Environmental Evaluation Unit (EEU) has been commissioned by the Oelsner Group to undertake a Social Impact Assessment (SIA) for the Kerrie Fontein and Darling Wind Farm. This Draft SIA has been undertaken to inform the Environmental Impact Assessment (EIA). The aim of the SIA is to identify and assess the potential social impacts, or the "social and cultural consequences to human populations... that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society" (Vanclay, 2002:190).

The Kerrie Fontein and Darling Wind Farm proposes the construction of 14-16 turbines and associated infrastructure adjacent to the existing Darling Demonstration Wind Farm. The site is on the West Coast approximately 85 km north of Cape Town near the Junction of the R27 and the R315. The Swartland Municipality is predominantly a rural area with the economy dominated by the agricultural sector as the major economic contributor and employer. Tourism potential has been recognised although it is not a significant contributor at present. The local population is characterised by low levels of education and skills and low incomes, however unemployment levels are moderate in comparison to national levels. There is an increasing trend of out-migration of white youth for employment elsewhere and in-migration of white mature age groups for retirement or commuting lifestyle; while the black youth are in-migrating to seek employment. It is evident that there is an increasing disparity between the rich and the poor. In terms of infrastructure and services, there is considered to be a good transport network despite a lack of public transport in rural areas. There are relatively high levels of access to energy and piped water, with access to sanitation less widespread. HIV/AIDS and TB are significant health concerns, although not as critical compared to national levels. It is reported that crime linked to alcohol and substance abuse is a major social problem.

The assessment has included a literature review; inputs from the Public Participation Process (PPP); cross-references to the other specialist findings; and primary data collection. The latter was largely collected via a consultation process which involved interviews and stakeholder meetings. Site visits and observation has also contributed to the collection of data. The broad stakeholder groups with an interest in the proposal include neighbouring landowners; estate agents; tourism operators or organisations; recreational groups; government officials; local business and the rural and urban communities. The data collected from the range of stakeholders has been documented in this report as 'social facts' which reflect the major issues and concerns as raised by stakeholders. The issues are described and interpreted through the application of a qualitative methodology. The significance of the impacts has been assessed in accordance with the NEMA EIA Regulations and mitigation measures are provided where relevant.

The assessment of impacts has been based on international examples; experience from a local demonstration project; views of key stakeholders; and professional judgement. The assessment has taken into account that this Project is an extension to an existing facility and is to date the smallest wind farm proposed on the Cape West Coast. The impacts on society and people are assessed as both positive and negative, as described below.

The main benefits of the Project are the employment, training and skills development opportunities, with associated benefits to the economy through the multiplier effect. The significance is assessed as *low* for all phases of the Project, while during construction the implementation of a local employment and procurement policy could increase these benefits to *low-medium*.

During construction, disruption to neighbouring farms as a result of additional farm workers, introduction of crime and other social ills from new workers and general construction damage and disruption have all been assessed to have a *low* negative impact. This can be reduced to a *negligible* impact in all cases through the implementation of a comprehensive employee induction programme; measures to control dust and noise; a complaints procedure; and rehabilitation. These best practice measures are typically covered in more detail in the CEMP. The VIA has indicated that the visual impact during the construction phase would be *medium* (substation and roads) to *high-medium* (turbines), and these impacts would continue to the operational phase. The visual impact of the turbines cannot be mitigated through screening, however, the substation could be screened by berms and access roads could be blended with contours which would reduce those impacts to *medium-low*. The social impacts arising from decommissioning are similar and have the same significance as those predicted during construction.

The social benefits during operation have been discussed above, however, there are a number of potential negative impacts. Impacts on property prices and community cohesion have both been assessed as *neutral* and therefore no mitigation is proposed. Impacts on tourism are assessed to be *negative low* significance and could be mitigated through site tours and publicity, and will remain *low*. The impact on noise has been assessed as having a *negative medium* significance, which could be mitigated through noise monitoring to reduce to *low* significance. The impact on road safety has been assessed as *low* and site tours could assist in reducing driver distraction. The VIA assessed that the operational visual impacts would remain the same during the operational phase, see above.

The cumulative impacts on tourism are negative and assessed as *medium-high*. The cumulative impacts in terms of renewable energy generation are assessed as *medium-high* positive, similarly the cumulative impacts on employment and the economy are *medium-high* positive. No mitigation is proposed.

In terms of social impacts, the assessment has found no difference in significance of impacts arising from both Option 1 and Option 2. While the majority of stakeholders did express a preference for Option 1 as it is considered less disruptive in terms of landtake and number of turbines. The No-go option would be of benefit to the social environment in that it would maintain the status quo and not incur disruption, noise, visual, road safety, and tourism impacts. The impact is therefore *neutral*. However, there would be an opportunity cost in terms of contributing to the renewable energy targets for the Western Cape Province and nationally and also terms of job creation, skills development and indirect economic benefits. This is assessed to be a *low* negative impact because of the scale of the Project and the fairly insignificant permanent employment opportunities.

The Kerrie Fontein and Darling Wind Farm is to date the smallest wind farm proposed on the Cape West Coast and the extension to an existing facility, the Darling National Demonstration Project, which has not revealed any material social impacts to date. In terms of potential social impacts arising from the Project, the SIA has found that there is no reason for the competent authority to reject the application on social grounds.

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ACRONYMS

ABBREVIATION	TERM
ARV	Antiretroviral
DEA	Department of Environmental Affairs (formerly DEAT)
DEAT	Department of Environmental Affairs and Tourism
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EEU	Environmental Evaluation Unit
EMP	Environmental Management Programme
GN	Government Notice
LED	Local Economic Development
NIA	Noise Impact Assessment
PPP	Public Participation Process
IAIA	International Association of Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
NEMA	National Environmental Management Act (Act No. 107 of 1998)
SIA	Social Impact Assessment
VIA	Visual Impact Assessment

1 INTRODUCTION

1.1 INTRODUCTION

The Environmental Evaluation Unit (EEU), UCT, was commissioned by the Oelsner Group to undertake an Environmental Impact Assessment (EIA) for the proposed Kerrie Fontein and Darling Wind Farm (DEA Ref: 12/12/20/1928). As part of the specialist studies it was identified that a Social Impact Assessment (SIA) was required. A Social Scoping Study was submitted to Department of Environmental Affairs (DEA) to accompany the Scoping Report and the methodology and approach therein was accepted by DEA in March 2011. The SIA has followed this approach to assess the significance of potential social impacts and has included recommendations to reduce negative impacts in order to enhance the benefits of the Project.

1.2 SOCIAL IMPACT ASSESSMENT

The National Environmental Management Act (NEMA) (Act 107 of 1998) sets out a number of principles which underpin environmental management in South Africa. A number of these principles relate to the social dimension of sustainable development and public process requirements such as transparency, accountability, democracy and environmental justice. The following principle outlines the basis for a Social Impact Assessment:

> *(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*

More specifically, the social, economic and environmental impacts of activities must be considered and assessed. In this context, social impacts have been defined by Vanclay (2002: 190) as:

> *Social impacts includes all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society.*

1.3 PROJECT OVERVIEW

The Kerrie Fontein and Darling Wind Farm (referred to as 'the Project' hereafter) proposes the construction of 14-16 turbines and associated infrastructure adjacent to the existing Darling Demonstration Wind Farm. The site is on the West Coast approximately 85km north of Cape Town near the Junction of the R27 and the R315. See Figure 1.1.

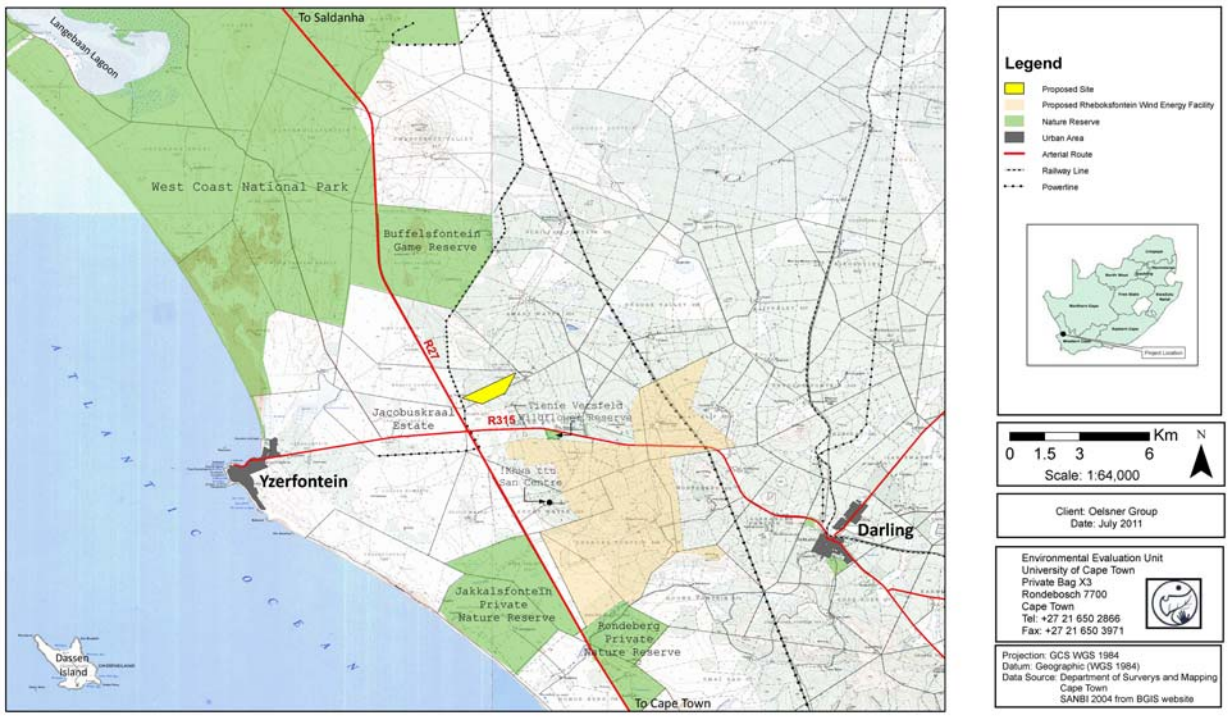

Figure 1.1: Locality Map

The turbines have the capacity to generate a total of 20.8-21 MW for contribution to the national grid. The infrastructure which will form part of this Project is as follows:

Slangkop Farm (3/552) also known as Windhoek Farm:

- 5-6 Nordex N60 turbines
- Underground cabling linking turbines to (existing) substation
- Internal roads - stabilised dirt tracks to access each turbine

Kerrie Fontein Farm (0/555):

- 9-10 Nordex N60 turbines
- New 66/11kV substation
- Underground cabling linking turbines to substation
- Access to site off the R27
- Internal roads – stabilised dirt tracks to access each turbine

The Project is planned for construction commencing end-2011, and is expected to take approximately nine months. Commissioning will require one month and operation will commence thereafter from approximately end-2012. The Project has an estimated lifespan of 25 years.

There are two alternatives technologies and site layouts which have been considered over and above the No-Go option, see Figure 1.2 and Figure 1.3 overleaf. Table 1.1 thereafter sets out the main differences:

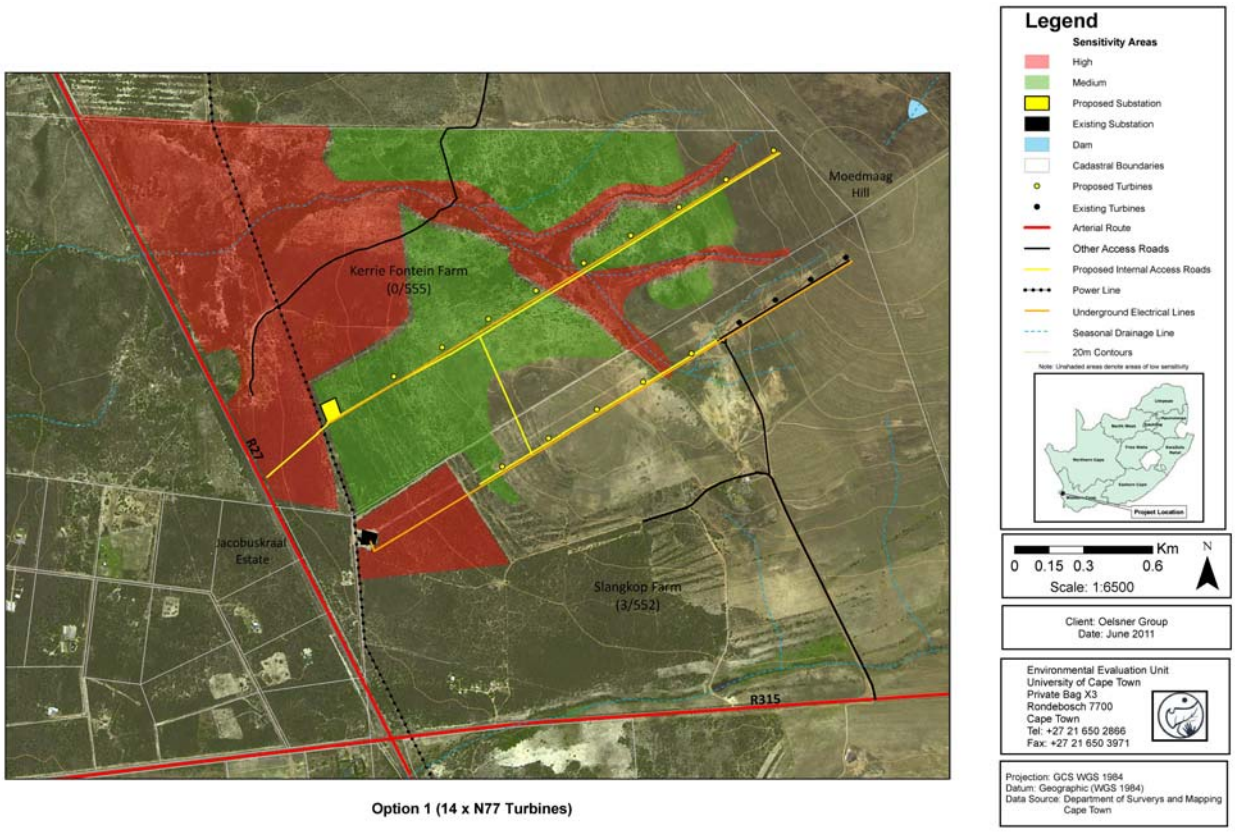

Figure 1.2: Option 1 Site Layout

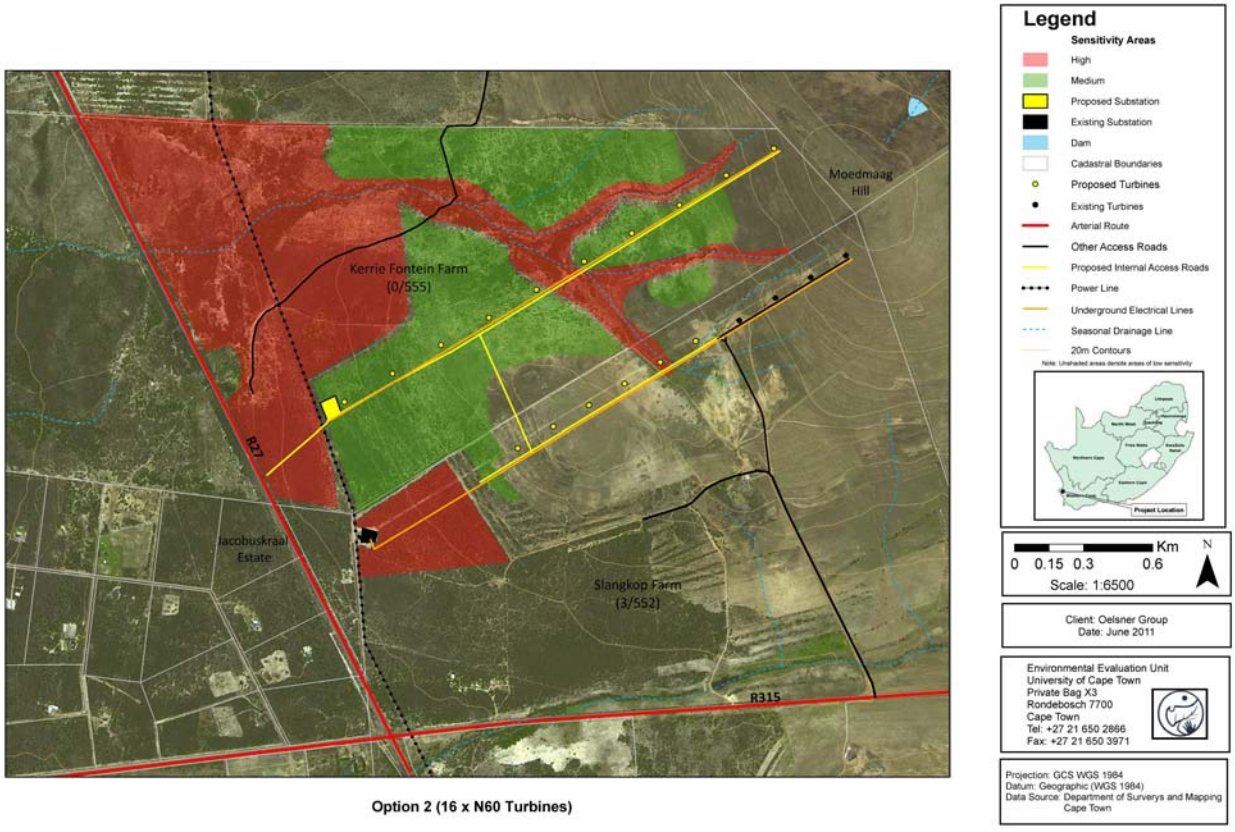

Figure 1.3: Option 2 Site Layout

Table 1.1: Alternative Technology for the proposed Project

	Alternative 1	**Alternative 2**
Type of Turbine	N77	N60
Design configuration	Low and moderate wind conditions	High wind conditions
Total No.Turbines	14	16
No. Turbines on Slangkop (3/552)	5	6
No. Turbines on Kerrie Fontein (0/555)	9	10
Capacity per Turbine	1.5 MW	1.3 MW
Total Capacity	21 MW	20.8 MW
Rotor speed	9.9/17.3 rpm	12.8 /19.2 rpm
Rotor diameter	77 m	60 m
Swept area	4,657 m2	2,828 m2
Blade length	±37.5 m	29 m
Hub height	70 m	60 m

The 'Darling Education, Training and Visitor Centre' is a development proposed by the Oelsner Group on Windhoek Farm. The Centre is subject to a separate environmental authorisation process and an amendment application is pending a decision from DEA&DP. The Kerrie Fontein and Darling Wind Farm Draft EIR (EEU, 2011) provides more detail on the nature of the facility. Should this Centre be developed, it would have significant social benefits such as employment, training and skills development and education. Although these benefits cannot be attributed to the Kerrie Fontein and Darling Wind Farm development, the development of the Centre is dependent on the development of the Wind Farm. There are clear linkages between the two proposals and many stakeholders have associated the two developments.

2 LEGISLATION AND GUIDELINES

2.1.1 The Constitution, Act 108 of 1996

The Constitution of the Republic of South Africa (Act 108 of 1996) has been adopted as the supreme law of the country and forms the foundations for a democratic society in which fundamental human rights are protected. In terms of the environment, Chapter 2 Section 24 states that everyone has a right:

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

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

i. prevent pollution and ecological degradation;

ii. promote conservation; and

iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

A SIA is a prerequisite for sustainable development as it assesses the impact of the development on the well-being of people and safeguards their future well-being.

2.1.2 The National Environmental Management Act 107 of 1998 (NEMA)

NEMA is the legislation setting out the framework for environmental management in South Africa. The Act promotes cooperative environmental governance and establishes principles for decision-making on matters affecting the environment. An overarching principle in Chapter 1 emphasises that development must be socially, environmentally and economically sustainable.

The EIA Regulations (Government Notice (GN) R385, GN R386 and GN R387 of April 2006) defines an environmental impact assessment as a '*means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application*'. The SIA aims to fulfil these requirements by providing all social information relevant to the consideration of the Project.

2.1.3 The National Energy Act (2008)

The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors, as well as matters relating to renewable energy.

The Act provides the legal framework which supports the development of renewable energy facilities for the greater environmental and social good.

2.2 POLICY AND PLANNING

2.2.1 Western Cape Provincial Spatial Development Plan (2009)

The Provincial Spatial Development Plan (PSDF) is a provincial wide structure plan that guides the spatial development of the Western Cape addressing challenges such as "urban sprawl, environmental recklessness and inequality". The PSDF provides for directives and guidelines to aid decision-makers in the land use planning and environmental sector to consider whether or not the proposed development would be desirable in terms of economic, social and ecological sustainability. The Plan sets out a number of objectives and action plans.

Relevance to the Project

Objective 5 aims to conserve and strengthen the 'sense of place' of important natural, cultural and productive landscapes, artefacts and buildings and the environmental sustainability. This is of relevance to the Project as the landscape is valued for its rural / natural characteristics and visual intrusion of the facility may impact this 'sense of place'. This is addressed in the Visual Impact Assessment (Oberholzer and Lawson, 2011).

Objective 9 sets out to minimise the consumption of scarce environmental resources, particularly water, fuel, building materials, mineral resources, electricity and land. Although the detail design of the Project is not yet available, considerations have been set out in the EIR and EMP to reduce the impact on environmental resources.

2.2.2 West Coast District Spatial Development Framework (WCDM-SDF) (2007)

The overarching aim of the West Coast District Spatial Development Framework (WCDM-SDF) is to provide a spatial framework within which the sustainable development of the district and its specific resources can be carried out. The Framework is intended to be broad-scaled and centred on principles and issues significant to the district as a whole. The principle focus of the SDF is on spatial elements. The WCDM-SDF consists of 6 main objectives namely: aligning future settlement and investment with places of economic and resource potential- also taking into account efficiency at the regional level; facilitating job creation; correction of existing negative developmental legacies of the past; conservation and strengthening of a 'sense of place' for all; and ensuring the wise use of existing resources and conservation of biodiversity resources.

Relevance to the Project

The Saldanha to Cape Town corridor, namely the West Coast Road, has been identified as a development corridor with important biodiversity areas. It has also been recognised that there are areas of heritage / palaeontological and tourism importance which need to be accounted for in strategic planning. Particular issues identified which are relevant to this Project are as follows:

- Inappropriate location, planning and design of developments threaten tourism
- There is a need to harness wind energy
- The fragmentation of agricultural land, e.g. smallholdings and 'rural living' has negative effects
- Integration of biodiversity aspects with planning and development exercises

- Inadequate conservation practices, e.g. fire management, harvesting, alien invasion

Some of these are considered within the SIA, whilst others have been addressed in the other specialist studies, the EIR or the EMP.

2.2.3 West Coast District Municipality Integrated Development Plan (2010-2014)

The integrated planning approach for the West Coast District is documented in the IDP which focuses on bulk service delivery as well as major and future developments in the region and the associated potential to alleviate poverty and enhance economic growth. The vision of the Municipality is based on the promotion of social and economic development whilst also facilitating a safe and healthy environment.

Relevance to the Project

The IDP recognises national targets for renewable energy and indicates the possibility of a wind facility near Darling. The IDP therefore supports the Project in principle. At a more local level, the !Khwa ttu Centre is identified as a heritage tourism node which is in proximity to the Project.

2.2.4 Swartland Municipality Integrated Development Plan (IDP) (2007-2011)

The main local planning document is the Swartland Municipality Integrated Development Plan (IDP) (2007-2011) which coordinates and guides development in the Municipality. The IDP sets out the Mission of the Municipality:

> *Swartland Municipality strives to ensure social and economic stability and growth through the sustainable delivery of all primary and secondary services to all our interested parties.*

The Swartland Municipality IDP is the fundamental strategic plan for the Municipality through which development planning is managed. The IDP takes into account the issues and problems unique to the area and proposes appropriate strategies and projects to address these in a manner which supports long term sustainable development. The long term vision supports diversification of the economy to redirect the focus on secondary and tertiary industries, in order to reduce the percentage of people active in elementary occupations and to increase the average income. This would also reduce the reliance on agriculture as the dominant sector. The town of Darling has been recognised as an increasingly popular tourist and retirement village in a rural setting and co-operation with the tourism assets of Yzerfontein is recommended. The R27 is also identified as a regional transport corridor.

Relevance to the Project

The IDP does not address the emerging industry of renewable energy. However, the IDP documents the key social and economic characteristics and aspirations for the Municipal area. The proposed Project lies between two recognised tourism nodes, Darling and Yzerfontein, and at the intersection of the R27 (a regional transport corridor) and the R315. It is therefore important that the Project does not detract from the vision of the Plan to develop this tourism focus. Although not directly

relevant to this Project but rather relevant to the associated 'Darling Education, Training and Visitor Centre' proposed on the Windhoek farm, there exists the potential to assist with job creation and add to the tourism offer which accords with the vision for the area.

2.2.5 Other important Policy and Plans

Other important policy and planning documents which frame the study include the following

- The White Paper on Renewable Energy for South Africa (November 2003)
- The White Paper on Sustainable Energy for the Western Cape (2008)
- The Western Cape Integrated Energy Strategy (Draft, January 2007)

As the Project would contribute 20.8-21 MW of renewable energy to provincial and national targets set out and supported within these energy policies, it is considered that the Project fits within the energy policy framework.

- West Coast District Municipality Regional Economic Development Strategy (2007)
- West Coast District Municipality Poverty Alleviation Strategy (2006)
- West Coast Tourism Strategy (2010-2015)
- Swartland Municipality Local Economic Development Strategy (2007)

These strategic policies at the district and local level have similar objectives for the respective areas, namely to accelerate economic growth, create jobs, uplift communities and alleviate poverty. The Project is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor. The Tourism Strategy specifically acknowledges the role of tourism in driving economic growth and recognises the natural and cultural resources on the West Coast as a tourism asset. This is considered in the assessment of impacts in Section 7.3.10 and 7.3.11.

2.3 GUIDELINES

There are a number of guidelines which have been applied where necessary in the Scoping and EIA Phases of the Project.

2.3.1 International

The International Association of Impact assessment (IAIA) Social Impact Assessment International Principles (Vanclay, 2003) provides the framework for the assessment.

Scoping guidelines on the Environmental Impact Assessment (EIA) of projects: Windfarms (on-shore and offshore) published by the Environment Agency, UK (2002) were also considered.

2.3.2 National

The former Department of Environment and Tourism (DEAT) published a series of guidance documents to assist roleplayers within the environmental authorisation process set out in the EIA Regulations (Chapter 5 of NEMA, 2006). This is known as the Integrated Environmental Management Guidelines Series and these guidelines have been followed where relevant.

2.3.3 Provincial

The Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) has developed a set of guidelines which should be taken into account when undertaking an EIA in line with NEMA. The Environmental Impact Assessment Guideline and Information Document Series (August 2010) have been referred to where relevant.

There are also a number of guidelines published by DEA&DP which particularly relate to specialists involved in EIAs. The relevant guidelines adhered to here include the following:

- Guideline for Determining the Scope of Specialist Involvement in EIA Processes
- Guideline for the Review of Specialist Input into the EIA Process
- Guideline for Involving Economists in EIA Processes
- Guideline for Involving Social Assessment Specialists in EIA Processes

2.3.4 Wind Energy

The Provincial Government of the Western Cape has commissioned a 'Regional Strategic Environmental Assessment of sites suitable for wind farms' which was expected to be completed in October 2010, however it had not been published at the time of writing this report. Previous work includes a 'Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape: Towards a Regional Methodology for Wind Energy Site Selection' (Provincial Government of the Western Cape, 2006). This initiative focused on the West Coast in particular. The principles of the 2006 report have framed the Visual Impact Assessment for the Project (Oberholzer and Lawson, 2011) and are therefore also relevant to the social impacts and issues.

3 METHODOLOGY AND APPROACH

3.1 INTRODUCTION

The SIA was undertaken in line with the Scoping and EIA process outlined in NEMA and therefore comprised two reporting phases. These are set out in Section 3.2 below.

3.2 SCOPE OF STUDY

3.2.1 Scoping Phase

The scoping phase was largely desk-based drawing on a variety of policies, plans, statistics, reports, case studies, and guidelines. The process involved the compilation of the socio-economic baseline; identification of potential issues and impacts; as well as setting out of the plan of study, or the methodology for the impact assessment phase. The aim of this phase was to generate an understanding of the socio-economic context and potential receptor communities in the study area, and to propose an approach to address the identified issues.

3.2.2 Impact Assessment Phase

The SIA phase involved further desk-based research through an international literature review as well as primary research based on interviews with key stakeholders. Data collection is detailed in Section 3.3 below.

The spatial scope was considered and this included definition of the area of influence which was linked to the context of the issues and impacts. For the purpose of describing the socio-economic profile, the Swartland Municipality, and Ward 5 where data is available, were used as the geographical units.

In terms of temporal scope, the duration of construction and the operational design life of the proposed Project were considered. Impacts during each project stage were assessed, namely construction, operation and decommissioning phases.

The methodology in Section 3.5 applied the environmental impact assessment criteria to establish the significance of environmental impacts. Drawing on the data collected, both primary and secondary, professional judgement was applied to undertake the social assessment.

3.3 DATA COLLECTION

To collect data in support of the impact assessment, the following activities have been undertaken:

3.3.1 Darling National Demonstration Wind Farm

Documentation produced for the original Darling National Demonstration Wind Farm has been reviewed and includes:

- Darling National Demonstration Wind Farm, Final Scoping Report, EEU, October 2004
- Darling Wind Farm Environmental Impact Assessment, Socio-economic Report, EEU, December 2001.

3.3.2 Review of Socio-economic and Planning Documents and Data

In order to document the socio-economic context of the study area within the Swartland Municipality and the West Coast District Municipality, a number of important documents or sources of information were reviewed and referenced and used to inform this SIA:

- 2001 Census
- Swartland Municipality, Ward 5, Ward Plan for the Financial Year 2010/11, May 2010
- Swartland Municipality Integrated Development Plan (IDP), May 2007
- Swartland Municipality Local Economic Development (LED) Strategy, May 2007
- Swartland Municipality Regional Economic Profile, August 2005
- West Coast District Poverty Alleviation Strategy, December 2006

3.3.3 Literature Review

A literature review has been undertaken and focuses on best practice derived from case studies, or wind energy studies and was sourced from academic journals and studies available on the internet or the media.

Additional documents such as planning documents which substantiate the baseline profile or provide context to the Project have been referred to where relevant. This provided a conceptual framework for designing the empirical data collection and interpretation.

3.3.4 Public Participation Process

The official Public Participation Process (PPP) undertaken by the EEU as part of the EIA included various activities such as the publicly advertised Open Day (23 June 2010) and landowners focus group meeting (23 May 2011) with written submissions and responses throughout the Scoping Process. These played an important part of the EIA process. The communications during the PPP and written submission of comments have been reviewed. Issues raised through this process have been incorporated into the SIA where relevant. Where possible, the PPP and SIA processes have been integrated.

3.3.5 Reference to other Specialist Studies

The other technical specialist studies undertaken for the Scoping and EIA of the Kerrie Fontein and Darling Wind Farm have fed into the SIA where there have been cross-cutting issues. These are predominantly the visual and noise studies.

3.3.6 In-depth interviews with key stakeholders

Interviews were undertaken for the SIA to collect information from representatives of key stakeholder groups. These included individuals both directly and indirectly associated with the Project. The interviews were mostly undertaken face-to-face and where not possible, telephonically. These interviews formed the basis of the primary data collection and assisted with the gathering of baseline information as well as establishing the stakeholder's perceptions, and interests and concerns. The neighbouring landowners were consulted as part of the EIA while the other groups of stakeholders were consulted as part of the SIA. The individuals are referenced in Section 9 (References):

Neighbouring landowners (see Appendix A)

- C. Basson, Owner of Swartwater Farm (454/2)
- J.F. Kirsten, Owner of Grootberg Farm (1199)
- E. Loedolff, Owner of Denneburg Farm (553/3) and Suurfontein Farm
- A. Nell, Owner of Klein Windhoek
- A. Bosch, Owner of Slangkop (552/0)
- H. Louw, Owner of Elsana
- R. Richards, Owner of Tumbleweed (Jacobuskraal (5/554))
- J. Pocock, Chairman of Jacobuskraal Homeowners Association

Tourism operators / local businesses in the area

- M. Daiber, !Khwa ttu San Education and Culture Centre
- B. Gent, West Coast Farm Stall

Local and district government

- D. Kotze, D. 2011. West Coast District Municipality – Planning
- D. Cornelius, D and H. van Rooyen, West Coast District Municipality – Tourism
- M. Ashford, M. Swartland Municipality – Tourism
- Cleophas, H. 2011. Swartland Municipality - Ward 5 Councillor
- H. Jansie, Darling Tourism
- A. Van Ellewee, W. Badenhorst, and B. Geel, Yzerfontein Tourism

Recreational groups / community representatives

- J. Fevrier, Capensis Seniors Club, Darling
- A. van Litsenborgh, Yzerfontein Urban Conservancy
- G. Adams, Darling Working Group
- A. Thoma, (Previous) Darling Residents Association

Estate agents in Darling and Yzerfontein

- Whalescape Properties, Yzerfontein
- Yzerfontein Seaside Estates (Pty) Ltd, Yzerfontein
- DPG Property Group, Darling
- Chas Everitt, Yzerfontein

3.3.7 Site Visits and Observation

Site visits were undertaken on 18 May, 15 June and 27 June 2010 as part of the EIA (including visit to Darling and Yzerfontein and interaction with other specialists). Observations were also made whilst on site or within the wider study area and these have supplemented the other findings.

3.4 IDENTIFICATION AND DESCRIPTION OF ISSUES

The data collected from the range of stakeholders has been documented as 'social facts' which reflect the critical issues and concerns as raised by stakeholders. The issues have been described and interpreted through the application of a qualitative methodology. See Section 6 (Social Findings) below.

3.5 ASSESSMENT OF SIGNIFICANCE OF ISSUES

According to the NEMA Regulations, 'significant impact means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment'.

In line with the Regulations, and based on the qualitative findings of the activities undertaken in Section 3.3, each potentially significant impact has been assessed with regard to:

- the nature of the impact (including the status which may be positive, negative or neutral)
- the extent and duration of the impact
- the probability of the impact occurring
- 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
- cumulative impacts

To be consistent with the EIA, the core indicators of significance have been identified as extent, duration, intensity and probability. Based on professional judgement, these are collectively used to assign a level of significance. The reversibility and degree of confidence are other criteria which can be considered to affect the significance rating if seen as relevant by the specialist, the latter potentially requiring application of the precautionary principle. In addition, the opinions of the I&APs have been taken into account and considered when applying a significance rating. Ratings for each criterion have been defined below.

To avoid or minimise impacts, each of the negative impacts identified should where possible include details of the potential mitigation measures and the degree to which it would influence the significance and status of each impact. Similarly measures to enhance any positive impacts should also be proposed.

3.5.1 Nature and Status

The 'nature' of the impact describes what is being affected and how. The 'status' is based on whether the impact is positive, negative or neutral.

3.5.2 Extent

'Extent' defines the spatial or geographical scale of the impact.

Table 3.1: Rating of Extent

Rating	Descriptor
Local	Specified by specialist studies, limited to site and/or immediate surrounds
District	West Coast District
Provincial	Western Cape
National	South Africa
International	Outside South Africa

3.5.3 Duration

'Duration' gives the temporal scale of the impact.

Table 3.2: Rating of Duration

Rating	Descriptor
Temporary	0-1
Short term	1-5 years
Medium term	5-15 years
Long term	Where the impact will cease after the operational life of the activity either because of natural process or by human intervention
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered as transient

3.5.4 Intensity

'Intensity' defines whether the impact is destructive or benign, in other words the level of impact on the environment.

Table 3.3: Rating of Intensity

Rating	Descriptor
Low	Where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.
Medium	Where the affected environment is altered in terms of natural, cultural and social functions and processes continue albeit in a modified way.
High	Where natural, cultural or social functions or processes are altered to the extent that they will temporarily or permanently cease.

3.5.5 Probability

The 'probability' describes the likelihood of the impact actually occurring.

Table 3.4: Rating of Probability

Rating	Descriptor
Improbable	Where the possibility of the impact materialising is very low either because of design or historic experience.
Probable	Where there is a distinct possibility that the impact will occur.
Highly Probable	Where it is most likely that the impact will occur.
Definite	Where the impact will occur regardless of any prevention measures.

3.5.6 Effect of Significance on Decision-makings

Table 3.5 below will determine whether the significance rating will have an effect on decision-making or not.

Table 3.5: Effect of Significance on Decision-Making

Rating	Effect on decision-making
Low	Where it will not have an influence on the decision.
Medium	Where it should have an influence on the decision unless it is mitigated.
High	Where it would influence the decision regardless of any possible mitigation.

3.5.7 Cumulative Impact

The EIA Regulations provides the following definition:

'"cumulative impact", in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area'.

There is the potential for cumulative impact as the wind energy industry becomes more established in South Africa and further sites are identified and developed, particularly in the regions which have favourable conditions for wind energy generation, such as the West Coast. As the industry is only now emerging, no guidance exists which directly relates to the strategic growth of the wind power industry. However, the Provincial Government of the Western Cape has developed a 'Strategic Initiative to Introduce Commercial Land Based Energy Development to the Western Cape' (May, 2006) in order to provide a regional methodology for wind energy site selection. The guidelines recognised the Darling Wind Farm as an existing wind farm and it was therefore taken as a point of departure, from which a minimum buffer of 30 km apart was proposed, and up to and beyond a preferred margin of 50 km for large wind farms. However, other emerging proposals have not been aligned with the hypothetical location of preferred sites as is evident in Figure 3.1 overleaf. The assessment of cumulative impacts has been based on this Figure which sets out the most current information of proposed locations for renewable energy facilities in the District.

3.6 LIMITATIONS AND ASSUMPTIONS

The 2001 Census is the most current source of official statistics and this been used for generating a baseline profile of the study area. It should be noted that this data may now be out of date to some degree and may no longer accurately reflect the current socio-economic profile.

It is assumed that a feasibility study, or business case, has been produced by the Applicant which has assessed the need for the Project as well as the financial sustainability. This SIA has therefore not evaluated these aspects of the Project.

It is assumed that the Project will be located on the Kerrie Fontein (0/555) and Slangkop (3/552) Farms, no alternatives were assessed as the Project is the expansion of an existing facility. This decision emerged from discussions with DEA&DP (Pre-application meeting, Feb 2010).

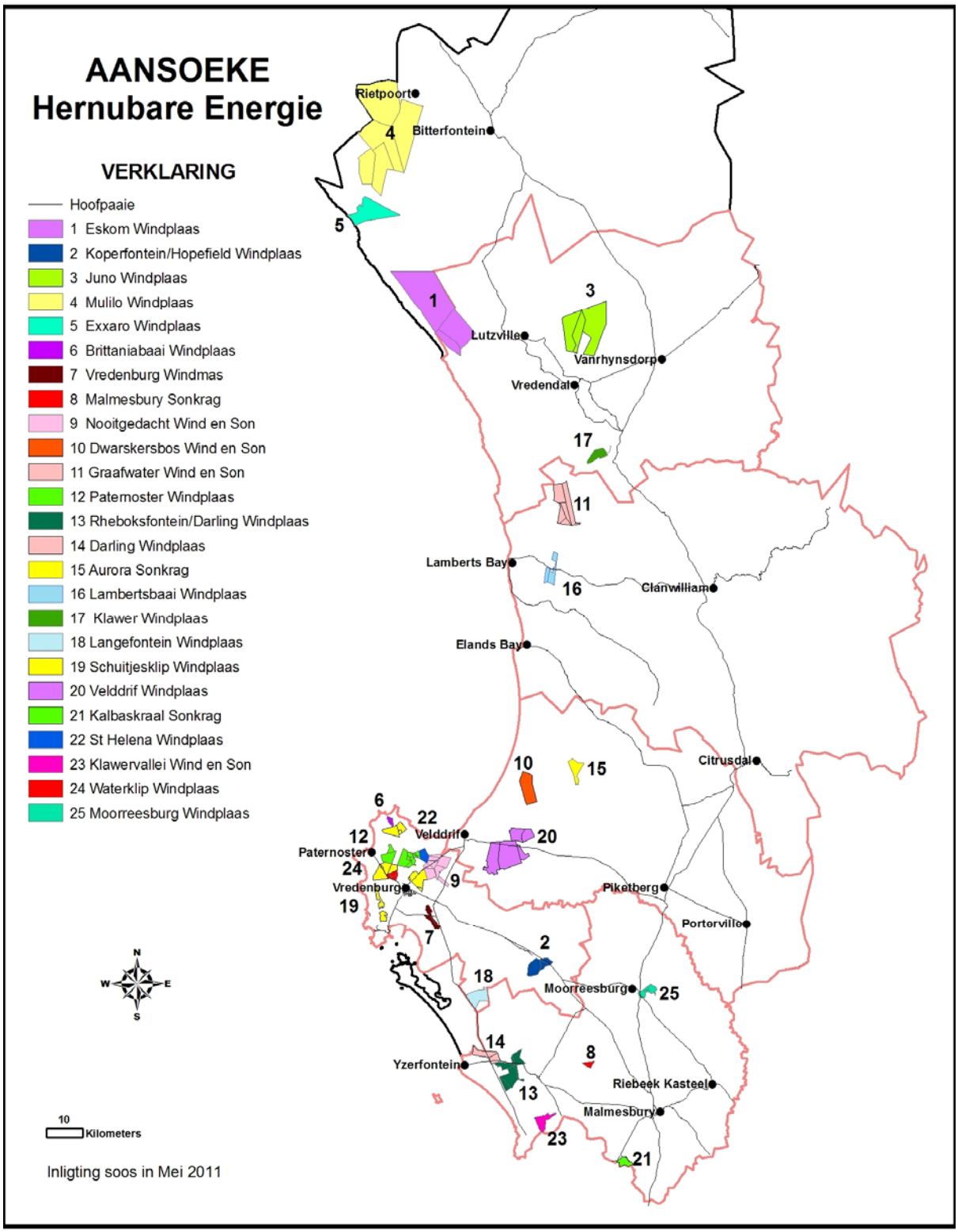

Figure 3.1: Renewable Energy Facility Proposals in the West Coast District Municipality, May 2011 (Source: WCDM)

4 BASELINE ENVIRONMENTAL CONDITIONS

4.1 GEOGRAPHICAL AND ADMINISTRATIVE CONTEXT

The Project is located in the Swartland Municipality, in the West Coast District of the Western Cape. It is located within Ward 5 of the Municipality which includes the towns of Darling (the portion west of Pastorie, Cole, Donkin and Smith Streets), Yzerfontein, Jakkalsfontein, Grottobaai, Ganzekraal, as well as Dassen Island and the rural area surrounding the towns. The site is located at the junctions of the R27 and the R315 between Yzerfontein and Darling, and is approximately 85km north of Cape Town.

4.2 OVERVIEW OF THE AREA

The Swartland Municipality is predominantly a rural area with the economy dominated by the agricultural sector as the key contributor and employer. However, Malmesbury as the administrative centre is the focus of non-agricultural economic activity in the Municipality. The economy is fairly diversified with other key contributors including the manufacturing, trade and services sectors. The Swartland economy is both the fastest growing economy in the West Coast District as well as the main employment area. It is the second highest contributor in terms of GDP (second to Saldanha) (Swartland Municipality, 2007b).

Agricultural activities in the Swartland are diverse and dominated by wheat, grapes, sheep, beef and dairy, with olive, canola, and legume farming to a smaller degree. It is on this basis that the agricultural sector is believed to be stable and sustainable although individual sectors, such as wheat can be volatile (Swartland Municipality, 2007b). Manufacturing, as the second largest sector, is based on a number of light industries and manufacturers of agricultural based products found in the area. The category of economic activity classified as trade and services, is related to other sectors such as manufacturing and residential development in the Municipality. Although tourism does not play a major role, the Local Economic Development Strategy has identified the niche potential of tourism in the coastal zone and farm tourism (Swartland Municipality, 2007b). A number of attributes of the Swartland will allow for growth in this sector:

- Its scenic beauty
- Its rural qualities that offer opportunities for relaxation
- Its many tourist attractions (such as game farms, 4x4 trails, bike trails, olive festival, and Evita se Perron)
- The advancement of its reputation as an area with good wines and wine farms
- Its coastal beauty along Yzerfontein
- Attractive places of accommodation
- Its cultural and historical towns such as Darling, Koringberg and Riebeek Kasteel

In general, the population of the Swartland is less formally schooled than both the District and the

Province respectively and this is partly attributed to the high rates of in-migration which are mostly unskilled Africans seeking employment (Swartland Municipality, 2005). As of 2005, a mismatch between labour demand - in terms of both numbers of jobs and skills – and labour supply was identified as a potential issue with regards to future trends in the Swartland. The implications of this include a reduced marketability of the labour force both locally and to neighbouring areas and a reduced likelihood of entrepreneurship (Swartland Municipality, 2005). The trend of in-migration of unskilled labour would further exacerbate these problems, driving local employers to seek skills from outside the Swartland.

The white population is characterised by out-migration of younger age groups and in-migration of 'older professionals, less intensively economically engaged and retired people' (Swartland Municipality, 2005:30). This further dictates the skill set within the local labour force. Yzerfontein in particular has become a destination for such older, retired residents.

The towns of Darling and Yzerfontein are the closest settlements to the Project. Darling was founded in 1853 and named after Charles Henry Darling, a Governor of the Cape. The town's main function has historically been as an agricultural service centre, based on the surrounding rural activities including wheat, grape, potato and dairy farming. However, other activities have since led to the diversification of the town's economy. Tourism is a growing sector, and is based on attractions such as the wildflowers, music and the arts, wine routes, produce and crafts and ecotourism. At a broader scale, Darling is located within the Cape West Coast Biosphere - the coastal lowland plains of the West Coast - recognised for its environmental integrity, character, and protection value. Darling's strategic location on the West Coast corridor, within easy reach of Cape Town has also contributed to the recent growth in tourism. As of 2001, the population of Darling was 7,544. At present, the population comprises a number of commuters as well as retirees which is a growing trend (Swartland Municipality, 2007b). The Swartland IDP recognises that the availability of land for industries related to light agricultural services presents a further opportunity to strengthen the town's growth potential (Swartland Municipality, 2007a). However, this could jeopardise the town's unique rural character.

The town of Yzerfontein has always been associated with recreation and was originally a farm popular with local farmers as a holiday location. In 1937 Abraham Katz formally established the town which became part of Yzerfontein Seaside Estates ('Yzerfontein Info' Website, 9 June 2010). With the construction of the R27, improved access fuelled further growth of the town. Yzerfontein was also historically linked with maritime activities including whaling, fishing, abalone harvesting and crayfishing. Despite limited harbour facilities, at present the town is the main line fishing harbour on the West Coast. Snoek is the dominant catch and the associated fish market is a key source of economic activity. Currently the fishing industry is playing a smaller role in the local economy characterised by the reduction in commercial vessel usage and the increase in recreational boating (Swartland, 2007b). In 2001, Yzerfontein had a population of 1,200 and has attracted holidaymakers, tourists and retirees with permanent residents accounting for 60% of the population (Swartland Municipality, 2007a and 2007b). Tourism is on the increase and related business activities include restaurants, cafes and guest houses. The LEDS (Swartland Municipality, 2007b) attributes the tourism potential to the famous scenic unspoilt beaches, proximity to Dassen Island, flora and fauna, beautiful views and whale watching. The challenge is to balance the growth in tourism alongside opportunities relating to fishing.

4.3 STATISTICAL PROFILE OF THE STUDY AREA

The statistical profile documents the demography, the education levels, employment levels and labour force, housing, transport, services, health and crime to provide an overview of the socio-economic context of the study area. Census 2001 is the most recent source of official secondary data available and this has been supplemented with other data where available.

4.3.1 Demography

The Swartland Municipality accounts for most of the total population in the West Coast District (25.5%), followed by the Saldanha Bay local Municipality (24.9%) and Matzikama Local Municipality (17.8%) (West Coast District Municipality, 2006).

As set out in Table 4.1 below, the 2010 projected population in the Swartland Municipality is 85,500 people, with approximately 6,500 people residing in Ward 5 which is the ward in which the Project is located. The Swartland Municipality is predominantly comprised of coloured people (72%), which is slightly lower in Ward 5 at 67.3%. The Municipality has equal representation of both black African and white groups which each represent 14% each of the population. Ward 5 has slightly lower levels of black Africans at 11% and a higher population of whites at 21.1%. There is only a very small representation of Indian or Asian populations within the Municipality and the Ward.

Table 4.1: 2010 Projected Population - Race

Ethnicity	Ward 5	Swartland Municipality
Black African	11%	14%
Coloured	67.3%	72%
Indian or Asian	0.6%	(< 1%)
White	21.1%	14%
Total	**6,459**	**85,500**

Source: Swartland IDP (2007) and Ward 5 Profile (May 2010)

Table 4.2 below sets out the most recent gender statistics from 2001. These indicate an even representation whereby the population was 49.9% male and 50.1% female.

Table 4.2: Gender Ratio in Swartland Municipality (2001)

Gender	Number	% Composition
Male	36,049	49.9%
Female	36,067	50.1%
Total	72,116	100%

Source: Census, 2001

In terms of the population structure in the Swartland Municipality, there is a higher concentration in the lower age groups which are considered characteristic of a 'normal' age profile (Swartland Municipality, 2005). Table 4.3 below indicates that that in 2001 there were 28.7% in the 0-15 year group, with 66% in the 15-64 year group (which is the potential labour force) and 5.3% over 65 years. Therefore, approximately 35% of the population is not part of the potential labour force and is therefore dependant on the remaining 66% of the population.

The issue of in-migration and out-migration of various ethnic groups and age groups is discussed in Section 4.1 above.

Table 4.3: Population Structure in Swartland Municipality (2001)

Age Group	Number	Percentage
0 – 14	20,728	28.7%
15 – 64	47,582	66%
65+	3,806	5.3%
Total	72,116	100%

Source: Census, 2001

4.3.2 Education

Table 4.4 below sets out the level of education in the Swartland Municipality during 2001. Over 30% of the population had either 'no schooling' or 'some primary' education. This generally poor level of education can be attributed to limited access to secondary schooling (linked to a high dropout rate at the secondary level) and an exodus of skilled people, coupled with an influx of unskilled persons (Swartland Municipality, 2007a).

Table 4.4: Education levels attained by 'over 20 year olds' in Swartland Municipality (2001)

Level	Number	Percentage
No schooling	4,452	10.0%
Some primary	10,318	23.2%
Complete primary	4,439	10.0%
Some secondary	13,674	30.7%
Std 10/Grade 12	8,355	18.8%
Higher	3,319	7.4%
Total	44,557	100

Source: Census, 2001

4.3.3 Employment Levels and Labour Force

Table 4.5 below sets out the employment status of the Ward and the Municipality in 2001. The Municipality had a slightly higher level of employment (57.2%) than the Ward (54.4%), which is also reflected in the level of unemployment in the Municipality (6.5%) and the Ward (6.1%). These levels of unemployment are, however, relatively lower than national estimates (Swartland Municipality, 2007b). There is a particularly high level of people who are 'Not Economically Active', suggesting a high level of early retirees, or homes characterised by a single breadwinner. The Swartland IDP (2007a) has indicated that the black African population has a much higher unemployment rate than the other groups and this could be largely related to immigration for employment opportunities.

Table 4.5: Employment Status (2001)

Status	Ward 5	Swartland
Employed	54.4%	57.2%
Unemployed	6.1%	6.5%
Not Economically Active*	39.5%	36.3%

Source: Census, 2001

% is a proportion of those of working age (15 – 65 yrs)

* People who are neither in employment nor unemployed and therefore not seeking work. This group includes, for eg, all those looking after a home, studying or retired.

The individual monthly income of the Swartland population indicates that income levels were fairly low in 2001 as indicated in Table 4.6 below. Almost 50% of the population earned no income, while approximately 30% earned only R1,600 or less per month. The low incomes in rural areas can be attributed to the limited value adding potential of primary industries (such as agriculture) and the limited skills required to do this work (Swartland Municipality, 2007a). The Swartland IDP (2007a) has identified the black population as the lowest earners and this is indicative of low skills levels, whilst the white population are the highest earners. This can be quantified through comparison of the 2001 mean income per ethnic group showing that the black population had a mean income of R1,290 per month; coloureds, R1,655; and whites, R 9,720 (Swartland Municipality, 2005).

The Swartland Economic Profile (2005) reported that for 2005, social grants were received by 6,000 people which equates to 8% of the estimated Swartland population and 12% of the potential labour force. Although this facilitates additional spend in the local economy, the Swartland Economic Profile (2005) noted that it was not sustainable and may act as a disincentive to engage in the local economy.

The West Coast Poverty Alleviation Strategy (2006) has indicated that the average household in Swartland spends most of their monthly income on food and clothing as well as housing followed by education. Furthermore, in Swartland 15% of households cannot afford transport, 70% food, and 10% housing, while 5% indicated that basic services are unaffordable (West Coast District Municipality, 2006).

Table 4.6: Individual Monthly Income in Swartland Municipality (2001)

Income Bracket	Persons	Percentage
None	35940	49.8%
R1 - 400	3619	5.0%
R401 - 800	13258	18.4%
R801 – 1,600	8358	11.6%
R1,601 – 3,200	5265	7.3%
R3,201 – 6,400	3317	4.6%
R6,401 – 12,800	1542	2.1%
R12,801 – 25,600	463	0.6%
R25,601 – 51,200	176	0.2%
R51,201 – 10,2400	98	0.1%
R10,2401 – 204,800	62	0.1%
Over R204,801	20	0.0%

Source: Census, 2001

Table 4.7 overleaf, sets out the distribution of employment by sector and it is evident that the predominant sector is agriculture (35.3%), followed by community, social and personal services (11.1%), manufacturing (10.8%) and wholesale/retail (10.8%). The predominance of agriculture has been discussed in Section 4.1 above, while the employment in the community, social and personal services relates largely to Government jobs. Wholesale and retail trade employment can be attributed to tourism activities to some degree.

Table 4.7: Industry amongst the employed in Swartland Municipality (2001)

Industry	Number	Percentage
Agriculture/Forestry/Fishing	9,683	35.3%
Community/Social/Personal	3,052	11.1%
Construction	1,640	6.0%
Electricity/Gas/Water	122	0.4%
Financial/Insurance/Real Estate/Business	1,001	3.7%
Manufacturing	2,970	10.8%
Mining/Quarrying	59	0.2%
Other	0	0.0%
Private Households	1,784	6.5%
Transport/Storage/Communication	569	2.1%
Undetermined	3,564	13.0%
Wholesale/Retail	2,974	10.8%
Total	27,418	100%

Source: Census, 2001; Note: % is a proportion of all of those employed of working age (15 – 65 yrs)

Table 4.8 below sets out the composition of occupations within the Municipality in 2001. Elementary occupations are dominant (27.3%) which largely comprises labourers in the sectors of agriculture, fishery, mining, construction, manufacturing and transport, and other low skilled sales and services occupations such as vendors, domestic workers, and garbage collectors. This is followed by a small percentage of craft and related trades workers (4.9%), clerks (4.3%) and pant and machine operators and assemblers (3.6%). Overall it shows that only a small proportion of the formally employed population are in remunerative managerial or professional positions. These trends in occupation are consistent with the low average monthly incomes in the Municipality as well as high level of employment in the agricultural sector (Swartland Municipality, 2007a).

Table 4.8: Occupations in Swartland Municipality (2001)

Occupation	Number	Percentage
Legislators, senior officials and managers	1,038	2.2%
Professionals	763	1.6%
Technicians and associate professionals	1,348	2.8%
Clerks	2,070	4.3%
Service workers, ship and market sales workers	1,566	3.3%
Skilled agricultural and fishery workers	1,201	2.5%
Craft and related trades workers	2,352	4.9%
Plant and machine operators and assemblers	1,718	3.6%
Elementary occupations	13,083	27.3%
Undetermined	2,272	4.7%
Total	47,893	100%

Source: Census, 2001; Note: % is a proportion of all of those employed of working age (15 – 65 yrs)

4.3.4 Housing

The most common type of accommodation in the Swartland in 2001 was a 'house or brick structure on a separate stand or yard' which accounted for 76.8% of all households. Table 4.9 below sets out the tenure status of households in the Swartland Municipality in 2001. According to the data, 39.6% of all households are owned and fully paid off. As many as 21.5% are occupied rent free, and this was followed by rented accommodation accounting for 18.9% of the households. This indicates that there is a relatively high level (52.4%) of home ownership in the Swartland Municipality. The IDP indicates that there is a backlog of 7,000 houses to be subsidised within the Municipality. Darling has the second highest need for housing at 908 houses, however, only 400 are proposed within the Plan period. This has implications for existing infrastructure capacity.

Table 4.9: Tenure Status in Swartland Municipality (2001)

Tenure Status	Number	Percentage
Owned and fully paid off	7,431	39.6%
Owned but not yet paid off	2,393	12.8%
Rented	3,550	18.9%
Occupied rent-free	4,029	21.5%
Not applicable	1,355	7.2%
Total	18,758	100%

Source: Census, 2001

4.3.5 Transport

Table 4.10 below sets out the mode of transport used by the resident Swartland population in 2001. According to the data, the predominant mode of travel which individuals use to travel to work and school is by foot (34.8%). This is followed by travel by bus (7%), as a passenger in a private vehicle (6.8%), and by car as a driver (6.2%). The West Coast Poverty Alleviation Strategy (2006) states that the transport network in the Swartland Municipal area is fairly well developed in comparison to the other municipalities in the West Coast District, however, there is still the requirement to upgrade much of this infrastructure. The Strategy highlights that it is difficult to implement public transport infrastructure and services to serve settlements which can only be reached via a dirt road (West Coast District Municipality, 2006). Transport is therefore a constraint to employment in terms of access.

Table 4.10: Mode of Travel in Swartland Municipality (2001)

Mode of Travel	Number	Percentage
On foot	25,087	34.8%
By bicycle	326	0.5%
By motorcycle	138	0.2%
By car as a driver	4,447	6.2%
By car as a passenger	4,887	6.8%
By minibus / taxi	3,077	4.3%
By bus	5,024	7.0%
By train	439	0.6%
Other	1,030	1.4%
Not applicable	27,661	38.4%
Total	72,116	100%

Source: Census, 2001

4.3.6 Services

As set out in Table 4.11 below, in 2001, most of the population residing in the Swartland (72.2%) had access to water in the form of piped water inside their dwellings. This was followed by 15.8% of individuals who had piped water inside their yards. A further 5.1% of the population had access to piped water on a community stand less than 200 meters away from their dwelling. The West Coast Poverty Alleviation Strategy (2006) indicates that according to the poverty criteria 93.2% of individuals living in the Swartland Municipal area have access to water and are above the poverty line.

Table 4.11: Access to Piped Water in Swartland Municipality (2001)

Level of Access	Number	Percentage
No access to piped (tap) water	272	1.5%
Piped (tap) water to community stand: distance greater than 200m from dwelling	999	5.3%
Piped (tap) water to community stand: distance less than 200m from dwelling	964	5.1%
Piped (tap) water inside yard	2,966	15.8%
Piped (tap) water inside dwelling	13,539	72.2%
Not applicable	18	0.1%
Total	18,758	100%

Source: Census, 2001

Energy is required for basic needs such as cooking, heating and lighting. As set out in Table 4.12 below approximately 91% of the population residing in Swartland have access to electricity for lighting (and therefore energy) and are above the poverty line. The next most prevalent form of energy used is candles which are used by 5.7% of the population, followed by paraffin which accounts for 2.6%. Cooking and heating use other sources of energy such as wood, coal, and animal dung. This data indicates that there is a relatively high level of services for basic needs in the Municipality.

Table 4.12: Access to Energy in Swartland Municipality (2001)

Type of Energy Used for Lighting	Number	Percentage
Electricity	17,070	91.0%
Gas	36	0.2%
Paraffin	483	2.6%
Candles	1,071	5.7%
Solar	15	0.1%
Other	67	0.4%
Not applicable (institutions)	18	0.1%
Total	18,760	100%

Source: Census, 2001

Table 4.13 below sets out the sanitation available to the residents in the Municipality in 2001. Only 73.7% of households had access to a flush toilet connected to a sewerage system and the remaining residents did not have access to a proper sanitation facility.

Table 4.13: Toilet Facilities in Swartland Municipality (2001)

Type of Toilet	Number	Percentage
Flush toilet (connected to sewerage system)	13,824	73.7%
Flush toilet (with septic tank)	2,150	11.5%
Chemical toilet	84	0.4%
Pit latrine with ventilation (VIP)	396	2.1%
Pit latrine without ventilation	358	1.9%
Bucket latrine	983	5.2%
None	945	5.0%
Not applicable	18	0.1%
Total	18,758	100%

Source: Census, 2001

4.3.7 Health

The Swartland IDP (2007a) identifies TB and HIV/AIDS as the two primary health issues in the area. The Swartland LED Strategy (2007b) identified that there was an estimated 5% HIV prevalence in the Municipality which was lower than provincial and national estimates. This equates to approximately 8,581 people as HIV positive. At present all towns and settlements have access to part or full time clinic services, while Antiretrovirals (ARV) are distributed from the Swartland Hospital. According to the Swartland LED Strategy (2007b), life expectancy in the area may currently be above the national average. However, future negative trends may be expected as a result of an increase in HIV and crime.

4.3.8 Crime

According to the Swartland LED Strategy (2007b), the number of crimes per 1,000 individuals has been estimated to be 78, which is the second highest in the West Coast. The IDP (2007) links a number of serious crimes to alcohol and substance abuse which is a key social issue in the Municipality. Other safety issues in the Municipality relate to land invasion and road safety.

4.4 SUMMARY OF THE SOCIO-ECONOMIC PROFILE

In summary, the Swartland Municipality was found to have the following general characteristics:

- Dominant agricultural sector
- Potential for growth in tourism
- Low levels of education and skills
- Low incomes
- Moderate levels of unemployment (relative to national levels)
- Out-migration of white youth for employment elsewhere and in-migration of white mature age groups for retirement or commuting lifestyle
- In-migration of black youth seeking employment
- Increasing disparity between the rich and the poor

- Good transport network with a lack of public transport in rural areas
- Relatively high levels of access to energy and piped water, with sanitation less widespread
- HIV/AIDS and TB are key health concerns
- Crime linked to alcohol and substance abuse is a key social problem

5 SOCIAL FINDINGS – INTERNATIONAL LITERATURE REVIEW

5.1 INTRODUCTION

As increasing research exposes the threats of climate change and green house gases, the international community has been on course to reduce its' emissions. Since one of the biggest contributors to climate change is the burning of fossil fuels for energy, many countries have pushed for renewable energy in order to meet their emission reduction targets. And of all the different types of renewable energy, wind energy has had the fastest growth rate (Sawin, 2009). Currently there are 80 countries using wind power on a commercial basis (Sawin, 2009).

Past studies have suggested that there is wide public support for renewable energy (TNS 2003; Omnibus 1995, Simon 1996) and in particular, wind energy (Krohn and Damborg, 1999; Wolsink, 2007a). However, despite the push and support for the development of wind energy, many proposed wind farm projects have not been authorised. For example, only 25% of wind farm proposals in the UK and Denmark were approved between 1999 and 2002 (Toke, 2002). These poor commission rates have largely been due to the negative social and environmental impacts perceived to be created by wind farms (Eltham et al, 2008). Several studies at the international level have delved into understanding these perceived negative impacts, and whether certain amendments can be made to improve perceptions among the local populations (Devine-Wright, 2005; Eltham et al, 2008). This chapter will review literature relating to the potential socio-economic impacts of wind farm developments, but will also consider different aspects that could be influencing public perceptions of wind farms. It is important to note that most of these studies have been undertaken in the developed world.

5.2 TYPES OF SOCIAL IMPACTS

5.2.1 Visual Impacts

The extent of a wind farm's visual impacts is largely dependent on the perceptions of the local people. A few studies in the past have indicated that much of the resistance to the development of onshore wind farms can be attributed to people's negative perceptions of their visual impact (TNS, 2003; Wolsink, 2007b). For example, a British study carried out in 2003 found that 44% of the respondents associated their resistance to the visual impacts of wind farms, often describing the turbines as 'ugly' or 'spoiling the scenery/landscape' (TNS, 2003). However, not all perceptions towards visual impacts are negative. Some studies have found differing results in which people respond more positively towards the physical appearance of the wind farms. In two studies conducted in the UK, 51% to 63% of respondents who have a view of wind farms from their homes described the turbines as 'interesting' and 'a sign of progress' (Lee et al, 1989; DEL, 1995).

Alternatively, other research has compared the public's (visual) perceptions of wind farms to other synthetic structures. An Irish study found that wind turbines were more positively perceived than fossil fuel power stations, mobile phone masts and electricity pylons, but perceived less positively

than wooden electrical poles (SEAI, 2003). Beyond the physical appearance of the turbines, there have also been some complaints of the sun glint and flicker, which can annoy local residents and drivers (Eltham et al, 2008).

The magnitude of the visual impact is often dependent on the location and size of the wind farms. For example, van der Horst (2007) found that those people who 'derive a more positive sense of identity from particular rural landscapes' are more likely to resist wind farm developments (p: 2705). Research has also indicated that the size of a wind farm and size of the turbines can influence people's perceptions. In general, research suggests that there are more positive perceptions of small-scale wind farms and small turbines than large-scale ones (Devine-Wright, 2005), or as Lee et al (1989) describe it, there is a negative linear relationship between the size of the wind farm and public support. Several other studies worldwide have found that there is greater support for single turbines (Wolsink, 1989) or small clusters of 2-8 turbines than large-scale farms (AIM Research, 1993; SEAI, 2003; Devine-Wright, 2005). Conversely, wind energy policy generally favours large-scale developments (both in the size and amount of turbines) (Devine-Wright, 2005). Lovins (1978) describes this latter strategy as a conventional approach of creating a centralised (and large-scale) supply of electricity, rather than taking a more community-centred approach.

But despite the location, wind farms have a much smaller footprint than other energy generation facilities, such as coal or gas power stations (NSW, 2010). Even though a farm of 20 turbines might take up 1 km^2, it is estimated that the footprint of the entire infrastructure of the wind farm would only be 1% of the total site area, leaving much of the land between turbines to be used for its original purpose (such as farming or natural habitat) (BWEA, 2010). Furthermore, Eltham et al (2008) argue that unlike other energy infrastructure (such as hydro, nuclear, coal) wind farm sites that can be easily returned to its original state after decommissioning.

5.2.2 Noise Impacts

Although noise impacts are not perceived as negatively as visual impacts, they can still pose a significant barrier to the development of wind energy. Some complaints of local residents have focused around health issues due to noise, such as headaches, dizziness, sleep deprivation, anxiety and vertigo (Colby et al, 2009). Many argue that there is no scientific evidence that concludes that wind farms have a harmful effect on human health (Pedersen and Högskolan, 2003; Colby et al, 2009; NHMRC, 2010). Instead, they argue that any noise impact is primarily an annoyance, similar to annoyance or nuisance caused by nearby roads, and cannot be considered as an adverse health effect or disease (Pedersen and Persson, 2004; Colby et al, 2009). Nevertheless, others argue that stress produced by noise impacts can have its own adverse health effects (Gohlke et al, 2008), and thus express the need for more health studies in the future (EPAW, 2010).

There have also been several studies that have focused on the magnitude of the noise impacts and how people's perceptions are influenced. Sørensen (1995) found that the degree of annoyance was dependent on the tone and intermittency of the noise, as well as the sensitivity of the individuals. Pederson and Persson (2004) further argue that often the extent of noise annoyance is also influenced by and linked to people's perception of the visual impact and their overall attitude towards wind farms.

Fortunately, there are means and measures that can be undertaken to minimise sound impacts

(Eltham et al, 2008). Contemporary wind turbines are notably less noisy than the older designs. Most modern wind turbines produce around 40 decibals (dBA) or less, which is less than the noise produced by a car, office place or even a quiet suburban area (CanWEA, 2008; NSW, 2010). Furthermore, many regions have set up strict noise limits and guidelines in response to past complaints about wind farm noise. In these cases, noise levels at nearby communities are managed through carefully-planned turbine setting and operational management (including continuous noise monitoring) (CanWEA, 2008; NWS, 2010; BWEA, 2010). Other research has focused on the impacts of low frequency sound and infrasound, sounds which are below the threshold of human hearing. However, there is no evidence that suggests that this type of sound has any effect on people (Bellhouse, 2004; Colby et al, 2009). Regardless, modern turbines are now designed with the blades located upwind instead of downwind, which significantly reduces infrasound (NWS, 2010).

As a result of the reduction of noise emissions of wind turbines, noise complaints related to wind farms have been low in many regions. For example, only 20% of operational wind farms in the UK have received formal noise complaints (Moorhouse et al, 2007). A Scottish/Irish study found that many people's anticipated fears of noise impact were not realised – only 11% recorded hearing the turbines at all, and of this 11%, most described the noise as 'not disturbing the peace' or a 'slight background noise' (Warren et al, 2005). These studies suggest that people are concerned with the 'threat' of noise impacts because it is a new technology, but these threats are often not realised once a wind farm is up and running.

5.2.3 Impacts on Tourism

Proposals of wind farm developments will commonly receive resistance from the tourist industry, who believe such development will decrease the tourism potential of the area. Some concerns among stakeholders in the tourist industry include the visual impact on the scenery; the cumulative effect of giving bad publicity to an area; and the detrimental effects on birds and other wildlife (especially for companies offering outdoor activities) (NFO WorldGroup, 2003). The visual impacts of wind farms causes the greatest concern for local tourist companies – especially in countries known for their natural environment (NFO System Three, 2002). Furthermore, besides the actual turbines, local tourism companies are also concerned about other infrastructure that comes along with wind energy – such as roads and cablings – which could also have a detrimental visual affect on the landscape (NFO System Three, 2002). However, many tourism stakeholders that are concerned about the impacts, believe that they can be mitigated by having wind farms 'sensitively sited' as to avoid important tourist sites (NFO System Three, 2002, p: v).

People also have positive perceptions about wind farm development in their area. Some studies have suggested that wind farms themselves can act as a tourist attraction, and can increase 'green tourism' in an area (AusWEA, 2003; NFO WorldGroup, 2003; BWEA, 2006, CanWEA, 2008). Another survey found that wind farms can have a positive effect on tourism by enhancing the reputation of a region or country as an environmental friendly place (NFO System Three, 2002). In addition, wind farms will also bring temporary visitors during construction, and possibly create greater access to more remote areas, thus providing some revenue to the area (NFO System Three, 2002; NFO WorldGroup, 2003).

Determining how wind farms directly affect the tourist industry is very difficult, and thus many

authors and organisations believe it is not possible to draw conclusions. As a result, many surveys have been conducted with tourists to determine how the sight of wind farms affected their visit to an area. Of note is that these surveys illustrate the same result – that most tourists (70 – 91%) are not bothered by the presence of wind farms, and an increase of wind farms in the area would not deter them from visiting again (NFO System Three, 2002; NFO WorldGroup, 2003; BWEA, 2006).

5.2.4 Impacts on Property Value

As the number of wind farm sites continues to grow internationally and in the Western Cape, so does the concern for how these sites impact property and house value. Thus recently there have been a number of studies conducted to determine whether nearby wind turbines affect property values.

The few studies that have been conducted reveal conflicting results. For example, a study undertaken by BWEA in Cornwall, UK, displays that most estate agents (60% of 405 respondents) agree that there is a detrimental effect on property value in close proximity to or within visibility of a wind farm (Dent and Sims, 2007). However, this study also suggested that since most negative responses were acquired during the planning stages, these concerns are most likely the result of uncertainty or fear of a wind farm being constructed nearby and that concerns would lessen with time (BWEA, 2004).

On the contrary, other studies demonstrate no impacts on property and house value. For example, an American study, which examined 24,300 property transactions of 10 locations over a 6-year period, found no evidence that wind turbines within an 8 km radius had a negative impact on property value (Sterzinger et al, 2003). Alternately, some of the property values rose above the regional average, suggesting that perhaps close proximity to wind turbines can actually increase property value. Furthermore, landowners can benefit from the presence of a wind farm on their land. Wind energy companies provide an annual fee for the use of the land (CanWEA, 2006; Wasatch Wind, 2011). And since only a small percentage of the land is used for wind energy structures, existing land use (such as farming, recreation, ranching) can continue. This thereby increases the landowners' revenue without materially impacting the existing land use.

Nonetheless, most studies suggest that it is difficult to determine the extent of which wind farms impact property value. But likewise, to date, there is little evidence to support that property values will decline if located close to a wind farm (Dent and Sims, 2007; Hoen et al, 2009), indicating that there is no conclusive evidence that wind farms reduce property values.

5.2.5 Impacts on Employment and the Local Economy

Worldwide, the wind industry has greatly contributed to local and national economies. Currently in Europe, the wind energy industry is considered one of the highest-growth industries. As a result, the wind companies alone have provided approximately 105,000 jobs within the European Union, which is a growth of 226% from 2003 (Blanco and Rodrigues, 2009). Similarly in Canada, the wind industry employed close to 4,000 people and contributed $1.6 billion to the country's Gross Domestic Product (GDP) in 2006 (CanWEA, 2006). Furthermore, it is estimated that renewable energy projects in Australia could lead to the creation of more than 6000 jobs in the province of New South Wales alone (NSW, 2010). The wind industry, in particular, employs people with a wide range of skills.

Types of employment opportunities within the industry include consulting; engineering; construction; production; maintenance/repair; financial/insurance; developers; manufacturers; and component manufacturers (Blanco and Rodrigues, 2009). In addition, Blanco and Rodrigues (2009) note that since many of the activities/jobs are created at the local level, there is a positive co-relation between the site of the wind and the jobs it creates.

To date, however, most of the jobs in the EU created by the wind industry have been limited to certain areas and countries within Europe, specifically within Spain, Germany and Denmark. However, due to the growth of the industry, it is believed that wind energy employment will rise in other parts of Europe within the next five years (Blanco and Rodrigues, 2009). Furthermore, Boettcher et al (2008) encourage that if there is stronger political support in the UK to develop a greater amount of wind farms (so that the UK would become self-supplying), it could create up to 57,000 new jobs.

5.2.6 Impacts on Wildlife

Although impacts on wildlife are an environmental impact, they can significantly influence public opposition in the area and therefore become a social impact. For example, in Cape Code Massachusetts, an alliance was forged between the local residents, a senator, the Massachusetts Audubon Society, the Humane Society of the United States, and the International Fund for Animal Welfare to resist a proposed wind farm development in the area (Klick and Smith, 2010). The authors contest that this is not an isolated incident; that wind farm proposals are often met with organized opposition, much of which is based on the perception of environmental impacts of wind farms (Klick and Smith, 2010).

5.3 INFLUENCES ON PUBLIC PERCEPTION OF WIND FARMS

The magnitude of many of the socio-economic impacts mentioned above is often determined by the perceptions of the local people. Thus past research has focused on how the public's perceptions of wind energy and farms are informed and influenced. The following section will delve into possible influences of public perceptions, the accuracy of these influences, and how certain measures can help foster local support of wind farms.

5.3.1 Not In My Backyard (NIMBYism)

NIMBYism, or 'not in my backyard', is a term used to describe the opposition of local people to new developments being proposed close to their homes. Several studies have explored the extent of this theory and its validity in wind farm development. There is some support for this theory as a few studies have suggested that the general public is supportive of wind farm development within their own country, yet many people are resistant or would consider objecting to such development within their local area (Elliot, 1997; BWEA, 2005). However, other studies have shown the opposite of NIMBY is true – that those who favour wind farm development nationally also favour the development within their local area (Simon, 1996). Further to this, other research suggests that there is more support for development at the local level than the regional level (Hoepman, 1998). For example, a study conducted in Scotland found that people who do have wind farms in their 'backyard' are among the most supportive for wind energy (Warren et al, 2005).

Due to these contradictions, some authors argue that the NIMBY theory is questionable (Wolsink, 2000; Devine-Wright, 2005), and criticise it for its simplicity or its catch-all explanation for local resistance (Wolsink, 2000; Gross, 2007; Eltham et al, 2008). Rather, authors explain that resistance is often site-specific and much more complex, and that often those who are opposed to wind farms locally are also opposed to wind farms being developed anywhere (Wolsink, 2000).

5.3.2 Proximity Hypothesis

The 'proximity hypothesis' assumes that those living closest to wind farms will have more negative perceptions towards them (Devine-Wright, 2005). However, similar to the NIMBY notion, there have been mixed reviews in determining the validity of the proximity hypothesis.

A study conducted in the USA, found supportive evidence for the proximity hypothesis. The study found that people who live closer to a certain wind farm, and were more familiar with it, had slightly less positive perceptions than those who lived further away and were less familiar (Thayer and Freeman, 1987). However, although there is some support for the proximity hypothesis, Devine-Wright (2005) warns that it is difficult to prove a linear relationship between the two.

There are also an increasing number of studies that have found no evidence to support the proximity hypothesis. One UK study found that most local residents were not bothered by the wind farms, and some even expressed pride (DEL, 1995). In addition, many findings suggest that living in close proximity to wind farms generates more positive perceptions than those who live further away (Anderson et al, 1997; Braunholtz, 2003; TNS, 2003). This finding could also indicate that when the public has more knowledge and becomes more familiar with wind energy, perceptions become more positive.

5.3.3 Experience, Knowledge and Social Influences

In a few studies conducted by the British Wind Energy Association (BWEA), respondents who had less knowledge of wind energy had greater resistance to onshore wind farm development. BWEA further boasts that 'direct experience provokes a more positive attitude and that closer proximity results in a higher level of support' (BWEA, 2005, p: 1). Similarly, an Irish study found that those who had previous exposure or experience with wind farms will be more supportive of proposals for new developments (SEAI, 2003).

It is also important to understand how the public is educated on wind energy, and how this knowledge influences their perceptions. Recent studies suggest that people's perceptions of wind farms are largely influence by social processes and networks (Devine-Wright, 2005). These social processes and networks could include the opinions of friends and family, as well was local media exposure. Boyle (2004) suggests that much of the public's perceptions of wind farm impacts is influenced by their exposure to media reports. However, other studies have indicated that the opinions of friends was the most important forecast of wind farm perceptions (Devine-Wright, 2005), suggesting that positive perceptions among friends strongly influences the perceptions of the individual.

5.3.4 Changes in Perceptions over Time

Other research has focused on how public perceptions change over time. Specifically, comparisons have been made between local perceptions before construction of the wind farm and afterwards. BWEA (2005) argues that after conducting several surveys and comparisons, there is a 'general shift in attitude towards the positive and that many fears of the potential impact of the development of the wind farm prove unfounded' (p: 1). Similarly, a Scottish/Irish survey found that the public's perceived impacts of the wind farms decreased after construction (Warren et al, 2005). Other studies have also focused on comparing public perceptions before construction, during construction, and after construction of a wind farm to determine any changes. Research indicates that negative perceptions of the local public are highest during construction, but then become more positive afterwards (Wolsink, 1989).

There are also other studies that have found contradicting results – where respondents became more negative towards the wind farm after construction (Bishop and Proctor, 1994). However, the dominant findings show that there is a decline of negative perceptions over time, suggesting that many initial concerns of wind farms impacts are not realised post-construction.

5.3.5 Community Involvement

The public is often sceptical of commercial developers, which can often cause resistance towards the proposed developments (Bell et al, 2005). There is a growing body of research which sheds light on the importance of generating trust among stakeholders and how this mutual trust can be established (Wolsink, 2007b; Aitken, 2010; Walker et al, 2010). The following section will explore different means, which have proved effective in generating trust and positive perceptions among local communities living around wind farms.

Planning Process

Frequently, people's negative perceptions of the physical structure of wind farms are based on social and institutional factors (Eltham et al, 2008). In particular, Eltham et al (2008) explain that people often have 'a distrust of the planning system or a suspicion of the developer's intent' (p: 30). Likewise, Devine-Wright et al (2001) also maintain that negative perceptions can be generated by a sense of 'lack of control' in the planning process on the part of local people, as well as dissatisfaction with the planning process. Such dissatisfaction is usually related to whether or not the community views the process and outcomes as 'fair' (Gross, 2007). Frey et al (2004) describes the fairness of the process as the extent to which the community and individuals are given a voice, especially in the decision-making process. The authors further argue that even if all parties do not accept the final outcome, if the outcome was decided through a perceived 'fair' process, then the outcome will also be considered 'fair' and be more readily accepted by all parties involved.

In order to maintain a 'fair' process, many authors argue it is essential to identify the different perceptions and include the public early in the planning process. In doing so, negative perceptions will decrease and public support can be ensured (Devine-Wright et al, 2001; Jobert et al, 2007; Eltham et al, 2008). Furthermore, early engagement with the community can improve the design quality of the plan (Breukers and Wolsink, 2007), as well as increase a community's understandings of what benefits can be potentially derived from the wind farm (Mclaren Loring, 2007).

Investment

Another body of research focuses on how economic involvement can influence a community's perceptions of wind farms. In a Danish survey, although only 5% of the respondents were share owners, 43% of the respondents showed interest in becoming a shareholder of nearby wind farms (AIM Research, 1993). Similarly, a survey in South Wales show that 88% of respondents believe that wind farm developments should be conducted in partnership with the community (Devine-Wright, 2005). These studies indicate that communities do have an interest in becoming economically involved with wind farm development.

However, some of these studies show that there is less enthusiasm for the economic involvement of communities in wind farms. In a study conducted in Ireland, only 16% of respondents showed interest in wind farm investment. However, the study also indicated that 93% of the respondents were also unaware that investment was an option for them (SEAI, 2003). This is not surprising, as local wind farm co-operatives are not common in many countries in the world.

Most local wind farm co-operatives are found in Denmark (Devine-Wright, 2005). In the Sydthy region of Denmark, 58% of households own one of more shares in the local co-operative. A study conducted in this region found that 1) those who are shareholders have significantly more positive perceptions of wind farms than those who are not shareholders, and 2) shareholders are more supportive of further wind farm developments than non-shareholders (Anderson et al, 1997). Thus suggesting that economic involvement can improve people's perceptions towards wind farms and that entrepreneurs in the South African context could develop ways of getting local communities to receive benefits from wind farms.

5.4 SOLAR ENERGY AS AN ALTERNATIVE

As countries search for alternative energy solutions, many consider solar energy as well as wind energy. One UK study found that solar energy had the highest approval rating among the general public (92%), while 88% of the public approved of wind energy (TNS, 2003). Furthermore, this study also found that 76% of respondents would approve the development of solar energy in their area whereas 66% would approve wind energy development in their area.

However, in terms of the potential impacts of solar energy, solar energy impacts closely match those of wind energy. Visual impacts of solar energy are dependent on the location of the proposed development and can be mitigated by placement, colour and visual amenity of the panels. However, the social impacts are also largely dependent on the perceptions of the local public (Tsoutsos et al, 2005). Noise impacts are restricted to the construction phase, and are insignificant during the operational phase, especially compared to other energy options such as wind energy and other conventional options (Tsoutsos et al, 2005). Finally, like the development of wind energy, solar farms can generate employment benefits during the construction and operational phases (Tsoutsos et al, 2005).

5.5 CONCLUSIONS

There are several socio-economic impacts that can arise from wind farm development, some of which are negative and some positive. However, many of these impacts are also reliant on the perceptions of the local public. Research indicates that many of these negative perceptions are actually based on fears rather than experience. Or as Dent and Sims (2007) suggest, often it is the 'threat' of wind farm development that 'may have a more significant impact than the actual presence of one' (p: 7). Regardless, it is important that local communities be involved in the planning process from the beginning in order to educate but also include them in the decision-making process. The more involved the local community is, the greater the local support for wind energy. And once more positive perceptions and local support is generated, it can aid in the approval and implementation of wind farms, ultimately helping many countries reach their emission targets to combat climate change.

6 SOCIAL FINDINGS – PRIMARY DATA

6.1 INTRODUCTION

Face-to-face and telephone interviews were undertaken with representatives from tourism authorities; tourism operators; local and district government; community groups; neighbouring landowners and estate agents; and the findings have been summarised below and referenced in the Section 9.

6.2 THE SOCIAL ENVIRONMENT

In order to assess the social impacts of the proposed wind farm, it is necessary to create a profile of the surrounding area – the area of influence which will receive any impacts, as well as broader impacts. This section presents a profile of the character and land use of the local area. Respondents were asked what they believed were the attributes of the area; what people liked most about living in the area; and what people would like to change about the area. The demographic profile of the area was discussed, and the social context in terms of community facilities; social networks; migration patterns; and trip generators were also considered. In terms of land uses, knowledge of land uses and activities in the area and potential changes thereof were explored. This provides a rich set of data which is summarised here.

As social impacts arising from the wind farm have the potential to transcend geographical boundaries, the study area for the SIA for the Project has been considered at the District, Local and settlement level. Respondents were asked to define the area of potential impact. In particular, the communities within the 'area of influence' of the proposed wind farm were identified by some interviewees as falling into the Darling, Yzerfontein and Jacobuskraal area. Other respondents felt that Darling was outside the zone as it was ±13 km from the site and the wind farm was not visible from the town. However, some respondents felt that Yzerfontein was also outside the zone of influence at ±8km distance even though the existing turbines are visible from some houses and from the jetty. A profile of the Yzerfontein, Darling and rural communities near the site has been gathered through the interviews to supplement the desk-based research done through scoping.

The Darling and Yzerfontein area, within the context of the Swartland Municipality and West Coast District Municipality, is appreciated for its rural qualities and described as 'quiet', 'unspoilt', 'unaffected' and 'laid back' with low levels of crime and an abundance of natural beauty (including the flowers and cultural heritage). The West Coast in general is also appreciated for its 'vast openness' and 'simplicity' (M. Daiber, 7/6/2011). Other attributes recognised by the interviewees include the low population density; proximity to Cape Town; climate; and diversity of offer. The area is seen to suffer from unemployment and poverty with large disparities between the rich and poor. Improvements recommended in Darling, in particular, include improving the limited public transport, improving access to adequate high schooling and a hospital; and the need for beautification of the main road as the central business area. Yzerfontein is a holiday town with a smaller proportion of permanent residents with the needs of the town mostly orientated towards tourism, see Section 4.2 (Overview of the Area) above.

Around the site specifically, the area is predominantly rural and the surrounding commercial farms support wheat, beef and dairy cattle, sheep, ostriches, corn and wine (C. Basson, J.F Kirsten, E. Loedolff, 23/5/2011 and A. Bosch, 10/6/2011). The farms employ between three and 20 people depending on their size and some of these also accommodate the families of the employees. See Appendix A for a summary of the neighbouring land uses. Some of the farms, for example Klein Windhoek, Elsana, and Tumbleweed (Jacobuskraal 5/554) although zoned as agricultural, have no commercial agricultural activities at present.

The town of Darling is divided by the railway line which also delineates two cultural groups. It was acknowledged that more integration between these two communities is required (H. Cleophas, 4/5/2011). On the one side there are predominantly white residents, many of which are retirees. A new trend is that young people able to work from home and commute on the odd occasion are moving to Darling (A. Thoma, 4/5/2011). In Darling East, on the other side of the railway line is a predominantly coloured population. Unemployment in the town is a problem (G. Adams, 21/4/2011) and a large number of people live in government housing and are reliant on social grants. The surrounding rural areas provide seasonal jobs for some residents of Darling, such as ploughing, planting, pruning, spraying and harvesting. However, the majority of farm work is provided by the farm workers and their extended families (G. Adams, 21/4/2011 and A. Thoma, 4/5/2011).

Yzerfontein is a holiday town with nearly half of all residents being permanent (A. Van Ellewee, W. Badenhorst, and B. Geel, 3/5/2011). It is said to be expanding and developing as is evident by the number of active building sites within the town. Jacobuskraal is located in the north west quadrant of the Junction between the R27 and the R315 and comprises approximately 25 small holding plots of about 10 ha each. Each 10 ha plot is allocated 3 ha for agricultural activities and residential accommodation and the remaining 7 ha is conserved in its natural state (J. Pocock, 29/6/2011). Two of the plots provide tourism accommodation and these are the only commercial activities within the Estate. There are some small scale farming activities, with limited commercial farming ventures. Only about 8 or 9 of the plots are occupied, although this is increasing (J. Pocock, 29/6/2011).

Reasons that people travel out of Darling include commuting for formal and informal employment (the Yzerfontein workforce is mostly from Darling), to attend high schools, shopping , travelling to a hospital or 24 hour medical facility or to access the services of the Department of Home Affairs in Malmesbury. Recreationally, residents travel to Yzerfontein for day trips to the beach, or into Cape Town on occasions. However, it has been noted that the R27 is not the shortest route to Cape Town and therefore not always the preferred route for residents or tourists (G. Adams, 21/4/2011).

Land uses around the site are mostly rural, however, there are a number of other land uses. As already mentioned, there are small holdings in Jacobuskraal which signify residential receptors. See Figure 1.1. Other land uses and activities include the following:

- Bambe Zonke B&B in Jacobuskraal Estate
- The West Coast Farm Stall on the south west quadrant of the junction which also houses a CWCBR information hub
- The Tienie Versveld Wildflower Reserve under the custodianship of SANBI, ±2.5 km south east of the site

Further afield are the following nature / game reserves:

- The !Khwa ttu San Cultural and Education Centre, ±4 km south of the side along the R27
- The West Coast National Park, located north west of the site, with the closest section being the coastal strip north of Yzerfontein ±7.5km west of the site
- Buffelsfontein Game and Nature Reserve, ±8.5 km north of the site along the R27
- Jakkalsfontein Nature Reserve (8-10km) south west of the site on the coast
- Rondeberg Nature Reserve (10km) south east of the site

Future development proposals in the vicinity of the site include: garages for fishing boats opposite the existing West Coast Farm Stall, which is said to be more of a longer term proposal, as well as low cost housing along the R27 which is also not likely to go ahead in the next 15-20 years (H. Cleophas, 4/5/2011). There were also rumours of a proposed filling station at the junction (H. Jansie, 21/4/2011) but these were not confirmed. The farm Elsana at the south east quadrant of the junction has an approval from the local Municipality for a padstal and light farming (H. Louw, 29/6/2011). The construction of the cable station at Yzerfontein and cable runs for the West African Cable System from Europe is currently underway. In terms of renewable energy proposals, there is the 138 MW Rheboksfontein Wind Energy Facility which comprises 80 wind turbines and associated infrastructure on seven farm portions farms (39 km^2) to the south of the R315, the nearest being Grootberg 1199 approximately 1.5km from the site (Savannah Environmental, 2010). This development is discussed later under cumulative impacts (Section 7.3.11).

The stakeholders provided a range of information on the tourism potential of the area. The qualities of the area that were tourist assets include the following:

In Darling, the main attraction is the wildflowers (and flower route); culture (such as Evita Perron[1] and the arts); wine; and events such as the Darling Marathon and Voorkamer Fest (M. Ashford, 21/4/2011 and H. Jansie, 21/4/2011). It was identified that there is the potential for more events which have significant indirect benefits for the local economy (M. Ashford, 21/4/2011). The West Coast Farm Stall near the site has an aviary, nursery and lion tours. In Yzerfontein the attraction is the beach (Blue Flag certified) and watersports, fishing, whale watching, the greenbelt and 'fantastic accommodation' (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Another attraction is the Strandkombuis which is a restaurant, accommodation and wedding venue. The potential for tourism related activities to Dassen Island is also recognised and being pursued by the Yzerfontein Tourism Committee. The lack of a show ground or conference facilities is recognised as a hindrance to hosting additional events in the area (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Other improvements such as roads, public transport and events in the wider Swartland and West Coast District were also suggested as a means of increasing the tourism potential of the area (D. Cornelius, 4/5/2011 and M. Ashford, 21/4/2011). Recently, the CWCBR has launched Cape West Coast Trails which includes walks, hikes, canoeing and cycling through the wider Biosphere Reserve. There is also a current initiative to establish the West Coast as a 'place of heritage' through a network of living heritage, fossils and rock art linking places like !Khwa ttu, the Fossil Park, and rock art sites. It was also noted that to maintain and enhance the tourism potential in the West Coast it is vital to retain the 'right aesthetics' and 'character' of the area (M. Daiber, 7/6/2011).

It is reported that in the towns and the broader Swartland and West Coast District, the tourists are

[1] A local theatre based on the persona of Evita Bezuidenhout, a fictional political figure.

local, national and international. The international tourists originate mostly from the UK, Germany, and Netherlands, with Yzerfontein reporting Americans as well. National tourists travel to this area from 'upcountry' which includes Gauteng and the Free State (H. Jansie, 21/4/2011, A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Local tourists include residents from the Western Cape, a large portion travelling north from Cape Town. Tourism peaks include the festive season (November - January) for longer stays especially in Yzerfontein; the Easter break mostly for tourism from within the Western Cape; the flower season (June-September) which attracts both local and international tourists for short stays; and smaller tourism peaks over long weekends and school holidays and related to special events (H. Jansie, 21/4/2011, A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011, M. Ashford, 21/4/2011 and D. Cornelius, 4/5/2011). The West Coast District is mostly a destination in itself with its own attractions, but is also a gateway to the Northern Cape and Namibia via the N7 (D. Cornelius, 4/5/2011). This evidence shows that there is already a nascent tourism industry in the area which has considerable social, cultural and environmental assets, and the potential to develop this further. Increasingly the value of natural and cultural assets is being recognised as a means to stimulate the local economy.

6.3 NEED AND DESIRABILITY

As part of the SIA, it is necessary to provide an understanding of the social and economic need for the proposed wind farm. Almost all of the respondents interviewed acknowledged the importance of developing renewable energy, in this case wind energy, in South Africa as means of mitigating climate change and were very supportive of this principle. There was also support for the principle of developing renewable energy facilities along the West Coast in particular. The local councillor for the Ward 5 of the Swartland Municipality believed that "it should be on the agenda of every Municipality and it would be a loss if not pursued" (H. Cleophas, 4/5/2011). Other support was fuelled by an opposition to nuclear energy generation, "the area is conducive to wind… anything but nuclear" (J. Fevrier, 3/5/2011). There were also sentiments that acknowledged the urgency for change "…the sooner the better" (A. Van Ellewee, 3/5/2011) and "we need the power, can't afford not to" (W. Badenhorst, 3/5/2011). It was recognised among stakeholders that development of renewable energy facilities is threatened by opposition, "I am concerned there will not be enough built due to lobbying by people who don't see the need…" (A. Thoma, 4/5/2011). Both residents from Darling and Yzerfontein hoped that some of the energy could be supplied directly to local villages and the surplus could enter the grid (A. Thoma, 4/5/2011, A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011).

On the other side of the argument, wind energy in general was described as "another form of consumption" and a means of making money (D. Kotze, 4/5/2011).

Having motivated for support, some of the stakeholders highlighted the importance of siting… "we need thorough research to identify the best locations" (A. Thoma, 4/5/2011). For tourist attractions such as !Khwa ttu, which support the principle of renewable energy, the establishment of a wind farm in view of the property was in conflict with the natural assets on which their brand is based, namely the 'remoteness and openness' associated with the heritage of the San people (M. Daiber, 7/11/2011). This is the case for many stakeholders who believe that the West Coast is suitable for wind energy and support it there; however believe that it should be carefully sited away from the

main tourism corridors and natural areas.

The planner for the WCDM identified the wind energy resource as the most important criteria for wind farm site selection, over and above the environmental constraints:

> "*The wind energy resource should be the main or most important informant. You could compromise some of the biodiversity / environmental resources if it was an extremely valuable wind resource. Otherwise I can't see how you can weigh these things. The whole landscape will be compromised by that type of decision-making*."

It is believed that the wind resource in this location is favourable following measurements by the applicant, and also anecdotally through the naming of the farm Windhoek.

6.4 SOCIAL IMPACTS ARISING FROM THE DARLING DEMONSTRATION WIND FARM

This section provides an overview of the social impacts of the existing Darling Demonstration Wind Farm. Although smaller and intended as a demonstration project, the Darling Wind Farm provides insight into what impacts could arise from an extension to the facility which would result in a larger project. Social impacts reported by the stakeholders related to the local environment in general, as well as the social and economic environment. The opinions of the wider community and specific organisations and their views were also reported. This section provides a description of the main social impacts reported by the stakeholders.

The evidence shows that the existing wind farm has proved to be a novel phenomenon in the local landscape. Most stakeholders reported that there are either 'no impacts' or they are 'not aware' of any. The existing wind farm was also described as being a 'talking point' and 'unique' (G. Adams, 21/4/2011); 'majestic' (J. Fevrier, 3/5/2011); a 'beacon' (H. Cleophas, 4/5/2011); a 'landmark' (A. Thoma, 4/5/2011); 'beautiful' (H. Louw, 29/6/2011) and having a 'curiosity value' (D. Kotze, 4/5/2011). Others have asserted that the wind farm has "destroyed the skyline" (B. Gent, 7/6/2011).

The following are the most important social impacts arising due to the existing wind farm. Importantly the *visual impact* was accepted to be 'subjective' (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). In terms of environmental impacts it was questioned whether there had been any impacts on birds or noise impacts, however, these are addressed in the other specialist studies.

In terms of the *tourism impacts*, it was noted that the project signifies progress and shows that South Africa is developing in line with world trends (G. Adams, 21/4/2011). The stakeholder representing Swartland Tourism noted that there were varied opinions regarding the potential impact on tourism (M. Ashford, 21/4/2011). The proximity to Tienie Versveld was noted as a problem, however, there have been no reports to the District Tourism authorities by people feeling they have had an unauthentic experience because of the presence of the turbines (D. Cornelius, 4/5/2011). The District planner has said the wind farm has not had any social impacts (D. Kotze, 4/5/2011) as has the Chair of Darling Tourism (H. Jansie, 21/4/2011).

In terms of *economic impacts*, it has been confirmed that the visual impacts have not affected local tourism businesses such as the West Coast Farm Stall and !Khwa ttu although it is unsightly (M. Daiber 7/6/2011 and B. Gent, 7/6/2011). Most of the other stakeholders confirmed that the project

had not resulted in any impacts, even when prompted regarding livelihoods, income and property prices specifically. It was acknowledged that very few jobs had been created by the existing wind farm and there were "very little indirect benefits to local economy and community"' (H. Cleophas, 4/5/2011). Unfilled expectations were one of the criticisms of the existing wind farm as the community was promised a financial share and this was never realised (H. Cleophas, 4/5/2011 and B. Gent 7/6/2011).

The question arose whether the adjacent farmers had suffered impacts to the livestock (A. Thoma, 4/5/2011). This was followed up at the landowners meeting and by phone with the neighbouring farmers and all the farmers agreed unanimously that there have been no impacts incurred on their livestock, or themselves as a result of the existing wind farm (C. Basson, J.F Kirsten and E. Loedolff, 23/5/2011; A. Bosch 10/6/2011; H. Louw 28/6/2011). However, in terms of property, two landowners have experienced an impact. During construction, the neighbouring landowner at Klein Windhoek Farm reported infringement on his property, namely the removal of surveyors pegs and other damages which were never reinstated nor dealt with by the developer (A. Nell, 9/6/2011). Secondly, the owner of Tumbleweed (Jacobuskraal 5/554) had an agreement with the developer during construction to permit access to the substation, however, this has reportedly since been abused, as Eskom still uses the access as a service road to access the substation during operation (R. Richards, 28/6/2011).

It was also noted that there were originally fears from neighbours and community members relating to road safety, bird mortalities and noise, however, this never materialised for them (C. Basson, J.F Kirsten, E. Loedolff, 23/5/2011 and A. van Litsenborgh, 7/6/2011). One exception is Rory Richards on Tumbleweed Farm who has reported that during certain weather conditions he can hear the facility (R. Richards, 28/6/2011). However, overall there has been an increased support for the wind farm with time. This confirms the findings of the literature review, showing that the initial fears of wind farm impacts are mostly unfounded (Warren et al, 2005).

In terms of the general attitude of the public, it appears the stakeholders fall into three main groups,

1. Those who are apathetic and who constitute the majority
2. Those who do not support the wind farm on the basis of the visual impact and associated change to 'sense of place' and impact on tourism potential
3. Those who support the wind farm, seeing it as a sign of progress, a solution to the energy crisis and a suitable alternative to nuclear energy.

Another general comment made refers to the operational capacity of the wind farms as the turbines are mostly seen to be 'standing still' (M. Ashford, 21/4/2011; D. Kotze, 4/5/2011) and the community therefore question the efficiency thereof. However, a number of the stakeholders noted that now 'people are used to it' (H. Jansie, 21/4/2011, H. Cleophas, 4/5/2011, C. Basson, J.F Kirsten and E. Loedolff, 23/5/2011).The Environmental Control Officer (ECO) for the project, whose number still appears on the board located on Windhoek along the R315, occasionally receives calls, none of which are complaints, but expressions of interest mostly from people in the same industry (M. Sasman, 12/05/2011).

6.5 POTENTIAL IMPACTS OF THE KERRIE FONTEIN AND DARLING WIND FARM

The majority of the stakeholders interviewed expressed support for the proposal. Others were supportive in principle and could not necessarily speak on behalf of their organisations which were often divided, such as the Darling Tourism group. WCDM Tourism believes the West Coast is conducive to wind energy generation and the Swartland Tourism authority did not comment.

The planner from the WCDM expressed an issue with wind farms on the West Coast in general and stated that she was "…not keen on the siting, but since there are already four turbines there, would rather see this site extended than develop a new one next door". Similarly, the WCDM Tourism Officer noted that the West Coast is the most suitable location for harnessing wind energy and believed it was appropriate in the wider area (D. Cornelius, 4/5/2011).

Impacts raised with regards to the biophysical aspects included the following:

The potential for impacts on birds; flicker or noise impacts; and impacts on livestock were raised, but it was also acknowledged that the other studies as part of this EIA (Avifauna and Noise Impact Assessments) would assess this and provide for the necessary monitoring. Other environmental issues raised relate to the blasting for the foundations and the volume of material to be removed and similarly the volume of concrete required; associated impacts on groundwater and erosion from increased run-off from the hard standing; as well as the nature of the crossings of the drainage lines (B. Gent, 7/6/2011). It is important to note that the neighbouring landowners also believed that the new proposal would in no way impact their agricultural activities (C. Basson, J.F Kirsten, E. Loedolff, 23/5/2011 and A. Bosch, 10/6/2011). Rehabilitation of vegetation was also mentioned as a positive impact (D. Cornelius, 4/5/2011).

In terms of the social impacts, the WCDM planner noted that the project would not have any great social impacts (D. Kotze, 4/5/2011). It was noted that the development was not near an urban centre and being outside a residential area, social impacts would be limited (H. Jansie, 21/4/2011 and A. Thoma, 4/5/2011). Similarly, one community member from Darling stated the following "I am very much in favour, I can't see any adverse effects on the human population" (G. Adams, 21/4/2011). However, the issue of road safety at the junction of the R315 and R27 and implications from the site access roads was noted as a potential social issue (H. Cleophas, 4/5/2011 and B. Gent, 7/6/2011).

Of all the issues raised, the potential visual impact was the greatest concern amongst stakeholders. There was concern that the wind turbines would be sited in a sensitive tourism area, as the turbines would be in proximity to the R27, the Darling Hills and the Coast (D. Kotze, 4/5/2011). However, the same stakeholder noted that 'people are adaptable' and would get used to it. Another respondent felt strongly that the visual impacts would 'destroy the Darling brand' by affecting the skyline (M. Ashford, 21/4/2011). However, in terms of international tourists it was noted that such overseas tourists are used to wind energy facilities and it would not deter them from visiting (H. Jansie, 21/4/2011). The District Tourism representative also believed that it would not negatively impact on tourism "because it is new and novel it might add to the tourism product mix" (D. Cornelius, 4/5/2011).

When asked how the impacts could affect each stakeholder's organisation and respective activities, the District Tourism authorities stated it would have no impact (D. Cornelius, 4/5/2011); while Swartland Tourism stated it would negatively impact the activities through the change in 'sense of

place' (M. Ashford, 21/4/2011). The owner of the West Coast Farm Stall stated that it would not prevent tourists from travelling up the R27, because the tourists would not know that the wind farm is there until they see it, much like the existing Darling Demonstration Wind Farm (B. Gent, 7/6/2011). Similarly with !Khwa ttu, the proposal would not deter people or result in a loss of business, however, it would "ruin the atmosphere" and be a contradiction to the natural and cultural activities !Khwa ttu are promoting (M. Daiber, 7/6/2011). For example the turbines would be visible from the replica San Village on the property and would therefore detract from the atmosphere being recreated.

On a different level, the long term benefits of renewable energy for the environment and society were also acknowledged (A. Thoma, 4/5/2011, M. Daiber, 7/6/2011 and van Litsenborgh, 7/6/2011).

In terms of the impacts to the local economy, it was acknowledged that the Project is not likely to create many operational jobs, however, the construction jobs would be welcomed (H. Cleophas, 4/5/2011, A. Thoma, 4/5/2011 and G. Adams, 21/4/2011). It was noted that a small workforce was an advantage in that there would not be an influx of outsiders into the town as is common in other projects (A. van Litsenborgh, 7/6/2011). Two stakeholders noted that the development could limit the developmental potential of nearby properties and hence potential negative impacts on property prices (H. Jansie, 21/4/2011 and B. Gent, 7/6/2011). It was the opinion of a number of local estate agents that the proposed Project would not have any impact on property values, however, in conjunction with the other proposals along the West Coast there could be cumulative impacts (see Section 7.3.11). Only two of the neighbouring landowners specified plans for future development on their land and this is on the farm Klein Windhoek (see Appendix A for map), where a tourism facility has already been approved and on Elsana where a padstal has been approved (A. Nell, 9/6/2011 and H. Louw, 29/6/2011). Apart from this the surrounding properties are predominantly agriculture and associated activities and on this basis, it was the opinion of the Chair of the Yzerfontein Urban Conservancy that these activities would not be affected by the presence of a wind farm (A. van Litsenborgh, 7/6/2011). Therefore, impacts on the local economy are not likely to be significant due to the existing agricultural land use and small workforce required for this Project.

A number of interviewees believed that if there was an associated development of a Darling Education, Training and Visitor Centre on Windhoek Farm, the tourism impacts would be positive and would attract more visitors (H. Cleophas, 4/5/2011, A. Thoma, 4/5/2011, J. Fevrier, 3/5/2011, H. Jansie, 21/4/2011, A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). The District Tourism representative stated that there were no conference facilities that can accommodate over 80 people in the West Coast District and there was definitely a demand for such a facility (D. Cornelius, 4/5/2011). However, an important issue raised is the threat to road safety should a liquor licence be granted to the Centre (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Also in response to a potential Visitors Centre, it was noted that !Khwa ttu and the West Coast Farm Stall may lose business should this new Centre be developed. However, it was acknowledged by the director of !Khwa ttu that "competition is healthy" and !Khwa ttu would not be in opposition to such a development (M. Daiber, 7/6/2011). It was noted that there was a high risk of the benefits not materialising as this project has been in the pipeline for many years and was supposed to have followed on from the existing Darling Demonstration Wind Farm (M. Ashford, 21/4/2011 and B. Gent, 7/6/2011). Overall, it was unanimously agreed that an 'Education, Training and Visitor Centre' would be an associated positive impact of the Project and would be welcomed by the public.

6.6 OPPORTUNITIES TO MAXIMISE THE BENEFITS OF THE PROJECT

Stakeholders were questioned on possible opportunities to maximise the benefits arising from the proposed Project. Although some parties felt there would be no benefits from the project (21/4/2011 and H. Jansie, 21/4/2011), those that did, identified four categories of opportunities to maximise these benefits. The first related to jobs and local economic benefits. The number of jobs should be maximised and where possible local labour should be used (G. Adams, 21/4/2011, A. Van Ellewee, W. Badenhorst, B. Geel, 3/5/2011 and B. Gent, 7/6/2011). Local suppliers should be used where possible for services such as security or even provision of milk to the labourers, and a 'Local Economic Development' plan was suggested as a means of setting out these targets (D. Cornelius, 4/5/2011). In essence, socio-economic benefits from 'green energy' need to be maximised.

Another suggestion was the establishment of a trust to address the social needs of the community in order to see benefits at the grass roots level (H. Cleophas, 4/5/2011 and B. Gent, 2011). Community members such as headmasters and churches, rather than politicians should be involved (H. Cleophas, 4/5/2011). A BEE company, as set up for the previous wind farm was not considered adequate as the community would not receive any direct benefits (H. Cleophas, 4/5/2011). Other suggestions were for the applicant to commit to contributions to the CWCBR (H. Cleophas, 4/5/2011) or !Khwa ttu as a not for profit community-owned venture which would be directly affected by the presence of the facility (M. Daiber, 7/6/2011).

Another benefit recognised was the generation of renewable energy. It was questioned whether the community and the towns could directly tap into this resource, for example, branding of Yzerfontein and Darling as a 'green towns' (J. Fevrier, 3/5/2011, A. Thoma, 4/5/2011, A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Unfortunately this is not possible as the energy would be bought by Eskom for the national grid.

The fourth type of benefit was to maximise on the educational potential associated with a wind farm. It was noted that there was a poor understanding of wind energy and renewable energy in general in the wider community (D. Cornelius, 4/5/2011). It was acknowledged that the general public need exposure to renewable energy technologies and the awareness would assist in generating buy-in (J. Fevrier, 3/5/2011). It was suggested that an educational facility and information bureau be established (D. Kotze, 4/5/2011) similar to that at the nearby Fossil Farm (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Schools and tourists would therefore benefit from having access to such a facility (G. Adams, 21/4/2011). At a District level it was suggested that an education and awareness campaign for wind energy be initiated which could involve roadshows and presentations to schools, tourism forums, chamber of commerce and so forth (D. Cornelius, 4/5/2011).

Overall benefits from local labour and procurement should be maximised, a community trust should be set up and education and awareness of renewable energy should be enhanced.

6.7 MEASURES TO MINIMISE THE NEGATIVE IMPACTS OF THE PROJECT

A range of mitigating measures were identified, namely turbines set back from the R27; environmental monitoring; financial contribution for junction upgrade (for Visitor Centre); and creation of awareness and education. It is very difficult to mitigate the visual impacts of wind farms. In identifying measures to mitigate potential negative impacts arising from the project, two stakeholders noted that there were no measures which could mitigate the visual impacts (M. Ashford, 21/4/2011 and D. Kotze, 4/5/2011). However, it was also acknowledged that it would be favourable to keep the turbines as far away from the R27 as possible (M. Daiber, 7/6/2011). Similarly, the environmental impacts from blasting and land-take are also difficult to mitigate (B. Gent, 7/6/2011). Other stakeholders noted that there were no social impacts as the development was not within a residential area (A. Thoma, 4/5/2011). Two stakeholders noted that if a proper assessment is conducted, there would be no negative impacts (H. Jansie, 21/4/2011) and similarly potential impacts should be monitored (G. Adams, 21/4/2011). In response to the existing issue of road safety along the R27 and at the junction with the R315 in particular it was noted that the project could increase the risk in this zone. Therefore although it is acknowledged that the development alone will not generate huge volumes of traffic and that there are many other road users, should a Visitors and Education Centre also be developed, junction upgrades would be necessary and the developer should consider providing a financial contribution to an upgrade of this intersection (H. Cleophas, 4/5/2011). As mentioned above, it was suggested that negative impacts could be mitigated through educating the public of the benefits of renewable energy (J. Fevrier, 3/5/2011) taking into account people are resistant to change and need more information (D. Cornelius, 4/5/2011). The consultations suggested that the most significant impact was most likely the visual impact of the turbines, which cannot be mitigated, thus other measures such as ensuring a setback from the R27 could be applied. Whilst some stakeholders did not feel that there were any negative impacts, there was the suggestion to undertake environmental monitoring; contribute to the junction upgrade (for the Visitor Centre); and to create awareness and provide education on renewable energy.

6.8 ALTERNATIVES

The two alternatives for turbine technology and number (and therefore site layout) were considered and stakeholders provided their preference (see Section 1.3 for comparison of the two options). Only two stakeholders preferred Option 2 (16 turbines) on the basis of smaller turbines, and one recommended a mix with the smaller turbines at the top and the bigger ones at the bottom of the Moedmaag Hill, and if not possible, the preference was for the smaller turbines. Most stakeholders preferred Option 1 on the basis of efficiency and fewer turbines. Two stakeholders did not have a preference stating that the impact would be the same either way. Another issue raised was the preference to distance the turbines away from the R27 as much as possible (H. Jansie, 21/4/2011). Option 1 therefore received the most support from stakeholders mainly due to higher efficiency and a reduced impact on the physical and biophysical environment.

6.9 CUMULATIVE IMPACTS

The cumulative impacts of the proposed Project in conjunction with the other renewable energy proposals along the West Coast was considered by the stakeholders. At a strategic level it was recognised that the establishment of such developments would have long term environmental benefits, and although they would not provide cheaper energy, they would be more 'environmentally friendly' (D. Cornelius, 4/5/2011). Jobs were also seen to be a positive cumulative impact (G. Adams, 21/4/2011).

In visual terms, the situation on the West Coast was described by the owner of the West Coast Farm Stall who also resides adjacent to the Rheboksfontein proposed wind farm as "monsters springing up in your backyard" (B. Gent, 7/6/2011). The visual impact was notably a common concern and from a District perspective, the attraction of the West Coast and the main tourism hub is between Cape Town and Saldanha, more so than areas north of the Olifants River where wind energy developments were considered more suitable. It was a concern that this stretch of the coast "could be spoilt forever" (D. Kotze, 4/5/2011) and the West Coast could become known as "the place of wind farms instead of a place of nature, fishermen and a simple way of life" (M. Daiber, 7/6/2011). When considering scale and siting of wind farms, it was the preference of WCDM Tourism that fewer larger wind farms with larger turbines were more favourable, as is common in Europe where the wind farms are far enough apart (such as 100 km) to allow for a cumulative visual impact buffer zone (D. Cornelius and H. van Rooyen, 4/5/2011).

Visual impacts were predominantly linked to impacts on tourism (M. Ashford, 21/4/2011). However, at Yzerfontein it was believed by interviewees that there would be no cumulative impacts affecting tourism (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). It was noted that in terms of the visual impacts, wind energy developments are likely to be negatively perceived by the public, but with time the public would get used to the presence of the turbines, and realise the benefits (D. Cornelius, 4/5/2011 and H. Cleophas, 4/5/2011). Some individuals believed that as long as developments are sited correctly, for example employing a 5 km buffer zone from settlements, and not near prime tourist beaches, they would be acceptable (H. Jansie, 21/4/2011 and A. Thoma, 21/4/2011).

Other negative cumulative impacts identified include the distraction of drivers along the R27 (J. Fevrier, 3/5/2011) and the potential for noise (A. Van Ellewee, W. Badenhorst and B. Geel, 3/5/2011). Some of the stakeholders queried whether the development of many wind farms along the coast could influence weather patterns (van Litsenborgh, 7/6/2011). Although the economic and climate change benefits of renewable energy developments are significant and considered to be a positive cumulative impact, the cumulative visual impact would have a negative impact on the natural and rural 'sense of place' if not sited correctly.

6.10 PLANNING IMPLICATIONS

The relevant planning documents for the area were reviewed and the municipal officials have been consulted to establish the potential planning implications of the proposed Project. Renewable energy does not feature in the IDP and SDF documents at the local (Swartland Municipality) or

district (West Coast District Municipality) level. However, it was stated by the current Swartland Ward 5 Councillor that the SDF of the Swartland Municipality is out of date and the Municipality needs a 'shift in mindset' to acknowledge the potential of the renewable energy industry (H. Cleophas, 4/5/2011). In questioning whether the Project aligns with the vision within the local planning documents, the Ward Councillor noted that the Municipality would be in favour of the development. At the District level, there is also no mention of renewable energy development in key documents; however the plans identify the R27 as a major transport corridor serving many purposes (D. Kotze, 4/5/2011).

The DEA&DP 'Strategic Initiative to Guidelines for Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape' (2006) was developed and subsequently the SEA (2010) which is not yet legislated. The District is led by DEA&DP and therefore it is 'pro renewable energy but with the necessary caution' (D. Kotze, 4/5/2011). The District is hesitant to produce their own guidelines or spatial framework in light of the above as well as creating potential for dispute with developers (D. Kotze, 4/5/2011).

In terms of the planning implications of the proposed Project in particular, it was believed that there were none (H. Cleophas, 4/5/2011 and D. Kotze, 4/5/2011). The SDF of the CWCBR was also highlighted as an important document; however it is not yet approved. Overall, there are no planning implications apart from the potential conflict with the recognised scenic attributes of the R27 corridor.

6.11 SUMMARY OF SOCIAL IMPACTS

The District and Local Municipal areas are appreciated for their rural qualities and quiet, unaffected environment with areas of natural beauty. It is therefore not surprising that the potential visual impact of the proposed Kerrie Fontein and Darling Wind Farm is one of the greatest concerns amongst some of the stakeholders. Although it is acknowledged that this Project is small by comparison to other wind energy proposals along the West Coast, it is the cumulative effect which causes concern as the landscape and the 'sense of place' would be permanently altered. The site has been chosen as it is the site of an existing wind farm, the Darling Demonstration Project, and for this reason the planner from the WCDM stated that she was "not keen on the siting, but since there are already four turbines there, would rather see this site extended than develop a new one next door".

In terms of the general attitude of the public, it appears the community falls into three main groups: the majority being apathetic, those that do not support the proposal on the basis of the visual impact and associated change to 'sense of place' and tourism potential, and the final group that supports the proposal, seeing it as a sign of progress, a solution to the energy crisis and a suitable alternative to nuclear.

While the stakeholders' opinions on visual impact are clearly divided, the principle of renewable energy development in South Africa and along the West Coast more specifically was largely supported.

In terms of socio-economic impacts specifically, employment although minimal, was identified as a benefit of the Project, and impacts on property prices was identified by some as a potential issue

although the majority of estate agents themselves felt that this was not an issue. Road safety at the junction was raised as an existing problem which could be exacerbated by the Project. There are perceived to be no planning implications of the development, however, the District recognises the R27 as a scenic route and this could be in conflict with the siting of the Project.

Various suggestions to enhance the opportunities presented by the project include support for the associated Visitors and Education Centre both in terms of adding to the tourism product mix; creating jobs; and generating awareness of the benefits of renewable energy. It was also identified that the establishment of a community trust would allow benefits to filter down to the grassroots level. Mitigation measures include monitoring of impacts, contribution to the upgrade of the junction, and education as already described. It was acknowledged that there was no potential to mitigate the visual impacts.

In terms of alternatives, the responses were mixed, however, there was more preference for the option that was more efficient in terms of wind resources, which has been proven to be Option 1 (14 x N77).

Overall the majority of stakeholders were very supportive of the Project identifying few perceived social impacts, with the most emphasis being on the permanent change in landscape.

7 SOCIAL IMPACT ASSESSMENT

7.1 INTRODUCTION

During the Scoping Phase, the potential issues and impacts were identified for the different phases of development, and the SIA has aimed to establish the environmental significance of these potential impacts through application of the framework for assessing significance (see Section 3.5). The impacts are summarised in Table 7.20 at the end of this Section.

7.2 CONSTRUCTION PHASE

The potential positive and negative impacts which could arise as a result of the construction activities are assessed as follows.

7.2.1 Direct Employment and Skills Development

The construction of the Project will require a workforce and therefore direct employment will be generated. Although the exact number of construction jobs has not yet been established; a recent study by Greenpeace has indicated that in South Africa, construction and installation of wind energy facilities accounts for approximately 4.5 job years per MW (Rutovitz, 2010). This would equate to between approximately 94 - 95 job years generated by this Project over a period of 6-10 months. However, this number is likely to be lower based on other existing wind farm proposals and their estimations. In terms of skills, it is common that highly skilled or skilled labour such as engineers, technical staff and project managers constitute about 20-25% of the work force; while low skilled construction and security staff constitute the majority of the workforce at around 40-70%. Semi-skilled staff would typically be required to operate machinery and these usually comprise 30-40% of the work force. It is likely that a general contractor will be appointed by the developer who will hire the necessary subcontractors with expertise in civil works, electrical work and mechanical assembly.

Statistics set out in Sections 4.3.2 and 4.3.4 indicate a poor level of education in the Swartland Municipality linked to a limited skills base. This is coupled with a high level of unemployment. Although the more specialised tasks are likely to require skills from outside the Swartland Municipal area, there are potential opportunities for low skilled local security staff and construction workers which would require associated training. This, however, depends on the policies and the location of the contracting company.

The impact is therefore assessed to be positive; local, district and provincial in extent; temporary in duration; low intensity; and highly probable. However, the extent to which the local workforce will benefit will depend on the contractor and is assessed with less confidence. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

It is recommended that a local employment policy is adopted by the developer to maximise the

opportunities made available to the local labour force and to set recruitment targets. This would increase the significance to an impact of *low-medium* significance to the decision-making process.

Table 7.1: Significance of impact on direct employment and skills development

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local employment policy	Low-Medium

7.2.2 Economic Multiplier Effects

There are likely to be economic multiplier effects from the use of local goods and services which includes, but is not limited to, construction materials and equipment and workforce essentials such as food, clothing, safety equipment, and other goods. Off-site accommodation would also be required for those construction staff not located in the area, and there is a good stock of accommodation in Darling and Yzerfontein. Transport services to the site from these urban centres would also be required as there is a lack of public transport in the area. This additional spend would provide an indirect boost to the local economy but the extent to which these benefits can be achieved would also depend on the location of the contractor and the subcontractors and their preferred suppliers.

The impact is therefore assessed to be positive; local, district and provincial in extent; temporary in duration; low intensity; and highly probable. However, the extent to which the local economy will benefit will depend on the contractor and is assessed with less confidence. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

It is recommended that a local procurement policy is adopted by the developer to maximise the benefit to the local economy. The general contractor could be responsible for making available to the sub-contractors the contact details for all the local businesses offering related good and services. This would increase the significance to an impact of *low-medium* significance.

Table 7.2: Significance of impact on economic multiplier effects

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local procurement policy	Low-Medium

7.2.3 Indirect effects of additional workers on site

Additional workers on the site during construction may have indirect effects, such as increased security issues for neighbouring farms and damage to property, such as the risk of veld fire, stock theft and so forth. The site would not accommodate construction workers overnight apart from security staff if necessary and is fairly small and by no means isolated.

The impact is therefore assessed to be negative; local in extent; temporary in duration; low intensity; and improbable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation

The site should be secured and livestock restricted from such areas. A comprehensive employee induction programme would cover land access protocols, fire management and so forth. This would normally be addressed in the Construction EMP as best practice. The impact is assessed to be of *negligible* significance to the decision-making process.

Table 7.3: Significance of indirect effects of additional workers on site

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Temporary	Low	Improbable	Low	Implement comprehens-ive employee induction programme	Negligible

7.2.4 Impacts of a non-local workforce on society

It was identified that the introduction of a non-local workforce has the potential to result in social disruption both physical and emotional during construction. Such disruption could result in an increased demand on social infrastructure such as accommodation, health facilities, transport facilities and so forth. Social ills including the spread of diseases (such as HIV/AIDS), crime and social conflict are also a potential risk. However, the degree to which society is disrupted largely depends on the level of local employment achievable and in the case of this Project a portion of the workforce is expected to be sourced locally and the overall number of outsiders would not be significant. The infrastructure within Darling and Yzerfontein would have the capacity to absorb the additional people. In terms of social ills, however, there is an existing alcohol and drug problem in the area which is often linked to crime and this has the potential to be exacerbated by newcomers.

The impact is therefore assessed to be negative; local in extent; temporary in duration; low intensity; and improbable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation

A comprehensive employee induction programme would address issues such as HIV/ AIDS and TB as well as alcohol and substance abuse. The induction could also address a code of behaviour for employees that would align with community values. This would reduce the impact to be of *negligible* significance to the decision-making process.

Table 7.4: Significance of impacts of a non-local workforce on society

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Temporary	Low	Improbable	Low	Implement comprehens-ive employee induction programme	Negligible

7.2.5 Landscape and visual disturbance

There is likely to be some temporary landscape and visual disturbance as a result of the presence of heavy machinery and transportation to and from, and within the site. Temporary land take is also required for the construction camp and the laydown areas; the turbine components themselves are very large and would be conspicuous on the site during assembly. Receptors would include vehicle drivers along the R27 and R315 as well as residents of Jacobuskraal, and parts of Yzerfontein.

The Visual Impact Assessment (VIA) for this project undertaken by Oberholzer and Lawson (2011) has found the visual impacts of the wind turbines (both Option 1 and 2) erected during construction to be *medium-high*. The visual impacts of the substation construction is assessed as *medium*, and the construction of the internal access roads also assessed as *medium*.

Mitigation

As assessed by the visual impact specialists there is minimal mitigation available to reduce the impacts from the erection of the wind turbines, however, the visual impact of the substation can be reduced to *medium-low* through screening with berms and planting; and the impact of the internal access roads could be reduced to *medium-low* through the blending with contours.

Table 7.5: Significance of impact from landscape and visual disturbance

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Short Term	Medium to Medium-High	Highly Probably	Turbines: Medium-High; Substation & Roads: Medium	Screening substation with berms; blend access roads with contours	Turbines: Medium-High; Substation & Roads: Medium-Low

7.2.6 Disruption or damage to adjacent properties

Disruption or damage to adjacent properties (including access arrangements) is a potential issue. This may include a temporary increase in noise and dust, or the wear and tear on private farm roads for access to the site. Access during construction will be via the farm access road to Windhoek Farm (Slangkop 3/552) and this access has been agreed with the landowner, permanent access will also be constructed on the Kerrie Fontein Farm for light vehicles. No other neighbouring farms will be required to provide access. It is reported that the road on Tumbleweed Farm is still used by Eskom

to access the existing substation and this arrangement would need to be reconsidered as it is in breach of the original agreement. Potential noise impacts from typical construction equipment such as an excavator, mobile crane or drilling rig would impact on the sensitive receptors especially if used simultaneously. This has been assessed by Williams (2011) in the Noise Impact Assessment (NIA) and predicted to be of medium negative significance. However, since the activities and access arrangements are largely restricted to the two farms, the works will be somewhat set back from adjacent farms, with very few receptors being within range of these impacts. During the construction of the Darling Demonstration Wind Farm, however, an infringement was reported on the farm Klein Windhoek whereby survey pegs were disrupted.

The impact is therefore assessed to be negative; local in extent; temporary in duration; low intensity; and probable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation

The Construction EMP would typically address noise and dust control through best practice measures. Incidences and complaints would be reported via a dedicated phone line to the contractor or ECO. Any disturbed areas will be reinstated during rehabilitation of the site. The EMP should also contain measures to protect and maintain legal survey pegs. Noise impacts would be reduced to low. Eskom will need to be consulted to establish the access arrangements to the substations. The overall impact from disruption would be reduced to be of *negligible* significance to the decision-making process.

Table 7.6: Significance of impact from disruption and damage to adjacent properties

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Temporary	Low	Probable	Low	CEMP to address noise and dust control; complaints procedure; rehabilitation	Negligible

7.3 OPERATIONAL PHASE

The potential positive and negative impacts which could arise as a result of the operation of the Project include the following:

7.3.1 Direct Employment and Skills Development

The operation of the Project will require a workforce and therefore direct employment will be generated. Although the exact number of construction jobs has not yet been established, a recent study by Greenpeace has indicated that in South Africa, the operation and maintenance of wind energy facilities accounts for approximately 0.72 job years per MW (Rutovitz, 2010). This would equate to between approximately 15 job years generated by this Project during its design life of a minimum of 25 years. However, based on the estimations of other wind farm proposals, it is likely to

be much lower than this. At present there is an operational office on Langefontein Farm servicing the existing turbines and this will be expanded to accommodate additional technical equipment and employees. It is likely that highly skilled personnel would need to be recruited from outside the Swartland Municipal area. The employees would include skilled 'mechatronics' engineers (specialised in both electrical and mechanical engineering) likely to be recruited from the West Coast, Darling area and trained by the manufacturer, as well as less skilled services such as safety and security and mechatronic assistants. Maintenance will be carried out throughout the lifetime of the turbines. A maintenance schedule usually involves an initial inspection after commissioning, a semi-annual inspection, an annual inspection and two and five year inspections but this varies according to the type of turbine. Typical activities during maintenance include changing of oil, replacement of brake lining and cleaning of components.

Although not part of this application and with an unknown probability of implementation, a training centre on Langefontein Farm is planned by the Oelsner Group. This would provide various levels of training relating to the servicing of operational wind energy facilities. It is intended that this would increase the local skills base and support this Project and others of its kind within the region.

During the environmental authorisation process, care has been taken to avoid the local creation of expectations of employment as this is a potential negative indirect impact that could arise during the planning stage of the Project.

The impact is assessed to be positive; local, district, and provincial in extent; long term in duration; low intensity; and probable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation

It is recommended that a local employment policy is adopted by the developer to maximise the Project opportunities being made available to the local labour force. Due to the small number of opportunities created and the limited skills base, the extent to which these local benefits could be enhanced is not large, and therefore the significance of the impact to the decision-making process would remain as *low*.

Table 7.7: Significance of impact on direct employment and skills development

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District; Provincial	Long term	Low	Probable	Low	Implement local employment policy	Low

7.3.2 Economic Multiplier Effects

Economic multiplier effects generated from the supply of local goods and services to the Project during operation would include maintenance tools, supplies and equipment which may be technology specific and therefore not necessarily available locally as the manufacturer is based in Europe. Local requirements, however, could include items such as employee essentials, namely

food, clothing, safety equipment, and other goods. Although the number of new employees is small, the new income earned would result in additional spend within the local economy.

The impact is therefore assessed to be positive; local, district and provincial in extent; long term; low intensity; and probable. However, the extent to which the local economy will benefit will depend on how many new positions are created for local residents which would reduce the potential for leakage. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

It is recommended that the developer adopts a local procurement policy which would maximise the benefit to the local economy and minimise leakage. Due to the small number of opportunities created, the extent to which these local benefits could be enhanced is not large, and therefore the significance of the impact to the decision-making process would remain as *low*.

Table 7.8: Significance of economic multiplier effects

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District; Provincial	Long term	Low	Probable	Low	Implement local procurement policy	Low

7.3.3 Landowner revenue

The Project will increase the profitability of the land leased from farmers and will provide an additional income for the landowners of the two farms Slangkop (3/552), also known as Windhoek, and Kerrie Fontein (0/555). Although this direct financial benefit is fairly limited as it will only profit the two landowners in question, this income could be used to upscale the agricultural activities on these farms with benefits for the local economy, or it could enter the local economy through additional spend.

The impact is therefore assessed to be positive; local in extent; long term; low intensity; and highly probable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

No mitigation measures are recommended.

Table 7.9: Significance of impact on landowner revenue

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local	Long term	Low	Highly probable	Low	None	Low

7.3.4 Diversification of the local economy

Increasing the contribution of the renewable energy sector to the Swartland local economy may contribute to the diversification of the local economy and provide greater stability. It is acknowledged that the economy of the Swartland Municipality is dominated by the agricultural sector as the main contributor and employer. Agricultural activities in the Swartland are diverse and dominated by wheat, grapes, sheep, beef and dairy, with olive, canola, and legume farming to a lesser degree. Although the sector is believed to be stable and sustainable, individual sectors such as wheat can be volatile (Swartland Municipality, 2007b). It is also reported that skills are being lost to areas with greater opportunities, such as to Cape Town. The growth in the wind energy sector could serve to retain some of these skills. The development of a wind energy industry could therefore add to the stability of the economy, and even though this Project is small scale in comparison to the overall potential of the sector, it could contribute to the local economy.

The impact is therefore assessed to be positive; local and district in extent; long term; low intensity; and probable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

No mitigation measures are recommended.

Table 7.10: Significance of impact on diversification of the local economy

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District	Long term	Low	Probable	Low	None	Low

7.3.5 Visual impacts on the rural character of the area

The presence of additional turbines on the site is likely to result in visual intrusion given the rural nature of the area. This has been assessed in the VIA and also reflected in the critical views of the stakeholders interviewed. The area is appreciated for its rural qualities and described as having ‘natural beauty’, being ‘quiet’, ‘unspoilt’ and ‘unaffected’ and is therefore considered to be a sensitive landscape. The wind turbine as an element in the landscape is a subjective topic, with the stakeholders and the general public being divided in their opinions, describing a wind farm as ‘majestic’, a ‘beacon’ and a ‘landmark’ with a certain ‘curiosity value’, with others using the term ‘eyesore’ and ‘monsters’ to refer to wind turbines. This is also mirrored by the findings of the international literature review in Section 5. With regards to the existing farm it has been evident that time was a mitigating factor, and this was also reflected in the literature when considering public perceptions.

The Visual Impact Assessment (VIA) undertaken by Oberholzer and Lawson (2011) has found the significance of the visual impacts of the wind turbines (both Option 1 and 2) during operation to be *medium-high*. The significance of the visual impacts of the substation and the internal access roads during operation are both assessed as *medium*.

Mitigation measures

As assessed by the visual impact specialists there is minimal mitigation available to reduce the impacts from the erection of the wind turbines, however, the significance of the visual impact of the substation can be reduced to *medium-low* through screening with berms and planting and the significance of the impact of the internal access roads could be reduced to *medium-low* through the blending with contours.

Table 7.11: Significance of visual impact

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Long term	Medium to Medium-High	Highly probable	Turbines: Medium-High; Substation & Roads: Medium	Screening substation with berms; blend access roads with contours	Turbines: Medium-High; Substation & Roads: Medium-Low

7.3.6 Road safety

Road safety is a potential issue as the landscape feature may create a distraction to drivers particularly when the facility is new and has a 'curiosity value' described by the stakeholders. The VIA has assessed the visual impact of the turbines as medium-high. The R27 is a regional transport corridor as recognised by the Swartland IDP and it has been identified that this road is 'notorious for its high accident frequency' (Swartland Municipality, 2007a). Furthermore the junction of the R315 and the R27 is also believed to be a high accident zone. It has, however, been reported by the stakeholders interviewed that that the original Darling Demonstration Wind Farm did not have an impact on road safety along this stretch of road.

The impact is therefore assessed to be negative; local in extent; short to medium term; low intensity; with an unknown level of probability. The impact is assessed to be of *low* significance to the decision-making process. This is, however, assessed with a low degree of confidence in the absence of a specialist traffic impact assessment, and therefore the precautionary principle has been applied.

Mitigation measures

The VIA has acknowledged that minimal mitigation is possible to reduce the impacts from the wind turbines and the significance of the impacts remain as *medium-high*.

The proposed Darling Education, Training and Visitor Centre which is a current proposal of the Oelsner Group would provide a platform for the general public to learn more about renewable energy and to explore demonstration technology. Whether this development is approved or not, it is recommended that the developer provide pre-arranged tours of the site for the general public and interest groups. This would allow people to view the wind farm up close and hopefully allay some of their fears and satisfy their curiosity when driving past in the future.

The impact would remain with a *low* significance to the decision-making process.

Table 7.12: Significance of impact on road safety

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Short to medium term	Low	Unknown	Low	VIA Mitigation; Site tours	Low

7.3.7 Noise impacts on the quality of life of nearby receptors

Noise generated from the turbines may reduce the quality of life of receptors in the immediate vicinity. The international literature review reveals that wind turbine facilities have been the subject of complaints from local residents focusing around health issues due to noise, such as headaches, dizziness, sleep deprivation, anxiety and vertigo (Colby et al, 2009). However, other scientific evidence reveals that wind farms have no harmful effects on human health (Pedersen and Högskolan, 2003; Colby et al, 2009; NHMRC, 2010). The Darling Demonstration Project has received no complaints of operational noise and the neighbouring farmers confirm that this was their original perception prior to construction. These farmers have not experienced wind turbine noise as an impact. Furthermore, there is also anecdotal evidence from these landowners that noise did not affect their livestock and the productivity of their farms. This Project, however, would be larger in capacity, with bigger turbines and this has been modelled in the Noise Impact Assessment (NIA) by Williams (2011). The NIA has assessed the impact at 10 noise sensitive receptors with the two closest receptors (to the nearest turbine) being the workers cottage at Windhoek Farm (523 m distance) and the Windhoek Farm House (634 m), which are both on the portion of Slangkop (3/552) known as Windhoek. Other receptors are further afield.

The findings of the NIA reveal that for both proposed options, the noise at the workers cottage may marginally exceed the recommended noise limit of 45 dB(A) during high wind speeds (45.6 dB(A)). On this basis the impact is assessed to be negative; local in extent; short term; medium intensity; and probable. The impact is assessed to be of *medium* significance to the decision-making process without mitigation.

Mitigation measures

The mitigation measures as recommended in the NIA apply here and this includes the measurement of the wind turbine noise to ensure that the impact is within the recommended limits. These measures reduce the significance of the noise impact to the decision-making process, to *low*.

Table 7.13: Significance of noise impacts

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Short term	Medium	Probable	Medium	Noise monitoring	Low

7.3.8 Impact on property prices

The potential negative impact on property prices was identified as a potential issue. The international literature review reflects conflicting findings. On the one hand, the majority of estate agents reported that negative impacts would arise, namely during the planning phases which they predicted would lessen with time (Dent and Sims, 2007). Another study based on quantitative findings from actual property transactions in the United States found no evidence to support the proposed impact on property prices (Sterzinger et al, 2003), such as the more recent study in the US by Hoen et al (2009). It is therefore difficult to assess the potential impact on property and apply international literature, given that the unique socio-economic context for each study.

Local estate agents, with experience in the Darling and Yzerfontein property markets (Yzerfontein Seaside Estates (Pty) Ltd, Whalescape Properties, Chas Everitt, Yzerfontein and Dormehl Property Group Darling) gave their opinion on whether the existing wind farm had affected property prices and whether the new proposal would impact prices. They were unanimous in their opinion, that there had been no impact. It was also predicted the proposed Project would not impact property values either and would not deter future investors nor cause people to move out of the area. However, the representative of Jacobuskraal Estate, across the R27, was concerned that the Project could have an impact on property values. Given that the surrounding land uses are predominantly agricultural, it is not likely that the proposed wind farm would impact property values as it will not in any way affect the agricultural activities or productivity on these properties. This was also the view of the neighbouring landowners themselves.

The impact is therefore assessed to be of *neutral significance* to the decision-making process.

Mitigation measures

Not relevant.

Table 7.14: Significance of impact on property prices

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Neutral	N/A	N/A	N/A	N/A	Neutral	N/A	Neutral

7.3.9 Impact on community identity and cohesion

Although the Project will most definitely result in a visual impact on the landscape and rural character of the area, an attribute valued by residents, it is not likely to impact on the identity of the community itself. This is an assumption made on the basis that the community is itself divided. It was found that there is little cohesion between the two towns of Darling and Yzerfontein, which operate as two separate communities with Darling itself being divided along socio-economic lines. The residents of Jacobuskraal Estate and the other farmers in the wider area seem to have separate identities as well. Within these groups themselves, different individuals supported the hypotheses from the various theories such as 'NIMBYism' (they did not want the turbines near them but agreed with renewable energy development), 'proximity hypothesis' (those living closer to the project had a more negative perceptions of them) and 'experience, knowledge and social influence' (those in

support of wind energy had a more positive attitude towards the proposal) as described in Section 5.3. Other underlying factors influencing perceptions of this particular Project were also detected and these were based on the renewable energy versus nuclear energy debate where stakeholders argued for renewable energy as they believed it was a more favourable alternative to nuclear energy. While there seem to be different factions supporting or opposing wind farms for various reasons, basing their perceptions on various beliefs and their respective worldviews, it is not believed that this Project in particular would undermine the cohesion of the local community.

The impact is therefore assessed to be of *neutral* significance to the decision-making process.

Mitigation measures

Not relevant.

Table 7.15: Significance of impact on community identity and cohesion

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Neutral	N/A	N/A	N/A	N/A	Neutral	N/A	Neutral

7.3.10 Impact on local and regional tourism as a result of visual intrusion

The visual impact of both the turbines and associated infrastructure is one of the main environmental and social impacts of the Project and linked to this is the potential impact on tourism. The visual impact has already been explored above and assessed in the VIA as medium-high. However, to identify whether the visual impact and the impact on tourism is positive or negative has been a challenge throughout the SIA as the key stakeholders and public in general have been clearly divided on this matter. Impacts of wind turbines are perception based or socially constructed. The terms provided by stakeholders to describe wind turbines, such as 'majestic', are opposite in meaning to terms such as 'monsters'. This depicts the subjective nature of the issue and the importance of understanding that the context, experiences and activities of stakeholders will impact on their understandings and opinions over time (see Section 5.3.4).

The change in the 'sense of place' was considered by some a negative impact which would directly affect tourism and the 'Darling brand' (M. Ashford, 21/4/2011). However, tourism stakeholders at the District level believed that "because it is new and novel it might add to the tourism product mix" (D. Cornelius, 4/5/2011). International examples, however, also identified the positive impact or tourism potential of wind farms, building on the notion of 'green tourism' and as a reflection of progress within a region or a country (See Section 6.2.3). Furthermore, it was a critical finding of the interviews that the Project would not deter visitors from the area and in doing so would not affect the income generated by nearby tourism businesses. In essence, it would not quantitatively impact the tourism industry as a sector within the local or regional economy. It is also acknowledged that to begin with the Project would have a positive 'curiosity value', which would also decrease and probably become neutral over time. The knowledge provided in the international literature and the findings of the primary research report a greater emphasis on the positive impact of wind farms on tourism. However, in this case the impact of wind farms is assessed as a negative impact because of the potential transformation of the 'sense of place' in the immediate vicinity of the site which is

considered a long term impact (over the life span of the Project). This impact is assessed to potentially erode the natural beauty and the remoteness which is an intangible and immeasurable asset of the area.

The impact is therefore assessed to be negative; local in extent; long term; low intensity; and is highly probable. The impact is assessed to be of *low* significance to the decision-making process.

Mitigation measures

As recommended in Section 7.3.6 above, the tourism and educational opportunities and benefits of a 'green energy' development in the area should be maximised. Tourism depends on strong marketing which has the potential to raise awareness and education which would in the long term assist in generating acceptance.

The proposed Darling Education, Training and Visitor Centre, which is a current development proposal of the Oelsner Group, would provide a platform for the general public to learn more about renewable energy and to view the models of wind turbines and other renewable energy demonstrations up close. Whether this development is approved or not, it is recommended that the developer provide pre-arranged tours of the site for the general public and interest groups. This would allow the public to realise the benefits of wind energy which would improve perceptions of wind energy developments in general and provide an additional tourist attraction for the area. The significance of the impact to decision-making would remain *low* as the visual presence of the turbines will always be a social construction in terms of tourism and will remain indefinitely.

Table 7.16: Significance of impact on tourism

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local	Long term	Low	Highly probable	Low	Site tours	Low

7.3.11 Potential negative or positive cumulative effects within the region

The sudden spate of renewable energy development proposals along the West Coast in particular, and South Africa in general, has been driven by national government as part of global environmental governance, as a solution to the energy supply crisis and to mitigate climate change. Renewable Energy Feed-In Tariffs (REFIT) have been proposed by NERSA and the South African Government as an incentive for Independent Power Producers (IPPs) to develop such facilities. An abundant wind resource on the West Coast has led to a high concentration of wind farm proposals in this area with associated concerns regarding the potential cumulative impact on the environment. According to the DEAT Guidelines on 'Cumulative Effects Assessment' (2004, p: 3):

"Cumulative effects are commonly understood as the impacts which combine from different projects and which result in significant change, which is larger than the sum of all the impacts."

Figure 3.1 indicates the sites of the renewable energy proposals up to May 2011 as mapped by the West Coast District Municipality. It should be noted the certainty of all of these being developed is low as each proposal requires a number of approvals and authorisations issued by various

governmental bodies.

In terms of cumulative impacts, the visual impact of renewable energy developments on the West Coast is the major concern of stakeholders and linked to this is the potential impact on tourism, especially since the district is known for its remote landscapes and is marketed on the basis of its natural assets. Other potential negative cumulative impacts relate to the effect on birds, bats, botany, and micro-climate patterns which is outside the scope of this SIA. There are however also potential positive impacts which may arise from the reduction in dependence on fossil fuels; the diversification of the regional economy; and associated employment and multiplier effects.

Tourism and Visual Impacts

The VIA has assessed the potential cumulative impacts as medium-high (for the turbines) given the facility would remain a relatively small facility in comparison to the Rheboksfontein facility which is the closest proposed development site. As per the findings presented in Section 5.3.4 and Section 6.4, it is a common theme that people are adaptable and therefore the impact would diminish over time. In terms of tourism, a number of stakeholders believed that the integrity of the West Coast would be lost and it would become synonymous with wind farms. These sentiments are also consistent with the findings of a number of international studies particularly by tourism operators in areas offering outdoor activities and known for their natural environments (NFO WorldGroup, 2003 and NFO System Three, 2002). However, other international studies have shown that the majority of tourists surveyed are not bothered by the presence of wind farms (NFO System Three, 2002; NFO WorldGroup, 2003; BWEA, 2006).

In the international studies, the sensitive siting of wind farms has been documented as the main mitigating factor (NFO System Three, 2002); this was also expressed by the stakeholders. It was the opinion of a number of stakeholders that the wind farms needed to be sited away from tourism corridors and nodes and at least a fair distance apart so that visitors would not view a constant montage of wind turbines when travelling up the coast. Although the proposed Project is a small facility and likely to have a low negative impact on tourism which would be confined to the local area (as assessed in Section 7.3.10 above), in conjunction with the other proposals within the West Coast District it could well result in a higher cumulative impact especially due to its location on the R27, which is one of the main coastal routes. The impact on tourism cannot be quantified in economic terms, however, there is no doubt that the presence of a number of wind energy facilities would result in a negative impact to the ‘sense of place’ of the West Coast, the essence of many tourism establishments.

The cumulative impact on tourism is therefore assessed to be negative; local, district, and provincial in extent; long term to permanent in duration; medium intensity; and is highly probable. The impact is assessed to be of *medium-high* significance to the decision-making process.

Not many measures are available at the Project level for mitigating cumulative impacts over and above the project level recommendations relating to site layout and screening. It is more of a challenge for decision-makers at the various tiers of government to approve those developments which are considered more socially and environmentally acceptable.

Table 7.17: Significance of cumulative tourism and visual impacts

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Negative	Local; District; Provincial	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High

Renewable Energy

As set out in the Integrated Resource Plan for Electricity (IRP) 2010, renewable energy forms an important component of the energy mix going forward over the next 30 years with wind a significant component thereof. The cabinet approved policy (the 'policy-adjusted IRP') indicates that renewable energy has a capacity of 17.8 GW out of a total energy capacity of 42.5 GW. Of this, wind comprises 8.4 GW and this is proposed to come on stream from 2014 onwards, over and above an already committed 700 MW for 2012 and 2013. In particular, the White Paper on Sustainable Energy for the Western Cape Province (2010) sets out a target for the Province. It is stipulated that 15% of electricity consumed in the Province will come from renewable energy sources by 2014. The potential total capacity of all the proposed wind projects (excluding the wind and solar hybrids) in the West Coast District is roughly calculated to be 2,300-2,350 MW. This would more than meet the requirements of the provincial energy targets, over the following 30 years.

The cumulative impact on renewable energy development and associated climate change mitigation is therefore assessed to be positive; provincial and national in extent; long term to permanent in duration; medium intensity; and is highly probable. The impact is assessed to be of *medium-high* significance to the decision-making process.

No mitigation is recommended.

Table 7.18: Significance of cumulative renewable energy and climate change impacts

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Provincial; National	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High

Economic and Employment Impacts

Although the Project itself would yield relatively minor benefits for the local economy, given the appropriate enabling environment and in combination with the projected capacity of renewable energy generation, the impacts could be significant. Of importance is the fact that the renewable energy sector would require a wide range of skills to implement the various technologies (Agama Energy, 2003). Experience from the EU has shown that the wind energy sector creates the following direct employment: manufacturers (37%); component manufacturers (22%); developers (16%); installation, repair, operation and maintenance (11%); utilities and IPPs (9%); consultancy / engineering (3%); research and development (1%); financial / insurance (0.3%) and other (1%) (EWEA, 2009). This highlights the significant potential in the manufacturing sector (specifically for

wind turbine components) which is not yet established in South Africa and would require a high number of artisans. The findings of the study undertaken by Agama Energy (2003: p.ii) shows that "renewable energy technologies offer a quantifiable potential for creating and sustaining new and decentralised employment in South Africa, which can offset some of the employment attrition that is a current trend in the conventional energy sectors". This has associated economic benefits as well as skills development and training opportunities.

The cumulative impact on the economy is therefore assessed to be positive; local, district, provincial and national in extent; long term to permanent in duration; medium intensity; and is highly probable. The impact is assessed to be of *medium-high* significance to the decision-making process.

No mitigation is recommended.

Table 7.19: Significance of cumulative economic and employment impacts

Nature / Status	Extent	Duration	Intensity	Probability	Significance (Without Mitigation)	Mitigation	Significance (With Mitigation)
Positive	Local; District; Provincial; National	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High

7.4 DECOMMISSIONING

Decommissioning and restoration activities are likely to have similar impacts as those identified for the construction phase. There are likely to be fewer skills and training opportunities available because at the end of the projected design life of 25 years, more skills are likely to be established. The only major difference would be that the removal of infrastructure would have an overall positive visual impact and should some infrastructure remain, it would be a lasting visual impact.

7.5 ASSESSMENT OF ALTERNATIVES

Three options have been assessed, Option 1 (14 x larger N77 turbines), Option 2 (16 x smaller N60 turbines) and the No-go Option.

7.5.1 Assessment of Impacts for Option 1 and Option 2

Options 1 and 2 are assessed to have the same impact for all the identified potential impacts in Sections 7.2, 7.3 and 7.4. The only material difference is the size (height) and number of turbines which has been assessed as having the same impact in the VIA; medium-high during operation. However the VIA (Oberholzer and Lawson, 2011: 23) also concludes that:

The difference between the 2 layouts assessed is marginal in terms of visual impact, the viewsheds and visibility as shown in the photomontages being similar in both cases. However Option 1 would have fewer turbines and be further from the R27 Route, and although the turbines are slightly higher, Option 1 would create marginally less visual clutter on the skyline.

Table 7.20 summarises the social impacts which are the same for both Options 1 and 2. The SIA indicates no preference for either of these options. However, it must be noted that in terms of social acceptability, stakeholders interviewed largely preferred the option with the least environmental impacts which would be Option 1 because of the reduced landtake.

7.5.2 Assessment of Impacts for the No-go Options

The impacts of pursuing the No-go Option are both positive and negative as follows:

The benefits would be that there is no change in status quo in terms of the negative impacts described above during all project phases which would be experienced by neighbours, society and the landscape – namely through disruption, noise, visual, road safety, and tourism impacts. The impact is therefore *neutral*.

There would be an opportunity loss in terms of contributing to the renewable energy targets for the Western Cape Province and nationally. This is assessed to be a *low negative impact* because of the scale of the Project, which is considered small in comparison to other renewable energy facilities.

There would also be an opportunity loss in terms of job creation, skills development and associated economic multipliers for the local economy. This is assessed to be a *low negative impact* because of the scale of the Project and the limited numbers of jobs created.

Table 7.20: Significance of Social Impacts

DESCRIPTION OF THE IMPACT	NATURE / STATUS	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE (WITHOUT MITIGATION)	MITIGATION	SIGNIFICANCE (WITH MITIGATION)
CONSTRUCTION								
Employment, training and skills development	Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local employment policy	Low-Medium
Economic multiplier effects	Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local procurement policy	Low-Medium
Indirect effects of additional workers on site – e.g. damage or loss to neighbouring farms	Negative	Local	Temporary	Low	Improbable	Low	Implement comprehensive employee induction programme	Negligible
Impacts of non-local workforce on society (introduction of social ills such as competition for services, disease and crime)	Negative	Local	Temporary	Low	Improbable	Low	Implement comprehensive employee induction programme	Negligible
Visual impact*	Negative	Local	Short Term	Turbines: Medium-High; Substation & Roads: Medium	Highly Probably	Turbines: Medium-High; Substation & Roads: Medium	Screening substation with berms; blend access roads with contours	Turbines: Medium-High; Substation & Roads: Medium-Low
Disruption and damage to adjacent properties from construction activities	Negative	Local	Temporary	Low	Probable	Low	CEMP to address noise and dust control; complaints procedure; rehabilitation	Negligible

DESCRIPTION OF THE IMPACT	NATURE / STATUS	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE (WITHOUT MITIGATION)	MITIGATION	SIGNIFICANCE (WITH MITIGATION)
OPERATION								
Employment, training and skills development	Positive	Local; District; Provincial	Long term	Low	Probable	Low	Implement local employment policy	Low
Economic multiplier effects	Positive	Local; District; Provincial	Long term	Low	Probable	Low	Implement local procurement policy	Low
Landowner revenue	Positive	Local	Long term	Low	Highly probable	Low	None	Low
Diversification of local economy and stability	Positive	Local; District	Long term	Low	Probable	Low	None	Low
Visual impact*	Negative	Local	Long term	Turbines: Medium-High; Substation & Roads: Medium	Highly probable	Turbines: Medium-High; Substation & Roads: Medium	Screening substation with berms; blend access roads with contours	Turbines: Medium-High; Substation & Roads: Medium-Low
Road safety	Negative	Local	Short to medium term	Low	Unknown	Low	VIA Mitigation; Site tours	Low
Noise impacts*	Negative	Local	Short term	Medium	Probable	Medium	Noise monitoring	Low
Impact on property prices	Neutral	N/A	N/A	N/A	N/A	Neutral	N/A	Neutral
Impact on community identity and cohesion	Neutral	N/A	N/A	N/A	N/A	Neutral	N/A	Neutral
Impact on tourism	Negative	Local	Long term	Low	Highly probable	Low	Site tours	Low
Cumulative impacts: tourism and visual	Negative	Local; District; Provincial	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High
Cumulative impacts: renewable energy and climate change	Positive	Provincial; National	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High
Cumulative impacts: economy and employment	Positive	Local; District; Provincial; National	Long term to permanent	Medium	Highly probable	Medium-High	N/A	Medium-High

DESCRIPTION OF THE IMPACT	NATURE / STATUS	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE (WITHOUT MITIGATION)	MITIGATION	SIGNIFICANCE (WITH MITIGATION)
DECOMMISSIONING								
Employment	Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local employment policy	Low-Medium
Economic multiplier effects	Positive	Local; District; Provincial	Temporary	Low	High Probability	Low	Implement local procurement policy	Low-Medium
Indirect effects of additional workers on site – e.g. damage or loss to neighbouring farms	Negative	Local	Temporary	Low	Improbable	Low	Implement comprehensive employee induction programme	Negligible
Introduction of social ills such as competition for services, disease and crime	Negative	Local	Temporary	Low	Improbable	Low	Implement comprehensive employee induction programme	Negligible
Visual impact*	Negative	Local	Short Term	Turbines & Roads: Medium-Low; Substation: Medium	Probable	Turbines & Roads: Medium-Low; Substation: Medium	Remove structures, scarify roads and revegetate; Screen substation if remaining	Turbines & Roads: Low; Substation: Medium
Disruption and damage to adjacent properties from construction activities	Negative	Local	Temporary	Low	Probable	Low	CEMP to address noise and dust control; complaints procedure; rehabilitation	Negligible

* Based on the assessments undertaken as part of the VIA (Oberholzer and Lawson, 2011) and the NIA (Williams, 2011)

8 CONCLUSIONS AND RECOMMENDATIONS

The SIA has primarily focused on the collection of primary data to identify and assess social issues and potential social impacts. Secondary data was collected and presented in a literature review reflecting international experience and primary data was collected through the public participation process and face to face and telephonic interviews with key stakeholders. The environmental assessment framework for assessment of impacts and the relevant criteria were applied to evaluate the significance of the potential impacts.

The main benefits during all phases of the project are the employment, training and skills development opportunities with associated benefits to the economy through the multiplier effect. The significance is assessed as *low positive* for all phases of the project, while during construction the implementation of a local employment and procurement policy could increase these benefits to *low-medium*.

During construction, disruption to neighbouring farms as a result of additional farm workers, introduction of crime and other social ills from new workers and general construction damage and disruption have all been assessed to have a *low negative impact*. This can be reduced to a *negligible* impact in all cases through the implementation of a comprehensive employee induction programme; measures to control dust and noise; a complaints procedure; and rehabilitation. These best practice measures are typically covered in more detail in the CEMP. The VIA has indicated that the visual impact during the construction phase would be *medium* (substation and roads) to *high-medium* (turbines). The visual impact of the turbines cannot be mitigated through screening, however, the substation could be screened by berms and access roads could be blended with contours which would reduce those impacts to *medium-low*. The social impacts arising from decommissioning are similar and have the same significance as those predicted during construction.

The social benefits during operation have been discussed above, however, there are a number of potential negative impacts. Impacts on property prices and community cohesion have both been assessed as *neutral* and therefore no mitigation is proposed. Impacts on tourism are assessed to be *negative low* significance and could be mitigated through site tours and publicity, and will remain *low*. The impact on noise has been assessed as having a *negative medium* significance, which could be mitigated through noise monitoring to reduce to *low* significance. The impact on road safety has been assessed as low and site tours could assist in reducing driver distraction. The VIA has indicated that the visual impact during the construction phase would be *medium* (substation and roads) to *high-medium* (turbines). The visual impact of the turbines cannot be mitigated through screening, however, the substation could be screened by berms and access roads could be blended with contours which would reduce the those impacts to *medium-low*.

The cumulative impacts on tourism are negative and assessed as *medium-high*. The cumulative impacts in terms of renewable energy generation are assessed as *medium-high positive*, similarly the cumulative impacts on employment and the economy are *medium-high positive*. No mitigation is proposed.

In terms of social impacts, the assessment has found no difference in significance of impacts arising

from both Option 1 and Option 2. While the majority of stakeholders did express a preference for Option 1 as it is considered less disruptive in terms of landtake and number of turbines. The No-go option would be of benefit to social environment in that it would maintain the status quo and not incur disruption, noise, visual, road safety, and tourism impacts. The impact is therefore *neutral*. However, there would be an opportunity cost in terms of contributing to the renewable energy targets for the Western Cape Province and nationally and also terms of job creation, skills development and indirect economic benefits. This is assessed to be a *low negative impact* because of the scale of the Project and the fairly insignificant permanent employment opportunities.

The Kerrie Fontein and Darling Wind Farm is to date the smallest wind farm proposed on the Cape West Coast and the extension to an existing facility, the Darling National Demonstration Project, which has not revealed any material social impacts to date. In terms of potential social impacts arising from the Project, the SIA has found that there is no reason for the competent authority to reject the application on social grounds.

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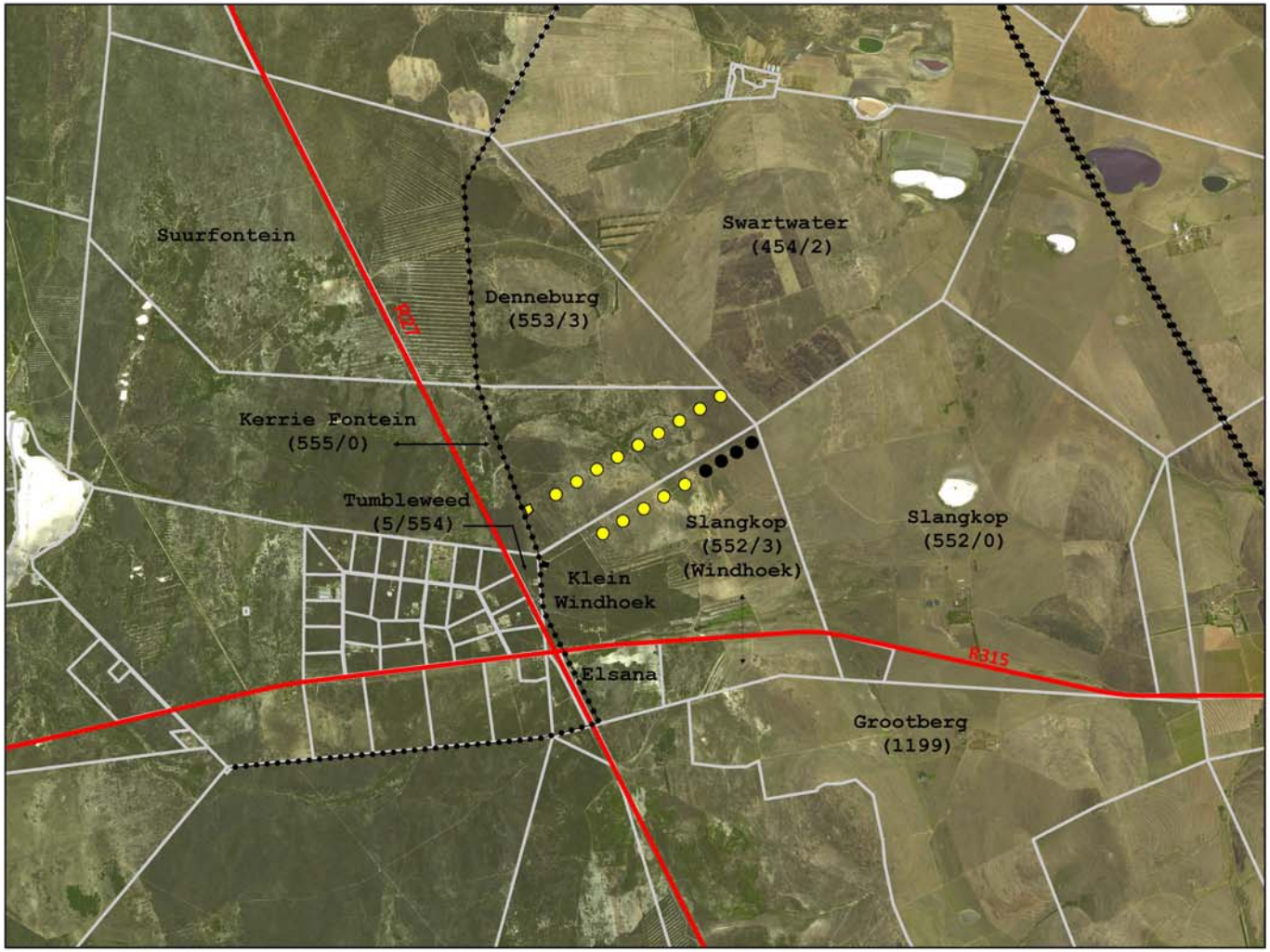
APPENDIX A:

Kerrie Fontein and Darling Wind Farm – Neighbouring Land Uses

Property	Landowner	Size	Current Land Uses and Activities	No. Employees (permanent and temporary)	No. Employees Living on the Farm	Future Plans?
Swartwater (454/2)	Koenie Basson	1360 ha	Sheep, cattle, wheat	10	30	None
Slangkop (552/0)	Gapie & Alfred Bosch	1,100 ha	Cattle, sheep, ostriches and wheat	3	2	None
Grootberg (1199)	JF Kirsten	1000 ha	Dairy herd, sheep, wine, corn, wheat	18/19	7 families (±20 people)	None
Klein Windhoek	Andre Nell	23 ha	Nothing at the moment, a few pigs	0	0	To develop a tourist facility such as a farm stall, restaurant etc
Denneburg (553/3)	E. Loedolff	327 ha	Cattle (beef)	5	15	None
Suurfontein (west of R27)	E. Loedolff	700 ha	Cattle (beef)			None
Elsana	Hugo Louw	61.06 ha	No agricultural activities at present and no residences.	0	0	The Municipality has approved a padstal and light farming.
Tumbleweed (Jacobuskraal (5/554))	Rory Richards	10.99 ha	Nothing – previously the storage area for the West Coast Road	0	0	For sale



Neighbouring Farms

Legend

- Proposed Turbines
- Existing Turbines
- Proposed Substation
- Existing Substation
- Cadastral Boundaries
- Arterial Route
- Power Line

Note: Option 1 is used as it is the preferred option

0 0.5 1 2 Km

N

Scale: 1:20,000

Client: Oelsner Group
Date: July 2011

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Projection: GCS WGS 1984
Datum: Geographic (WGS 1984)
Data Source: Department of Surverys and Mapping
Cape Town