Arcus GIBB (PTY) LTD

Environmental Impact Assessment for the Establishment of the Langhoogte Wind Farm, Western Cape Province

Environmental Scoping Report
Social Impact Assessment Study

by

Tony Barbour and Schalk van der Merwe

Date: February 2012
Environmental Impact Assessment for the Establishment of the Langhoogte Wind Farm, Western Cape Province: Social Scoping Report

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 INTRODUCTION</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.1.1 Terms of Reference</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.1.2 Study area location</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.1.3 Project description</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>1.2 Scope and Limitations</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>1.2.1 Assumptions</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.2.2 Limitations</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.3 Methodology</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.3.1 Study Area Sensitivity Analysis</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>2 DESCRIPTION OF THE RECEIVING ENVIRONMENT</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2.1 Study area context</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2.1.1 Administrative context</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2.2 Policy context</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>2.2.1 National Energy Act (Act 34 of 2008)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>2.2.2 White Paper on Energy Policy for the Republic of South Africa</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>2.2.3 White Paper on Renewable Energy</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>2.2.4 Integrated Resource Plan for Electricity (2010-2030)</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>2.2.5 Climate Change Strategy and Action Plan for the Western Cape (2008)</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>2.2.6 White Paper on Sustainable Energy for the Western Cape</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>2.2.7 Western Cape Regional Methodology for Wind Energy Site Selection</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>2.2.8 Western Cape Provincial Spatial Development Plan</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>2.2.9 Guideline for the Management of Development on Mountains, Hills and Ridges in the Western Cape</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>2.2.10 Theewaterskloof Municipality Integrated Development Plan (2010-2011)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>2.2.11 Theewaterskloof Municipality Draft Spatial Development Framework (September 2010)</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>2.2.12 Theewaterskloof Municipality Wind Energy Regional Assessment (March 2010)</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>2.2.13 Tourism Development in Theewaterskloof: A Strategic Plan (2010)</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>2.2.14 Theewaterskloof Municipality Local Economic Development Strategy (2009)</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>2.2.15 Theewaterskloof Vision 2030 (2011)</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>2.3 Demographic overview of potentially affected communities</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>2.3.1 Growth potential of the towns in the vicinity of the proposed WEF site</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>3 IMPACTS AND ISSUES IDENTIFICATION</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>3.1 Key Planning and Policy Issues</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>3.2</td>
<td>Local and site specific issues</td>
<td>34</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Local communities and individuals</td>
<td>34</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Farmers on and adjacent to the WEF site</td>
<td>34</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Information requirements for the assessment phase</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>TERMS OF REFERENCE FOR IMPACT ASSESSMENT PHASE</td>
<td>36</td>
</tr>
<tr>
<td>5</td>
<td>CONCLUSIONS AND RECOMMENDATIONS</td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td>REFERENCES</td>
<td>38</td>
</tr>
</tbody>
</table>
TABLES

Table 1.1. Social Study Scoping Sensitivity analysis
Table 2.1. Bot River and Caledon population
Table 2.2. Age distribution
Table 2.3. Education levels
Table 2.4. Employment levels
Table 2.5. Household income
Table 2.6. Sectoral employment
Table 2.7. Growth potential of urban communities in vicinity to proposed WEF

FIGURES AND PHOTOGRAPHS

Figure 1.1. Study area location
Figure 1.2. Typical Wind Turbine
Figure 1.3. Location of power line alternatives
Figure 2.1. Overview of the Theewaterskloof Municipality
Photograph 2.1. View from R 43 looking east towards Caledon
Photograph 2.2. View from R406 looking north

ABBREVIATIONS

DEA Department of Environmental Affairs
DEA&DP Department of Environmental Affairs and Development Planning (Western Cape)
EIA Environmental Impact Assessment
IDP Integrated Development Plan
kVA Kilovolt Ampères
LM Local Municipality
MW Megawatt
NEMA National Environmental Management Act
ODM Overberg District Municipality
PSDF Provincial Spatial Development Framework (Western Cape)
SIA Social Impact Assessment
TWK LM Theewaterskloof Local Municipality
WEF Wind Energy Facility
DECLARATION OF INDEPENDENCE

I, Tony Barbour as duly authorised representative of Tony Barbour Environmental Consulting, hereby confirm my independence (as well as that of Tony Barbour Environmental Consulting as the Social Assessment specialist for the Langhoogte Wind Energy Facility EIA and declare that neither I nor Tony Barbour Environmental Consulting have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which Arcus GIBB was appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act) for the Langhoogte Wind Energy Facility EIA. I further declare that I am confident in the results of the studies undertaken and conclusions drawn as a result of it. I have disclosed, to the environmental assessment practitioner, in writing, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act. I have further provided the environmental assessment practitioner with written access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not. I am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 and any other specific and relevant legislation (national and provincial), policies, guidelines and best practice.

Signature: ______________________________

Full Name: Tony Barbour

Date:

Title / Position: Owner

Qualification(s): BSc, BEcon (Hons), MSc (Environmental Science)

Experience (years/ months): 23 years

Registration(s): IAIA
EXECUTIVE SUMMARY

Tony Barbour Environmental Consultants were appointed by Arcus GIBB (Pty) Ltd to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process for a proposed wind energy facility (WEF) located west of the town of Caledon on the Western Cape Province. This report contains the findings of the initial scoping level social assessment undertaken as part of the EIA process. The scoping study was based on a review of desktop sources only. These included the development proposal, key policy documents, as well as contextual and demographic sources such as the 2001 Census. The authors further drew on personal experience of the study area and EIAs for other wind farm developments in the Western Cape.

SAGIT Energy Ventures is proposing the construction of a 50 MW WEF in the Theewaterskloof Local Municipality (TWK LM) of the Western Cape. The proposed site is located between the towns of Bot River and Caledon. The TWK LM is essentially a rural area with a sparse settlement pattern. Poverty levels and unemployment levels are high, and education and skills levels low. High levels of economically motivated in-migration currently pose a significant developmental challenge to the Municipality. The local economy is growing at a relatively slow pace (3.5% p.a.), and achieving financial viability has been identified as the key immediate challenge facing the Municipality. Agriculture forms the traditional economic backbone of the area. Tourism is currently promoted as a significant diversification strategy. The development of light industry, specifically including renewable energy generation, has been identified as a key economic driver strategy. The TWK LM has also made it a requirement for all potential WEF operators who are granted to license to establish and operate a WEF in the TWK LM to become members of and contribute to a Community Trust.

The findings of a review of the relevant policy documents pertaining to the energy sector indicate that wind energy and the establishment of wind energy facilities are supported at national, provincial and local levels. Identified potential social impacts associated with the proposed WEF during the construction phase are largely related the transport of heavy components along local roads (potential road surface degradation) and the presence of construction workers in the area. The management of construction labour – both with regard to recruitment and the adequate management of on-site construction teams – has further been identified as of crucial importance.

Potential operational issues largely relate to potential adverse impacts on the visual/ scenic integrity of the landscape and associated scenic routes (N2, R406 and R43), visual impacts on adjacent properties, and potential adverse impacts on the productivity of local farms (compromised diversification into agri-tourism; loss of productive land). The potential adverse operational impacts are largely linked to the wind turbines and the impact of these turbines on the rural landscape.

The investigation and assessment of social impacts during the EIA phase will be guided by the Guidelines for specialist SIA input into EIAs adopted by DEA&DP in the Western Cape. This approach will include:

- Identification of key interested and affected parties;
- Meetings and interviews with interested and affected parties;
- Identification and assessment of key social issues based on feedback from key interested and affected parties; and
- Recommendations regarding mitigation/optimisation and management measures to be implemented.

The key conclusions of the Scoping level study are the following:

- The establishment of wind energy facilities are supported at national, provincial and local levels;
- The proposed WEF site appears to be compatible with the spatial development vision of the TWK LM;
- Key potential construction phase issues for further investigation during the EIA phase relate to the recruitment and on-site management of construction labour and the management of impacts on local roads; and
- Key potential operational phase issues relate to the potential negative impacts on the scenic integrity of the landscape and key scenic routes, specifically the N2.
1 INTRODUCTION

1.1 Background

Arcus GIBB (Pty) Ltd (“Arcus GIBB”) have been commissioned as lead consultants by SAGIT Energy Ventures to undertake an Environmental Impact Assessment (EIA) process in terms of applicable environmental legislation with regards to the proposed establishment of a 50 MW wind energy facility (WEF) and associated infrastructure, on a site comprised of a number of farms located in the vicinity of the towns of Caledon and Bot River, in the Western Cape Province, South Africa (Figure 1.1).

Tony Barbour Environmental Consultants were appointed by Arcus GIBB to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process. The terms of reference for the study include a scoping level assessment to identify key social issues that would need to be addressed in depth as part of the EIA. This report contains the findings of the initial scoping level social assessment undertaken as part of the EIA process.

1.1.1 Terms of Reference

The terms of reference for the Scoping Report Assessment require:

- A description of the environment which may be affected by the proposed activities;
- A description of the manner in which the relevant environment may be affected by the proposed activities;
- An identification of potentially significant social issues with regards to the proposed activities; and
- A description of the approach proposed for investigating and assessing potentially significant social issues during the EIA phase.

1.1.2 Study area location

SAGIT Energy Ventures has identified the potential to establish a new WEF on a site comprised of 22 cadastral units (Figure 1.1) in a rural area located to the north of the National road 2 (N2) between the towns of Bot River, in the west, Caledon, in the east. The site falls within the Theewaterskloof Local Municipality (LM) of the Western Cape Province. The general area is traditionally used for the cultivation of wheat and the raising of mainly small stock (sheep).
1.3 Project description

The proposed WEF will consist of ~ 25-30 wind turbines with a total generation capacity of 50 MW. The location of the individual wind turbines will be informed by the findings of the specialist studies undertaken during the assessment phase of the EIA.

A typical wind turbine consists of four primary components (Figure 1.2).

- The **foundation unit** upon which the turbine is anchored to the ground. The area and depth of the concrete foundation are the region of 30x30 x 3 m (depth);
- The **tower** which will 80 m in height. The tower is a hollow structure allowing access to the nacelle. The height of the tower is a key factor in determining the amount of electricity a turbine can generate. The tower houses the transformer which converts the electricity to the correct voltage for transmission into the grid. The transformer can also be placed in a small housing outside the tower depending on the design;
- The **nacelle** (generator/turbine housing). The nacelle houses the gearbox and generator as well as a wind sensor to identify wind direction. The nacelle turns automatically ensuring the blades always face into the wind to maximise the amount of electricity generated;
- The **rotor** which is comprised of three rotor blades (each up to 40 m in length). The rotor blades use the latest advances in aeronautical engineering materials science to maximise efficiency. The greater the number of turns of the rotor the more electricity is produced.
The amount of energy a turbine can harness is dependent on the wind velocity and the length of the rotor blades. Wind turbines start generating power at wind speeds of between 10 - 15 km/hour, with speeds between 45 - 60 km/hour required for full power operation. In a situation where wind speeds are excessive, the turbine automatically shuts down to prevent damage.

The most suitable turbines (manufacturer and specifications) will be determined once the most suitable turbine footprints have been identified (i.e. based on the outcome of the current EIA process and on-site wind resource measurement).

Figure 1.2: Typical example of wind turbine structure and components

Based on information for other wind energy facilities the basic infrastructure associated with the establishment of the proposed Langhoogte WEF would include:

- 20-30 wind turbines (Figure 1.2). The turbines will be approximately 120m in height;
- A substation that would need to be linked to each wind turbine via underground distribution cables. The proposed location and required footprint is currently being finalised, and will be assessed during the EIA phase;
- An access road to the site from the main road/s within the area. In the case of the relevant site, access is likely to be from the N2 and R43 (N2-Villiersdorp). The site is relatively extensive, and additional access roads may be required off existing public gravel roads in the area;
- Internal roads linking the wind turbines to one another;
- Laydown areas for the assembly of the wind turbines;
- An overhead 132 kV distribution line that will link the WEF to the Eskom electricity distribution grid. Two alternative options have been identified and will be assessed as part of the EIA (Figure 1.3). These are:
  - Northern Option: The Northern Option starts at the on-site substation located ~ 12 km north-east of Bot River, and runs in an east west direction for a distance of ~ 9.5 km. The proposed option crosses an existing Eskom 400 kV ~ km north of Bot River before swinging south for ~ 5 km linking up with the Bot River substation. The Northern Option will run next to an existing 66 kV line that runs to the west of Bot River and also links up with the Bot River substation;
- Southern Option. The Southern Option starts at the on-site substation located ~ 12 km north-east of Bot River, and runs in south westerly direction for a distance of ~ 5 km along a new servitude. The proposed option crosses the N2 ~ 3 km south west of the substation and runs for a further 2 km before swinging west and following an existing 66 kV line for ~ 4.5 km before and linking up with the Bot River substation.

- For both the Northern and Southern Options, the existing 66 kV lines and structures will remain and the new proposed 132kv line will run adjacent to them;

It is proposed that the constituent turbine components will be transported by road to the site before being erected. At this stage it is unclear whether the relevant components will be delivered by road or rail to the site.

![Figure 1.3: Location of proposed 132 kV power line options](image)

**1.2 Scope and Limitations**

The description of the proposed WEF and relevant site is based on information provided by Arcus GIBB. The description of the study area and the demographic profile of the study area is based on information from Census 2001, Integrated Development Plan (IDP) documents for the relevant municipality (Theewaterskloof), as well as from information contained in the 2007 Western Cape Provincial Treasury document entitled “Socio-Economic Profile: Overberg District”. Key national, provincial and local level policy and planning documents have also been reviewed.
The consultants are also familiar with the local conditions having undertaken SIA's for other proposed WEFs located in the area.

1.2.1 Assumptions

Technical suitability
It is assumed that the proposed site represents a technically suitable site for the establishment of a WEF.

Site selection process
It is assumed that the identification of the proposed site was informed by the criteria-based methodology contained in the 2006 Regional Methodology for Wind Energy Site Selection (Western Cape Department of Environmental Affairs and Development Planning (DEA&DP)).

Strategic importance of the project and no-go option
The strategic importance of promoting wind energy is supported by the national and provincial energy policies.

Consultation with affected communities
The Social Scoping Report is based on a desktop review only. As such, potentially affected communities, relevant local officials, potentially affected landowners and other potentially relevant interest groups have not been consulted with yet. However, the authors have undertaken SIAS for two other WEF in the area and are therefore familiar with the key issues. Detailed consultation will be undertaken during the assessment component of the SIA.

1.2.2 Limitations

Project description
At the time the study was compiled, the only available project description was the broad description provided by SAGIT to Arcus GIBB.

Demographic data
The demographic data used in the study is largely based on the 2001 Census. While this data does provide useful information on the demographic profile of the affected area, the data is dated and should be treated with caution. More up to date information will be sourced from key officials and community members when fieldwork is conducted during the EIA phase.

1.3 Methodology

The approach to the study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment. In this regard the study involved:

- Review of demographic data from the 2001 Census Survey;
- Review of socio-economic information on the Theewaterskloof Municipality, as compiled by the Provincial Treasury in 2007;
- Review of relevant planning and policy frameworks for the area, specifically for the Theewaterskloof Municipality;
- Review of information from SIAs undertaken for WEFs in the study area;
- Literature review of social issues associated with wind energy facilities.

The identification of potential social issues associated with proposed wind energy facility is based on observations during site visits to the area, review of relevant documentation and experience with other WEF projects in the area.

1.3.1 Study Area Sensitivity Analysis

The identification of potentially significant social issues, for further investigation and assessment during the EIA phase, was based on consideration of the potential impacts of the proposed activities in relation to the following key receptors:

- Level of fit with national and provincial energy policy context;
- Level of fit with planning and policy provisions for the relevant area; specifically with the developmental objectives of the Theewaterskloof LM;
- Level of addressing/ compromising the needs of socially vulnerable groups, including historically disadvantaged communities and the rural poor in the area around the proposed site;
- Level of reinforcing/ compromising existing livelihood strategies of potentially affected landowners and associated employees;
- Level of reinforcing/ compromising existing enjoyment of property and potential for diversifying economic strategies with regard to potentially affected land owners, specifically with regard to potential adverse visual impacts;
- Level of reinforcing/ compromising the integrity of connectivity links in the general area across and around the site, and specifically local area roads during the construction phase and as a result of construction phase impacts; and
- Level of reinforcing/ compromising existing and potential scenic and tourism value of the site within the local, regional and provincial resource contexts, specifically with regard to visual impacts.

A sensitivity typology, based on the relationship between potential impacts and key receptors, is presented in Table 1.1.

<table>
<thead>
<tr>
<th>Description</th>
<th>Lower Sensitivity</th>
<th>Medium Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse impacts with regard to key receptors unlikely/ of low magnitude/ local extent/ short duration and generally reversible or avoidable with the implementation of appropriate mitigation measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse impacts with regard to key receptors likely, but of moderate to high magnitude/ spatially extensive/ medium to long term duration, but may be reversed or avoided through the implementation of appropriate mitigation measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher Sensitivity</td>
<td>Adverse impacts with regard to key receptors likely of high magnitude, spatially extensive, long duration and may be irreversible, unavoidable despite mitigation measures</td>
<td></td>
</tr>
</tbody>
</table>
2 DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section provides an overview of:

- The study area context;
- The policy and planning environment affecting the proposed wind energy facility (WEF); and
- The relevant socio-economic environment.

2.1 Study area context

The study area is located in the western portion of the region of the Western Cape traditionally known as the Overberg. The term “Overberg” historically referred to the inland region to the east of the Hottentots-Holland Mountains (and thus “across the mountain” relative to Cape Town). Today the term is most commonly used to refer to the region circumscribed by the Hottentots-Holland Mountains to the west, the Langeberg range to the north, the lower Breede River to the east, and the Atlantic Ocean to the south. The interior Overberg is traditionally a farming area. Sheep farming and the cultivation of cereal crops have traditionally been dominant. In more recent times, the area has also become established as a major producer of canola (oil seed crop).

The Overberg is bisected by the east-west running N2. The N2 provides a link between the City of Cape Town to the west, and the scenic Garden Route (Mossel Bay and beyond) to the east. The Garden Route is an established tourist route of major significance. Although not forming part of the Garden Route, tourism has become established as a major industry in the Overberg, often as an economic diversification strategy to agriculture.

In that regard, the proposed site is traversed by the R43 linking the N2 with the scenic area of Villiersdorp and the Franschhoek Valley (Photograph 2.1). In addition, the R406 runs approximately 5 km to the east of the site (Photograph 2.2). The R406 provides a link from the N2 with the settlements of Greyton and Genadendal, which are recognised tourist destinations.

The landscape comprising the relevant part of the Overberg in which the study area is located consists of gently undulating hills against the backdrop of the Riversonderend Mountains. The scenic fruit growing area around Elgin and Grabouw is located approximately 20 km west of the site. This area is, however, screened from the site by the natural topography of the area. The site is however likely to be visible from sections of the Houhoek Pass. The Overberg is relatively sparsely settled. The nearest town to the proposed site is the small town of Bot River, located 500m south west of the western extremity of the site (Figure 1.1). The larger and regionally more significant town of Caledon is located approximately 10 km to the east of the easternmost section of the site.
Photograph 2.1: View from R43 between Villiersdorp and N2, looking east towards Caledon.

Photograph 2.2: View looking north from R 406 that links the N2 with Genadendal and Greyton. The site is located west of R 406.
2.1.1 Administrative context

In administrative terms, the proposed site is located within the Theewaterskloof Local Municipality (LM), which, in turn, is one of four LMs that make up the Overberg District Municipality (ODM). The administrative headquarters of the ODM are located in Bredasdorp. The remaining three LMs are comprised by the Cape Agulhas LM (Bredasdorp), Swellendam LM (Swellendam) and Overstrand LM (Hermanus).

The Theewaterskloof LM is comprised of 12 wards. The site proposed for the WEF straddles Wards 4 and 7.

The Theewaterskloof LM is the largest of the four municipalities constituting the ODM, both in terms of geographical size as well as population. It covers approximately 3 248.3 km², and was estimated to have a population of 103 281\(^1\) in 2007 (43.5% of the ODM’s population) (Provincial Treasury, 2007).

Source: Theewaterskloof 2009 IDP Revision
Figure 2.1: Overview of the Theewaterskloof Municipality

The most recent available data from the TWK LM IDP indicates that the Theewaterskloof’s economy accounted for 40.6% (R1.47 billion) of the ODM’s Gross Regional Domestic

\(^1\) This figure is disputed in the Theewaterskloof 2009 IDP. The Theewaterskloof LM’s own estimate for 2007 is around 135 000 people. This higher figure is based on what is perceived to be significant and continuous immigration into the fruit-growing areas around Grabouw and Villiersdorp.
Product (GDPR) in 2005, and 0.98% of that of the Province. Of the four constituent LMs in the ODM, it had the slowest recorded growth rate in the period 2004-2005 (viz. 3.4%). Agriculture has traditionally been, and continues to be, the main provider of employment opportunities and contributor to GDPR in the Theewaterskloof. The LM’s economy is essentially built on agriculture, agri-processing and tourism (Provincial Treasury, 2007). Tourism is strongly linked to the agricultural sector, primarily with regard to the scenic landscapes associated with its main agricultural activities (e.g. picturesque orchards in the Grabouw valley and around Villiersdorp; rolling wheat and canola fields and pastoral scenes associated with small stock grazing in for instance the area between Caledon and Bot River).

With the exception of land use associated with the fruit producing area around Grabouw in the LM’s extreme west, the settlement pattern is relatively sparse, and is mainly comprised of open space, farms and smallholdings. Of the entire municipal area (3 248.3 km² = 324 830 ha), only 3 246 ha (=1%) is constituted by demarcated urban land use. Caledon constitutes the largest town in the study area, and is of regional significance as service centre to the surrounding hinterland. Other urban settlements in the LM include Bot River, Rivieronderend, Greyton, Genadendal and Villiersdorp.

### 2.2 Policy context

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

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

- The National Energy Act (2008);
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- The White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2010-2030);
- Climate Change Strategy and Action Plan for the Western Cape (2008);
- White Paper on Sustainable Energy for the Western Cape (Final Draft, 2008);
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (2006);
- The Western Cape Provincial Spatial Development Framework (2009);
- Guideline for the Management of Development on Mountains, Hills and Ridges in the Western Cape (2002);
- The Theewaterskloof Municipality Integrated Development Plan (IDP) (2010-2011);
- The Theewaterskloof Municipality Draft Spatial Development Framework (September 2010);
- The Theewaterskloof Municipality Wind Energy Regional Assessment (March 2010);
- The Theewaterskloof Municipality Tourism Development Strategic Plan (2010);
2.2.1 National Energy Act (Act 34 of 2008)

The National Energy Act was promulgated in 2008 (Act 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including wind:

“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 (…); to provide for (…) increased generation and consumption of renewable energies…” (Preamble).

2.2.2 White Paper on Energy Policy for the Republic of South Africa

Investment in renewable energy initiatives, such as the proposed wind energy facility, is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard the document notes:

“Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential”.

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

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

Government policy on renewable energy is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented;
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options; and
- Addressing constraints on the development of the renewable industry.

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country’s renewable energy resource base is extensive and many appropriate applications exist.

The White Paper also notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:

- Minimal environmental impacts in operation in comparison with traditional supply technologies; and
- Generally lower running costs, and high labour intensities.

Disadvantages include:
• Higher capital costs in some cases;
• Lower energy densities; and
• Lower levels of availability, depending on specific conditions, especially with sun and wind based systems.

2.2.3 White Paper on Renewable Energy

This White Paper on Renewable Energy (November, 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy, which recognises that the medium and long-term potential of renewable energy is significant. This Paper sets out Government’s vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes, that while South Africa is well-endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol, Government is determined to make good the country’s commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change agreed to “take note of” at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act).

Government’s long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels. The medium-term (10-year) target set in the White Paper is:

“10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW)” (Executive Summary, ix).

2.2.4 Integrated Resource Plan for Electricity (2010-2030)

The current iteration of the Integrated Resource Plan (IRP) for South Africa, initiated by the Department of Energy (DoE) after a first round of public participation in June 2010, led to the Revised Balanced Scenario (RBS) that was published in October 2010. The document outlines the proposed generation new build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on the cost-optimal solution for new build options (considering the direct costs of new build power plants), which was then “balanced” in accordance with qualitative measures such as local job creation. In addition to all existing and committed power plants, the RBS included a nuclear fleet of 9.6 GW; 6.3 GW of coal; 11.4 GW of renewables; and 11.0 GW of other generation sources.

A second round of public participation was conducted in November/December 2010, which led to several changes to the IRP model assumptions. The main changes were the
disaggregation of renewable energy technologies to explicitly display solar photovoltaic (PV), concentrated solar power (CSP) and wind options; the inclusion of learning rates, which mainly affected renewables; and the adjustment of investment costs for nuclear units, which until then represented the costs of a traditional technology reactor and were too low for a newer technology reactor (a possible increase of 40%).

Additional cost-optimal scenarios were generated based on the changes. The outcomes of these scenarios, in conjunction with the following policy considerations, led to the Policy-Adjusted IRP:

- The installation of renewables (solar PV, CSP and wind) were brought forward in order to accelerate a local industry;
- To account for the uncertainties associated with the costs of renewables and fuels, a nuclear fleet of 9.6 GW was included in the IRP;
- The emission constraint of the RBS (275 million tons of carbon dioxide per year after 2024) was maintained; and
- Energy efficiency demand-side management (EEDSM) measures were maintained at the level of the RBS.

The Policy-Adjusted IRP includes the same amount of coal and nuclear new builds as the RBS, while reflecting recent developments with respect to prices for renewables. In addition to all existing and committed power plants (including 10 GW committed coal), the plan includes 9.6 GW of nuclear; 6.3 GW of coal; 17.8 GW of renewables; and 8.9 GW of other generation sources. The Policy-Adjusted IRP has therefore resulted in an increase in the contribution from renewables from 11.4 GW to 17.8 GW.

Table 3.1 indicates the new capacities of the Policy commitment. The dates shown in Table 3.1 indicate the latest that the capacity is required in order to avoid security of supply concerns. The document notes that projects could be concluded earlier than indicated.
The key recommendations contained in the Policy-Adjusted IRP Final Report (March 2011) that have a bearing on the renewable energy sector include:

**General**
- The dark shaded projects in Table 3.1 need to be decided before the next IRP iteration, with the identified capacities thereafter assumed as “committed” projects;
- The light shaded options should be confirmed in the next IRP iteration;
- All non-shaded options could be replaced during the next, and subsequent, IRP iterations if IRP assumptions change and thus impact on the quantitative model results.

**Wind Energy**
- Wind 2014/15: As is the case with solar PV, it is necessary to make a firm commitment to the first post-REFIT wind installations in order to connect the wind farms to the grid by 2014. Furthermore, to provide the security of investment to ramp up a sustainable local industry cluster, the first two years from 2014 to 2015 need commitment;
- Wind 2016 to 2019: For the first wind installations until 2015, extensive grid extension is not necessary. For the additional units to come in 2016 to 2019, these extensions might become necessary. To trigger the associated feasibility studies, planning, and investments in a timely manner, the additional wind units added from 2016 to 2019 should be decided on in the next round of the IRP at the latest.

**Solar energy**
- Solar PV programme 2012-2015: In order to facilitate the connection of the first solar PV units to the grid in 2012 a firm commitment to this capacity is necessary. Furthermore, to provide the security of investment to ramp up a sustainable local industry cluster, the first four years from 2012 to 2015 require firm commitment;
- Solar PV 2016 to 2019: As with wind, grid upgrades might become necessary for the second round of solar PV installations from 2016 to 2019, depending on their location. To trigger the associated tasks in a timely manner, a firm commitment to these capacities is necessary in the next round of the IRP at the latest. By then, the assumed cost decreases for solar PV will be confirmed;
- CSP 2016: The 100 MW of CSP power, planned for 2016, needs firm commitment because of the long lead time of these projects;
- CSP 2017 to 2019: Because of the long lead time for CSP plants, a commitment to the capacity planned for 2017 to 2019 is necessary in the next round of the IRP at the latest. By then, the cost and technical assumptions for CSP plants will also be grounded on more solid empirical data.

**Conclusions**
The key conclusions that are relevant to the renewable energy sector include:

- An accelerated roll-out of renewable energy options should be allowed in order to derive the benefits of localisation in these technologies; and
- A solar PV programme as envisaged in the Policy-Adjusted IRP should be pursued (including decentralised generation).

### 2.2.5 Climate Change Strategy and Action Plan for the Western Cape (2008)

The Climate Change Strategy and Action Plan (Final Draft, December 2008) was commissioned by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP). The document is aligned with the Western Cape Sustainable Development Strategy, and gives expression to Provincial Government of the Western
Cape’s (PGWC) acknowledgement that the Western Cape will inevitably be affected by climate change, and thus needs to timeously set in place a sound foundation for future climate change responses in the province.

The document consists of two sections. The first section examines climate change and socio-economic factors in the Western Cape, and establishes the need for a climate change response in the region. The second section outlines the key aspects of the Western Cape’s response strategy.

Key points of specific relevance to the current WEF proposal are the following:

**The need for a climate change response in the Western Cape**

- South Africa is currently ranked as the 19th greatest emitter of greenhouse gases (absolute terms) in the world;
- While the Western Cape’s local direct emissions are relatively low, this is largely the result of the province importing most of its electricity (~90%), mainly from Mpumalanga;
- There is little doubt that the Western Cape will experience the effects of human-induced climate change in the near future, possibly as early as 2030. Current predictions indicate that the Western Cape will generally become hotter and drier. Predictions indicate a mean increase in temperature of at least 1 °C by 2050. Higher mean temperatures will have negative consequences for rainfall (frequency, amount) as well as the soil’s ability to retain moisture. Periods of drought are anticipated to become more frequent and intense. Drier, hotter conditions will also increase the risk of more frequent, more severe fires;
- Predicted hotter and drier conditions hold significant risks to the Province’s key economic sectors and associated livelihoods. Compromised growing conditions and less water available for irrigation will negatively affect the agricultural sector – with massive negative implications for the regional economy, employment as well as regional food security. Increased sea surface temperatures will likely impact negatively on fish stocks. The tourism sector is likely to suffer from changes in the landscape amenity;
- For these reasons the province need to be committed to doing its share to stabilize or reverse the current trend in global warming;
- With regard to the current situation, the Western Cape’s energy infrastructure has demonstrated its reduced capacity to sustain cumulative impacts. The failure in supply of high quality energy that the province relies on, has high social and economic costs, as most of it needs to be imported from coal-burning power stations over very long distances;
- In terms of the Kyoto Protocol, South Africa, as a developing nation, does not have to take active steps to mitigate its carbon emissions. However, valuable export markets in the European Union are already starting to impose carbon emission reduction targets on their suppliers. The Western Cape, whose important agricultural sector is to a large extent export-orientated (wine, fruit) stands to lose market share on agricultural goods, for example, if no attempt is to be made to achieve at least carbon neutrality (no net emission of carbon for a produced good).

**The response strategy and action plan**

- The Province’s response strategy and associated action plan is based on two thrusts, namely adaptation and mitigation;
- Four programmes are prioritised. Of specific significance to the development of renewable energy resources, the reduction of the province’s carbon footprint is identified as the key mitigatory response. Associated strategies include promotion of energy efficiency (including demand management), the development of renewable and alternate
sustainable energy resources, effective waste management strategies, and cleaner fuel programmes for households and transport;

- Solar and wind energy are identified as the most suitable renewable technologies for the Western Cape. No development targets are set.

### 2.2.6 White Paper on Sustainable Energy for the Western Cape

The White Paper on Sustainable Energy compliments the Climate Change Strategy and Action Plan, specifically by setting targets for renewable energy generation. The White Paper is currently in Final Draft form. Once approved by Provincial cabinet, it will constitute the formal Western Cape’s policy document on which the Western Cape Sustainable Energy Facilitation Bill will be based. The purpose of the White Paper and the envisaged Bill is to create an enabling policy environment in the Western Cape in order to promote and facilitate energy generation from renewable sources, as well as efficient energy use technologies and initiatives.

The White Paper forms part of PGWC’s strategy aimed at removing a number of barriers (e.g. energy pricing, legal, institutional, low levels of investment confidence, insufficient knowledge) currently frustrating the province’s energy goals by preventing the adoption and commercialization of clean energy (including electricity generation from renewable sources such as wind and solar) technologies and initiatives. The White Paper notes that, with regard to sources of renewable energy, wind and solar both represent commercially viable options in the province. The document proposes that special focus should be given to these renewables subsectors and specific associated technologies in particular in order to achieve critical mass of installation, and thus drive down establishment costs and ensure permanent employment opportunities.

In terms of targets, the PGWC agreed to targets for electricity from renewable sources and for energy efficiency to be achieved by 2014. Of these, two are of direct relevance to the proposed WEF:

- Target for electricity generated from renewable sources: 15% of the electricity consumed in the Western Cape will come from renewable energy sources in 2014, measured against the 2006 provincial electricity consumption (p. 21)
- Target for reducing carbon emissions: The carbon emissions are reduced by 10% by 2014 measured against the 2000 emission levels (p. 23).

### 2.2.7 Western Cape Regional Methodology for Wind Energy Site Selection

The document focuses specifically on the siting of wind energy facilities. Some of the key findings and recommendations that have a bearing on the study are briefly summarized below.

**Cumulative Impact Issues**

The experience in Europe is that the very high cumulative impact of wind farms has resulted due to a policy of permitting small (wind) energy schemes in relatively close proximity to each other (only 2.5km in Denmark).

As a result the document recommends that:

- Large installations should be located extremely far apart (30 – 50km); and
- Smaller installations should be encouraged in urban/ brownfield areas.

In this regard, it should be noted that CaledonWind is proposing the construction of 71 wind turbines with an anticipated generating capacity of 245.4 MW (“Caledon WEF”). The site is
located ~7 km north-east of the town of Bot River and ~12 km north-west of the town of Caledon. In addition, Bio-Therm Energy is currently proposing a 16 x 3.2 MW turbine facility on two sites located south of the N2 (“Klipheuwel-Dassiesfontein WEF”). The proposed Dassiesfontein site (6 turbines) is located ~ 2 km south of the proposed WEF site.

**Recommended Disturbed Landscape Focus**

In addition to proposing that smaller facilities should be focused in urban/ brownfield areas, the proposed methodology further recommends focusing on existing disturbed rural landscapes, and in particular, those rural landscapes that have already been “vertically compromised” by the location, for example, of transmission lines, railway lines, and all phone towers.

In this regard, existing vertical disturbances to the landscape with regard to the Langhoogte site is limited to Telkom lines to individual farmsteads. An existing 400 kV Eskom line is located to the west of the westernmost portion of the site. The current sense of place on and around the site may be described as an agricultural landscape dominated by rolling hills.

**Protecting Rural Landscape Values**

The document notes that in Europe in the past, a great degree of emphasis was given to quantifying views from residential locations. This policy emphasis has effectively led to pushing WEF projects into more “remote” rural locations. The study notes that in the South African context this policy would effectively “penalize” rural areas, compromising wilderness and touristic visual values. In this regard, the proposed Caledon site is located in a scenic rural area which essentially serves as a node for traffic between significant tourism destinations within the Western Cape.

The Western Cape Provincial Government is currently in the process of considering applicable zoning (and thus compatible land uses) for solar and wind energy facilities, but as far as could be established, no directives have been finalized in this regard yet.

### 2.2.8 Western Cape Provincial Spatial Development Framework

The following key objectives identified by the PSDF are of specific relevance to the proposed WEF development:

**Objective 5: Conserve the sense of place of important landscapes**

The PSDF notes the vital importance of tourism to the Provincial economy. It further notes that scenic routes (such as the N2) and the adjacent countryside are memorable gateways to Cape Town and the Garden Route respectively; that urban development has already substantially detracted from their visual quality, and that no further deterioration should therefore be permitted.

The PSDF therefore stipulates that, with regard to the siting and design of future power lines and other visibly substantial infrastructural development, the relevant provincial guidelines should be followed, and proposals should include provision for environmental, visual and heritage impact assessments.

Two policy directives relating specifically to transmission lines and wind farms are of direct relevance to the proposed WEF and will be considered during the assessment phase, namely:

*HR26 (…) transmission lines (…) should be aligned along existing and proposed transport corridors rather than along point to point cross-country routes. (Mandatory directive)*
HR27 Wind farms should be located where they will cause least visual impact, taking into consideration the viability of the project. (Guiding directive)

The proposed site is located in an area that has wide expansive views of recognized scenic value. The N2, which is located to the south of the site, is the main conduit for tourist traffic between Cape Town and Garden Route. Traffic flows between Cape Town and the tourist towns of Genadendal/ Greyton and Struisbaai/ Arniston areas also make use of the relevant stretch of the N2. The R 43 (N2 to Villiersdorp) and R406 scenic route (N2 to Greyton) are also potentially affected by the proposed site.

Objective 9: Minimize Consumption of Scarce Environmental Resources

In line with national government’s Climate Change Response Strategy, the PSDF makes provisions for a strategy based on demand management and the development of renewable resources. The PSDF proposes that 25% of the Province’s energy generation should consist of renewables by 2020.

2.2.9 Guideline for the Management of Development on Mountains, Hills and Ridges in the Western Cape

The key aspects reflected in the Guidelines that have a potential bearing on the proposed WEF development are listed below:

The aim of the Guideline is to provide a decision-making framework with regard to developments which include listed activities in terms of National Environmental Management Act Regulations, and which are proposed in an environment which is characterised by mountains, hills and ridges.

The Guideline notes that mountains, hills and ridges are subject to a range of development pressures. A guiding framework is therefore needed to control development in these areas. Key reasons listed are:

- Provide catchment areas for valuable water resources;
- Often characterized by unique and sensitive ecosystems;
- Have aesthetic / scenic value; and
- Provide “wilderness” experience opportunities.

The Guideline defines a mountain, hill or ridge as “a physical feature that is elevated above the surrounding landscape”.

The Guideline is divided into 2 sections. The second deals with key decision-making criteria which need to be taken into account when adjudicating the suitability of developments in such areas. Key criteria which are of specific relevance to the proposed WEF include:

- Development on the crest of a mountain, hill or ridge should be strongly discouraged;
- Preserve landform features through ensuring that the siting of facilities is related to environmental resilience and visual screening capabilities of the landscape;
- Adopt the precautionary principle to decision making;
- The criteria used to assess developments in these areas include, amongst others, density of the development, aesthetics, location, value in terms of “sense of place”, character of adjacent land use, character of the general area, and cumulative impacts which may arise from other existing and planned developments in the area.
It should be noted here that the proposed WEF site is located in a landscape characterised by rolling hills in an agricultural setting.

2.2.10 Theewaterskloof Municipality Integrated Development Plan (2010-2011)

The following aspects of the Theewaterskloof LM Integrated Development Plan (IDP) are of particular relevance to the proposed WEF development:

Financial sustainability

The IDP emphasises the aspect of financial viability as an immediate strategic focus and objective of the Theewaterskloof LM. During the 2007/2008 financial year, only 58% of the annual budget was recovered. Consequently the Theewaterskloof LM is not able to fulfil its service delivery and other obligations satisfactorily.

The IDP notes that initial modelling suggests the local economy would need to grow by at least 5% per annum (current growth is at 3.5%) for the Municipality to be in a position to service the loans and remain financially viable by 2016. A similar growth rate is needed to halve unemployment.

Key challenges

Key challenges facing the LM are identified as:

- Large and sustained in-migration of specifically Black Africans into the LM, mainly into the fruit growing areas around Grabouw and Villiersdorp. The sector’s ability to provide employment opportunities has however been largely saturated;
- Provision of subsidized housing. The estimated low-cost housing waiting list is currently estimated at 1 883 – 1 495 for Caledon. The control of informal settlements has been identified as a critical priority within the Ward 4 area;
- A very high unemployment rate. The official unemployment rate (using the broader definition) is estimated at just under 40%. Local estimates of out-of-season unemployment are even higher;
- Generally low literacy and skills levels, with extensive prevalence of functional illiteracy. The IDP notes that businesses are increasingly looking for higher skilled people, and that developing the human capital base will be critical to turning the economy around;
- Extensive poverty within the LM. 20% of households were registered as indigent in 2009. Large disparities between the first and second economies exist;
- Difficulties facing the key agricultural sector. These are associated with high input costs, amongst others as a result of the high level of imports into the local economy such as packaging materials, fertiliser and supplies; and
- Steep increases in drug related crime. Figures for 2007 indicate that drug related crime accounted for significantly more cases than either theft or burglary. Drug related crime has been identified as a specific area of concern within the Municipal Area.

Developmental objective and growth strategy

The overarching objective of the LM is to become financially viable without compromising sustainability. The proposed economic turn-around strategy for the LM is underpinned by the principles of sustainability and the development of human capital, and is based on the pursuit of 3 main economic thrusts:

- Retaining and growing the existing agricultural and agro-processing sectors. These sectors form the current backbone of the economy, and need to be retained as valuable contributors to employment and GDPR;
• Development and growth of niche tourism, focusing specifically on markets in the outdoor adventure and agri-tourism niches. The development of a Theewaterskloof Scenic Route is proposed as a key strategy; and
• Incentivising and innovating light industrial development. This is seen as the growth driver of the economy. This thrust is aimed at providing the base to attract new investment, innovation and diversification to the economy. Identified key focus areas include value adding to agricultural produce and development of the renewable energy sector.

2.2.11 Theewaterskloof Municipality Draft Spatial Development Framework (September 2010)

The Theewaterskloof LM is currently in the process of revising, updating and replacing its 2005 Spatial Development Framework (SDF). A Draft document (September 2010) of the new SDF has been made available for public comment, but finalisation of the SDF process is unlikely before mid-2011. The following aspects are of particular relevance to the proposed WEF development:

Tourism/scenic routes
The N2 and R43 (including the R43 North, from the N2 to Villiersdorp and beyond) are identified as the main tourism distributor routes in the Theewaterskloof. The stretch of the N2 between Bot River and Caledon is considered of specific relevance by the Theewaterskloof Deputy Director Development, Mr Visagie. In this regard, it should be noted that majority of the site will be clearly visible from the N2.

The commended policy statement with regard to scenic routes is as follows:

“Development along existing and proposed scenic/tourism routes should promote the character of the area, avoid contrasting elements, enhance existing tourism attractions and promote tourist infrastructure at appropriate locations” (Policy Statement 9.7).

Identified scenic routes of relevance to the proposed WEF include the Houwhoek Pass on the N2 and the R406 (N2 to Genadendal). In this regard, the Houwhoek pass (~7 km from the site provides expansive views of the Rûensveld area.

Promotion of Wind energy
The Draft SDF notes that wind energy should be regarded as a clean, renewable resource which should be developed on the basis of national policy and provincial and regional guidelines. The visual prominence of turbines is noted, but the SDF points out that, given their role as progressive, efficient and safe generators of clean energy, the public will have to become accustomed to wind turbines starting to appear in the landscape. From a spatial land use perspective, the siting of WEFs is of significant importance, as large areas are generally required to accommodate them, and turbines are potentially visible over long distances. The document notes that the potential exists for suitable portions of the Theewaterskloof LM agricultural area to accommodate WEFs, but emphasises the need for appropriate/ sensitive siting. In this regard, the Theewaterskloof WEF Regional Assessment is referred to as the appropriate strategy for providing the necessary land use management guidelines, including an indication of preferred siting areas/ zones, in order to facilitate the attraction of independent power producer projects into the Theewaterskloof LM area.

2.2.12 Theewaterskloof Municipality Wind Energy Regional Assessment (March 2010)

Savannah Environmental/ MetroGIS were commissioned by the Theewaterskloof LM early in 2010 to prepare a regional assessment in order to provide spatial guidance to the
Theewaterskloof LM in the adjudication of WEF proposals within its jurisdiction. The resulting document was completed in March 2010. Although the document does not have any official status, the Deputy Director of Spatial and Economic Development of the Theewaterskloof LM has indicated that the document will be used as a key guideline in adjudicating WEF applications within the Theewaterskloof LM area. In addition, the key findings of the document will be incorporated into the Theewaterskloof LM Spatial Development Framework (SDF).

The Regional Assessment is based on the key principles contained in key Western Cape Provincial policy and planning documents. These include the PSDF, the Regional Methodology for WEF Site selection, and the Guideline for the Management of Development on Mountains, Hills and Ridges. The particular strength of the Regional Assessment is that it provides spatial expression to these principles, and then specifically with regard to the Theewaterskloof LM area. The Regional Assessment essentially consists of a series of 11 criteria-based maps (layers) and a twelfth composite (overlay) map summarizing the results of the 11 criteria-based maps/ layers. The spatial analysis focused on aspects of receptor sensitivity, as opposed to availability of the wind resource.

Negative buffers were assigned to sensitive landscape areas such as environmentally sensitive areas (Layer 1), mountains, hills and ridgelines (2), urban areas (3), airfields and telecommunications infrastructure (5) and designated scenic drives and heritage areas (7).

Positive buffers were assigned to areas such as those already disturbed by mining or industry (3), as well as to existing power line corridors (6). Aspects such as existing vegetation cover (8a), potential exposure to visual receptors from key vista points (8b), and landscape forms (8c) were further mapped to provide a visual assessment framework. The resultant overlay of the relevant layers (Maps 1-11) is illustrated in Figure 4.1 below.

![Figure 4.1: Theewaterskloof WEF Regional Assessment Composite Map](image)

As indicated in Figure 4.1 the proposed Langhoogte WEF site appears to be located within a restricted area (one negative criterion). The entire development area is designated as
“potentially visible from key vista points (potential restriction)” (see: Regional Assessment, Layer 8b). This will however need to be assessed in more detail during the assessment phase of the EIA.

2.2.13 Tourism Development in Theewaterskloof: A Strategic Plan (2010)

The Tourism Development in Theewaterskloof: A Strategic Plan was prepared in 2010 with financial support of the Development Bank of South Africa. The document flows from the Theewaterskloof LM Local Economic Development (LED) strategy which was approved by Council in 2009. The LED document highlighted three economic sectors for focused attention, namely tourism, light industry and agriculture/agro-processing. Tourism is identified as a growth sector, and as a sector with high potential for stimulating the local economy and local employment creation. The Strategic Plan document therefore seeks to provide strategic direction with the aim of fostering development of the sector.

The document notes that the Theewaterskloof LM’s tourism sector is comparatively less established than that of neighbouring areas such as the Overstrand, Agulhas, and Stellenbosch municipalities, as well as the City of Cape Town. The document however notes that much of the growth shown by the Theewaterskloof’s wholesale & retail trade, catering & accommodation sector over the past five years (5 % per annum) has been concentrated around the local tourism industry. The sector currently contributes R203.6 million per year to the local economy (13.9% of total). The document notes that this is reflected in increased activity in the Theewaterskloof tourism industry, as witnessed by the fact that within the past year, nine new accommodation businesses, eight new restaurants and 18 tour or support services businesses have been set up within the Theewaterskloof, and that some of the longer-established concerns currently report excellent growth.

The document notes that considerable potential for the further development of the Theewaterskloof’s tourism potential, the strengthening the local economy, and increased employment creation exists. Key opportunities were identified around the Theewaterskloof’s natural landscapes, water bodies (Theewaterskloof Dam), recreational/ sporting/ adventure destinations, the development of the existing wine route, cultural destinations, agro-tourism, and opportunities associated with the N2.

Given the important gateway function of the N2 as well as growth opportunities associated with the road, preservation of the visual integrity of the landscape alongside the road is regarded as being of key importance by the Theewaterskloof LM.

2.2.14 Theewaterskloof Municipality Local Economic Development Strategy (2009)

The mission set out in the IDP is to “position and transform the TWK LM to be a competitive developmental local authority”. As result, local economic development has been identified as one of the LM’s key priorities. In this regard the Local Economic Development Strategy (LEDS) is regarded as the first step in realising the vision set out in the IDP.

The multi-stakeholder vision for economic development in the area is:

“A prosperous economy that: Sustains the natural environment and agricultural character of the area; Creates opportunities and meets the needs of all residents; Enables a financial viable Municipality”.

One the key challenges facing the Theewaterskloof LM as set out in the LEDS is the existing infrastructure backlog and costs associated with meeting existing infrastructure maintenance costs. The LEDS indicates that a budget shortfall of between R 60 and R 72 million per annum currently exists. Initial modelling undertaken by the Theewaterskloof LM indicates that
the local economy would need to grow by at least 5% per annum for the Municipality to be in a position to service existing loans and remain financially viable in 2016.

Under economic advantages and disadvantages the LEDS lists climate and presence of FET training institutions as key advantages. Tourism is also identified as key advantage. The disadvantages include infrastructure constraints, high unemployment levels and poor quality education system, specifically in English medium secondary schools.

The LEDS outlines the key components that underpin the proposed turn-around strategy for the LM. The strategy consists of five interrelated strategic thrusts, namely Sustainability (the golden thread), Agriculture and Agri-Processing (retain and renew), Tourism (Develop and grow), Light Industry (Incentive and innovate), Development of Human Capital (the social thread). Of relevance to the proposed WEF are the following:

**Sustainability**
The LEDS indicates that the Theewaterskloof LM is positioning itself to become a leader in sustainable practices and creating an attractive investment environment. Five priorities are identified, of which the following are relevant to the proposed WEF and other renewable energy projects in the area:

- Develop both a spatial and an environmental management plan that promotes sustainability and growth;
- Adopt a sustainable energy strategy and plan. This includes promoting alternative energy sources, including a wind farm in the area and the development of alternative off-grid clean energy using wind power through partnering with the private sector; and
- Establish one of the first green campuses and offer courses linked to sustainable practices and building.

**Tourism**
- Develop a municipal wide tourism strategy; and
- Develop a Theewaterskloof Route – a meander (road and cycle) or country stroll linked to agritourism and biodiversity.

**Light Industry**
The LEDS indicates the aim of the LM is to become a destination for green industries. The promotion of these sectors will include a focus on retaining existing agro-processing activities. The provision of bulk infrastructure to unlock the potential of light industrial development is identified as a key priority.

**Human Capital**
The development of the regions human capital is identified as a key to achieving the objectives of the turn-around strategy. The development of a local skills base, with a specific focus on the agriculture, tourism, and social services sectors.

In terms of specific areas that may be affected by the proposed WEF, the LEDS notes that Greyton and Genadendal have opted to focus on tourism and human capital as the two focus areas of their LED. To promote tourism the LEDS highlights the importance of retaining the character and heritage of Greyton and Genadendal via proper planning and management. The focus for the town of Bot River is on tourism and light industry. However, the LEDS notes that this will not be possible without addressing the bulk infrastructure backlogs and constraints in Bot River.
Based on the review of the LEDS it is apparent that renewable energy, specifically wind energy, has been identified by the Theewaterskloof LM as an economic opportunity. At the same time the Theewaterskloof LM also recognise the importance of tourism to the local economy. In this regard the Theewaterskloof LM have produced a prepare a strategic plan for tourism and have also commissioned a regional assessment aimed at providing the LM with spatial guidance on where potential WEFs could be located in the area. There are very few if any LM's in the Western Cape, or for that matter the rest of South Africa, who have been so proactive in considering the potential issues associated with WEFs, specifically, the potential impact on the rural landscape. In this regard the Theewaterskloof LM should be complimented for their proactive approach.

In addition, the Theewaterskloof LM has made it a requirement for all potential WEF operators who are granted to license to establish and operate a WEF in the Theewaterskloof LM to become members of and contribute to a Community Trust. The Caledon Wind Farm is one of the founding members of the Trust. In terms of the structure of the Trust 20% of the dividends from the WEFs will be allocated to projects in the area that have been identified in the TheewaterskloofIDP. Of this total 50% of the revenue will be allocated to infrastructure projects and the remaining 50% to social projects and initiatives, such as skills development and training.

The establishment of WEFs in the Theewaterskloof LM and the associated Community Trusts is therefore seen by the Theewaterskloof as a key mechanism for contributing towards the current budget shortfall that the LM faces (between R 60 and R 72 million per annum). This contribution will in turn assist the Theewaterskloof LM to address the existing infrastructure backlog and costs associated with meeting existing infrastructure maintenance costs. As indicated above, this is identified in the LEDS as one of the key challenges facing the Theewaterskloof LM.

2.2.15 Theewaterskloof Vision 2030 (2011)

The aim of the vision document is to develop a long-term vision for Theewaterskloof that has wide acceptance and active support with a range of strategies which, if implemented, will position the region as a financially, socially and environmentally sustainable one over the next 20 years. To achieve this five strategic thrusts are identified, namely:

- Creating a place to live offering a quality living environment that meets different settlement needs, from people looking for affordable housing to professionals, mobile entrepreneurs, and retired people who want to escape the city life to an attractive and well-located area.
- Creating the most sought-after and well-known visitor destination outside Cape Town for local and international visitors living, touring or working in the Cape.
- Becoming a recognised centre of learning, offering quality schooling, skills training and higher education in targeted sectors.
- Creating a region recognised for its vibrant economy and innovation, offering employment and opportunities for entrepreneurs.
- Becoming a low carbon green region through a focus on renewable energy, as well as sustainable resource use and business practices (Vision 2030, March 2011).

Of relevance to the proposed WEF is the focus developing the area as a visitor destination, the creation of a vibrant economy and the establishment of a low carbon green region. Of specific relevance to the SIA is the commitment to establish the Theewaterskloof as a source of renewable energy production, especially wind energy. While these thrusts support each other, there is potential for conflict between the establishment of the region as a preferred visitor destination and WEFs.
The vision notes that the Theewaterskloof region forms part of the Cape Floral Kingdom and Kogelberg International Biosphere Reserve, has six mountain ranges, four mountain passes to travel through and seven dams, including the Theewaterskloof Dam. In addition the Theewaterskloof region offers world class hiking and mountain bike trails. The Cape Country Meander will aim to make visitors to the region more aware of the regions natural wonders and the charm of country life. However, it should be noted that the establishment of large WEFs does have the potential to impact negatively on the regions agricultural rural sense of place. This issue will need to be addressed, specifically in terms of the proposed location of wind turbines and the routes that are likely to link the eight towns that are integral to the meander, namely Grabouw, Villiersdorp, Genadendal, Greyton, Bot River, Caledon, Tesselaarsdal and Riviersonderend.

2.3 Demographic overview of potentially affected communities

The proposed site comprises quite an extensive area. It is located in a rural area, traditionally used for sheep farming and wheat cultivation. The nearest town to the proposed site is the small town of Bot River, located approximately 500 m south west of the western extremity of the site. The larger and regionally more significant town of Caledon is located approximately 10 km to the east of the site. Presentation below focuses on these two towns.

According to Census data, the total population of Bot River was 4 052, and that of Caledon 10 647 in 2001. The majority of inhabitants in both towns were Coloured (79% and 68% respectively). In absolute terms, the White population group was the second most numerous in the study area, although it was of less relative importance than the Black group in the smaller town of Bot River. Afrikaans is traditionally spoken by the Coloured and White communities as first language, and is the dominant language in both towns.

Table 2.1: Population for Bot River and Caledon

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Bot River</th>
<th>Caledon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Black African</td>
<td>564</td>
<td>14</td>
</tr>
<tr>
<td>Coloured</td>
<td>3 202</td>
<td>79</td>
</tr>
<tr>
<td>Indian or Asian</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>White</td>
<td>277</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>4 052</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Census 2001

As may be seen in Table 2.2 below, Census 2001 indicated that the dependency ratio\(^i\) for Bot River was 47.5, and that for Caledon 45.3. Of significance, more than a quarter of the population of both towns was younger than 15 years. As a result, there is a strong youthful

---

\(^i\) The dependency ratio is calculated as the number of 0 to 14-year olds, plus the number of 65-year olds and older (i.e. sum of people to young and too old to work), divided by the number of people in the 15 to 64-year (i.e. working age) cohort, times 100. This provides a rough indication of dependency in a community, but does not account for working age adults not participating in the economy, or for household income derived from pensions. A value of 100 theoretically indicates one person of working age to every person of depending age; a value of 50 two to one, one of 33 three to one, etc. Thus, the lower the value, the greater the number of potential providers to probable dependents.
component to the dependency ratio, and consequently a large need for educational facilities, especially within the Coloured and African population groups.

Table 2.2: Bot River and Caledon Age distribution

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Bot River %</th>
<th>Caledon %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>8.9</td>
<td>7.4</td>
</tr>
<tr>
<td>5-9</td>
<td>9.2</td>
<td>8.6</td>
</tr>
<tr>
<td>10-14</td>
<td>8.5</td>
<td>9.6</td>
</tr>
<tr>
<td>[Youthful dependents]</td>
<td>[26.6]</td>
<td>[25.6]</td>
</tr>
<tr>
<td>15-19</td>
<td>9.4</td>
<td>11.2</td>
</tr>
<tr>
<td>20-24</td>
<td>9.2</td>
<td>8.0</td>
</tr>
<tr>
<td>25-29</td>
<td>8.9</td>
<td>8.4</td>
</tr>
<tr>
<td>30-34</td>
<td>8.0</td>
<td>9.0</td>
</tr>
<tr>
<td>35-39</td>
<td>8.0</td>
<td>8.4</td>
</tr>
<tr>
<td>40-44</td>
<td>7.4</td>
<td>7.3</td>
</tr>
<tr>
<td>45-49</td>
<td>5.3</td>
<td>5.4</td>
</tr>
<tr>
<td>50-54</td>
<td>4.1</td>
<td>4.6</td>
</tr>
<tr>
<td>55-59</td>
<td>3.8</td>
<td>3.5</td>
</tr>
<tr>
<td>60-64</td>
<td>3.0</td>
<td>2.7</td>
</tr>
<tr>
<td>65-69</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>70-74</td>
<td>2.0</td>
<td>1.6</td>
</tr>
<tr>
<td>75-79</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>80 and over</td>
<td>0.6</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Source: Census 2001

As seen in Table 2.3 below, according to Census data, approximately 23.3% of the population of Bot River aged 15 and older was estimated to be functionally illiterate/in numerate. The relevant percentage for Caledon was somewhat lower, namely 18.4%. Given the strong correlation between education and skills levels, it may be assumed that a significant portion of the study area’s working age population have only sufficient skills for elementary jobs.

Table 2.3: Bot River and Caledon education levels (population 15 years and older)

<table>
<thead>
<tr>
<th>Description</th>
<th>Bot River %</th>
<th>Caledon %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No schooling</td>
<td>4.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Some primary</td>
<td>18.5</td>
<td>14.8</td>
</tr>
<tr>
<td>[% functional illiteracy/ innumeracy]ii</td>
<td>[23.3%]</td>
<td>[18.4%]</td>
</tr>
<tr>
<td>Complete primary</td>
<td>12</td>
<td>8.3</td>
</tr>
<tr>
<td>Some secondary</td>
<td>43.2</td>
<td>42.3</td>
</tr>
<tr>
<td>Std 10/Grade 12</td>
<td>16</td>
<td>23.2</td>
</tr>
<tr>
<td>Higher</td>
<td>5.5</td>
<td>7.8</td>
</tr>
</tbody>
</table>

\[i\] In the South African context, having obtained a primary qualification (i.e. having successfully passed Grade 7) is generally held as the absolute minimum requirement for functional literacy/numeracy. The National Department of Education’s ABET (Adult Basic Education and Training) programme provides education and training up to the equivalent of Grade 9. In this more onerous definition, Grade 9 is required as the minimum qualification for having obtained a basic education (www.abet.co.za).
The employment statistics presented in Table 2.4 below indicate that in 2001 50% of the Bot River population was employed, and 52.5% of that of Caledon. Bot River had a significantly higher unemployment rate (viz. 17.5%) than Caledon (10%). The recorded unemployment rate of Bot River was comparable with the Provincial average for 2001 (viz. 17%), while that for Caledon was lower. As a result of rationalisation in the provincial agricultural sector during the past decade, and in the light of the current global economic downturn, current unemployment rates are likely to be significantly higher.

Table 2.4: Bot River and Caledon Employment levels (15 – 64 year age group)

<table>
<thead>
<tr>
<th>Description</th>
<th>Bot River %</th>
<th>Caledon %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employediv</td>
<td>50</td>
<td>52.5</td>
</tr>
<tr>
<td>Unemployed</td>
<td>17.5</td>
<td>10</td>
</tr>
<tr>
<td>Not Economically Activev</td>
<td>32.5</td>
<td>37.5</td>
</tr>
</tbody>
</table>

Source: Census 2001

Census data for 2001, presented in Table 2.5 below, indicated that a significant portion of households in the relevant towns were living below the R1 600/ month minimum subsistence level. In that regard, the breadwinners of 45.9% of Bot River households, and 34.9% of Caledon households had no access to formal income, or earned less than R1 600/ month.

Table 2.5: Household income (by head of household)

<table>
<thead>
<tr>
<th>Income per month</th>
<th>Bot River %</th>
<th>Caledon %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal income</td>
<td>10.4</td>
<td>7.8</td>
</tr>
<tr>
<td>R 1 – R 400</td>
<td>1.9</td>
<td>2.8</td>
</tr>
<tr>
<td>R 401 – R 800</td>
<td>14.2</td>
<td>9.9</td>
</tr>
<tr>
<td>R 801 - R 1 600</td>
<td>19.4</td>
<td>14.4</td>
</tr>
<tr>
<td>[% households below minimum subsistence level]</td>
<td>[45.9]</td>
<td>[34.9]</td>
</tr>
<tr>
<td>R1 601 - R 3 200</td>
<td>25.9</td>
<td>21.9</td>
</tr>
<tr>
<td>R 3 201 – R 6 400</td>
<td>18.3</td>
<td>20.6</td>
</tr>
<tr>
<td>R 6 401 – R 12 800</td>
<td>7.5</td>
<td>14.6</td>
</tr>
<tr>
<td>R 12 801 – R 25 600</td>
<td>1.6</td>
<td>6</td>
</tr>
<tr>
<td>R 25 601 and higher</td>
<td>0.8</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Census 2001

Table 2.6. below provides an overview of proportional employment per economic sector by head of household for the relevant towns. As may be seen, the profiles for Bot River and Caledon are very dissimilar. Specifically, employment in the primary agricultural sector was the most significant for Bot River (27.4%), followed by wholesale and retail trade (26.3%). Together, more than 50% of all household heads were employed in either of the two sectors.

Census 2001 official definition of an unemployed person: "A person between the ages of 15 and 65 with responses as follows: 'No, did not have work'; 'Could not find work'; 'Have taken active steps to find employment'; 'Could start within one week, if offered work.'" (www.statssa.gov.za).

The term “not economically active” refers to people of working age not actively participating in the economy, such as early retirees, students, the disabled and home-makers.
Manufacturing (14.9%) and Service-related activities (14.8%) constituted other significant sectors. This profile is closely related to Bot River’s rural setting, its function as agricultural service center, and the processing of agricultural produce. Caledon’s function as seat of the Theewaterskloof LM is reflected by the primacy of Service-related activities (31.3%). Retail and wholesale trade (20.9%) also accounted for a significant proportion of employment. Surprisingly, primary agriculture (6.8%) and manufacturing (10.2%) played relatively minor roles. Nevertheless, the importance of the agricultural sector to the local economy should not be underestimated, as the town, as regional service centre, to a large extent cater for the retail and services needs of its rural hinterland.

Table 2.6: Sectoral contribution to employment

<table>
<thead>
<tr>
<th>Description</th>
<th>Bot River %</th>
<th>Caledon %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, hunting, forestry and fishing</td>
<td>27.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>14.9</td>
<td>7.3</td>
</tr>
<tr>
<td>Electricity, gas and water supply</td>
<td>0.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Construction</td>
<td>8</td>
<td>10.2</td>
</tr>
<tr>
<td>Wholesale and retail trade</td>
<td>26.3</td>
<td>20.9</td>
</tr>
<tr>
<td>Transport, Storage and communication</td>
<td>2.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Fin., real estate and bus. Services</td>
<td>2.9</td>
<td>9</td>
</tr>
<tr>
<td>Community, social and personal services</td>
<td>14.8</td>
<td>31.3</td>
</tr>
<tr>
<td>Other and not adequately defined</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Private householdsvi</td>
<td>2.1</td>
<td>9.1</td>
</tr>
</tbody>
</table>

Source: Derived from Census 2001

2.3.1 Growth potential of the towns in the vicinity of the proposed WEF site

A study (Centre for Geographical Research, 2004) of the growth potential of the towns in the Western Cape was commissioned by the Department of Environmental Affairs and Development Planning (Western Cape) to provide the Department with a better understanding of the developmental potential and challenges of the Western Cape. The Study was undertaken within the context of the strategic requirements as pointed out in the National Spatial Development Perspective. The findings of the Study played a crucial role in informing the drafting of the WCPSDF.

The Study investigated 131 towns in the province with regard to assessing their development potential for infrastructural investment, as well as assessing their human need with a view to social investment in their people. The study also investigated and diagnosed rural-urban development issues faced by the province, and made recommendations towards improving the status quo.

Two investment types ‘Town/Infrastructural investment’ and ‘Social/People investment’ were used as points of departure in order to identify the appropriate investment type which is best

vi This category mainly comprises domestic workers and gardeners.
suited to stimulate economic growth and social investment for each of the relevant urban communities/towns:

- **High Human Need/Low Development Potential:** Social investment required;
- **Low Human Need/High Development Potential:** Town investment required;
- **High Human Need/High Development Potential:** Social and Town investment required;
- **Low Human Need/Low Development Potential:** Minimal investment required.

The assigning of development potentials to specific towns included quantitative (survey of existing infrastructure, retail and services providers, etc) and qualitative aspects (based on the self-perception of its inhabitants). The following five qualitative categories were defined:

- **“Very Low” and “Low” growth potential:**
  Towns with a proven track record of growth, but wishing to retain their present character and therefore rejecting major development; or towns with limited economic and human resources, devoid of the potential to stimulate the urban economy.
- **“Medium” growth potential:**
  Consistent and moderate growth prevails in these towns and certain sectors of the economy show signs of growth, or have the potential for it;
- **“High” and “Very High” growth potential:**
  Towns displaying sustainable growth combined with an established and proven track record to operate as ‘regional leaders’. Potential to grow at a sustainable and powerful rate in line with the capacity of their resources and to operate as service providers to a relatively extensive hinterland. The difference between ‘High’ and ‘Very High’ status only lies in the diversity and intensity of the town dynamics (Centre for Geoscience Research, 2004)\(^3\)

An overview of the Study’s findings with regard to the urban communities of particular relevance to the proposed WEF is provided in Table 2.7 below. Given the proposed site’s location in proximity to the R406, the touristic settlements of Genadendal and Grayton have also been included.
Table 2.7: Growth potential of urban communities in vicinity to proposed WEF

<table>
<thead>
<tr>
<th>TOWN</th>
<th>HUMAN NEEDS</th>
<th>DEVELOPMENT POTENTIAL</th>
<th>ECONOMIC BASE</th>
<th>PLACE IDENTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quantitative</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>Bot River</td>
<td>Medium</td>
<td>Low</td>
<td>Very Low</td>
<td>Agricultural service centre[vii]</td>
</tr>
<tr>
<td>Caledon</td>
<td>Very low</td>
<td>Medium</td>
<td>Medium</td>
<td>Agricultural service centre</td>
</tr>
<tr>
<td>Genadendal</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Tourism/ Residential</td>
</tr>
<tr>
<td>Greyton</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Retirement/ Second homes</td>
</tr>
</tbody>
</table>

**Source:** *Growth Potential of Towns in the Western Cape* (2004)

\[vii\] *Agricultural service centre:* “Traditional central place towns serving the daily needs of a surrounding farming community, e.g. providing educational, religious, shopping and professional services.” (*Growth Potential of Towns in the Western Cape* (2004)).
3 IMPACTS AND ISSUES IDENTIFICATION

Section 3 identifies the key social issues that will need to be assessed by the SIA specialist study. In identifying the key issues the following assumptions are made:

- The area identified for the proposed wind energy facility meets the technical wind and other technical criteria required for such facilities;
- The selection of the area for the establishment of the proposed wind energy facility has been informed by the Regional Guidelines for wind farms prepared by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape; and,
- The issues associated with the proposed facility are likely to be similar to the issues identified by SIAs undertaken for other WEFs in the area.

3.1 Key Planning and Policy Issues

As indicated in Section 3.2, legislative and policy context plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents.

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

- The National Energy Act (2008);
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- The White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2010-2030);
- Climate Change Strategy and Action Plan for the Western Cape (2008);
- White Paper on Sustainable Energy for the Western Cape (Final Draft, 2008);
- Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape. Towards a Regional Methodology for Wind Energy Site Selection (2006);
- The Western Cape Provincial Spatial Development Framework (2009);
- Guideline for the Management of Development on Mountains, Hills and Ridges in the Western Cape (2002);
- The Theewaterskloof Municipality Integrated Development Plan (IDP) (2010-2011);
- The Theewaterskloof Municipality Draft Spatial Development Framework (September 2010);
- The Theewaterskloof Municipality Wind Energy Regional Assessment (March 2010);
- The Theewaterskloof Municipality Tourism Development Strategic Plan (2010);
- The Theewaterskloof Municipality Local Economic Development Strategy (2009); and
- The Theewaterskloof Vision 2939 (March 2011).

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

At a national level the White Paper on Energy Policy (1998) notes:
• Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future; and
• The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

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

• Wind energy potential in the Western Cape is high (3 000 MW). The potential advantages associated with wind include:
  ➢ Technology and capital costs are reducing rapidly;
  ➢ Low maintenance;
  ➢ Clean option; and
  ➢ Can be quickly installed in areas needing new supply.

• The Provincial Government of the Western Cape is committed to energy efficiency and renewable energy, and to reducing the Province’s carbon footprint and eradicating energy poverty. In order to achieve this vision, the PGWC will:
  ➢ Support an approach to energy planning, which takes into account environmental, social and economic considerations;
  ➢ Support research and development around renewable energy and energy efficiency technologies.

• The Strategic Assessment for establishing Wind Farms (May, 2006) undertaken by DEA&DP notes:
  ➢ It is important that at the national level (South Africa being signatories to the Kyoto Protocol) that positive policy is enacted to encourage wind energy (and indeed all renewable) development. A national perspective should ensure that wind resource rich provinces and regions are identified in order to ensure a co-ordinated and holistic national strategy. In this regard, it is accepted that the Cape West Coast (the study area and beyond to the north – indeed to the Orange River) will inevitably be attractive to wind energy developers due to the prevalence of coastal wind regimes. However, the importance of employing an effective cumulative impact model must be emphasised.

• The PSDF (2009) recognises the importance of developing renewable energy generation resources, including wind energy generation facilities. In that regard, provincial government has set a target of 25% renewable energy generation for the Province by 2020. The PSDF however also notes the importance of preserving the integrity of the province’s scenic resources, including landscapes, and therefore provides that associated infrastructure should be sensitively sited.

The Theewaterskloof IDP emphasises the critical importance of increasing the rate of local economic development. Three key economic developmental thrusts are identified, maintaining and growing the existing agricultural backbone sector, promoting and developing niche tourism as a vital diversification strategy, and incentivising the development of light industry, including the promotion of sensitively sited renewable energy generating facilities. Bot River is identified as a specific growth node focus in this regard.

In summary, the findings of the review of the relevant policies and documents pertaining to the energy sector indicate that wind energy and the establishment of wind energy facilities
are supported at a national, provincial and local level. The Theewaterskloof IDP specifically provides for the development of renewable energy generating facilities in the Bot River area. However, the potential visual impact on the N2 is an issue that will need to be assessed in more detail. In addition, while the Regional Assessment does provide spatial guidance for the siting of WEFs within the Theewaterskloof LM area, it does not necessarily provide guidance with regard the optimal number of WEFs and or the provide detailed information that would allow the adjudication of specific sites.

3.2 Local and site specific issues

Based on review of information and experience from SIAs for other WEFs in the area the most important issues that are likely to be raised and will need to be assessed during the EIA include:

3.2.1 Local communities and individuals

- Potential impact on rural sense of place (this will be closely linked to the visual impacts);
- Potential negative impact of the proposed WEF and associated power lines on tourism, both locally and regionally (this will be closely linked to the visual impacts from routes currently serving a scenic/touristic function, specifically the R406, but also the R43 and the N2);
- Impact on property prices (Bot River town and adjacent/ near-adjacent rural areas where the scenic resource may be considered of significant value with regard to rural lifestyle/land use);
- Influx of job seekers into the area during the construction phase. The influx of job seekers may result in an increase in sexually transmitted diseases, including HIV/AIDS; increase in prostitution; increase in alcohol and drug related incidents; increase in crime; and creation of tension and conflict in the community. This issue is potentially of great importance, given the high established migration influx level currently experienced by the Theewaterskloof LM;
- Creation of employment and business opportunities during the construction phase;
- Creation of employment and business creation opportunities during the operational phase;
- Creation of potential training and skills development opportunities for local communities and businesses;
- Potential up and down-stream economic opportunities for the local, regional and national economy;
- Potential positive impact on tourism, in that the proposed WEF may attract visitors to the area;
- Provision of clean, renewable energy source for the national grid.

3.2.2 Farmers on and adjacent to the WEF site

In terms of potential impacts on local farmers in the area the following issues will need to be assessed:

- Potential threat to farm safety due to increased number of people in the area and construction workers;
- Potential stock losses (during the construction and operational phase);
- Potential damage to water and other farm infrastructure (during the construction and operational phase);
• Potential damage to roads by heavy equipment and increased traffic volumes (during the construction and operational phase);
• Potential impact on farming operations and loss of productive land (during the construction and operational phase).

3.2.3 Information requirements for the assessment phase

The following typical, generic project information is required in order to inform the Social Impact Assessment.

**Construction phase**

(Including all related infrastructure such as transmission lines, access roads, office and warehouse components)

- Comments received from I&APs during the public participation process, including those with regard to the Final Scoping Report;
- A draft illustration (plan) of the proposed lay-out(s) of the turbines (including an indication of the phasing sequence on the site), supporting structures and infrastructure;
- Duration of the construction phase (months);
- Number of people employed during the construction phase;
- Breakdown of number of people employed in terms of low skilled, semi-skilled and skilled;
- Estimate of the total wage bill for the construction phase and breakdown in % as per skills categories;
- Total capital expenditure estimate for construction phase;
- Indication of where construction workers will be housed (on site or in nearest town?);
- Opportunities for onsite skills development and training;
- Description of the typical activities associated with the construction phase, specifically onsite construction activities. This includes a description of how the large components associated with a WEF will be transported to the site and assembled on the site;
- The size of the vehicles needed to transport the components and the routes that will be used to transport the large components to the site, and an estimate of the number of vehicle trips required and duration of each trip.

**Operational phase**

- Operating budget per annum;
- Total number of people employed;
- Breakdown in terms of skills levels (see above);
- Annual wage bill;
- Typical activities associated with the operational phase;
- Information on opportunities for skills development and training;
- Typical lifespan of proposed WEF;
- Information on the lease / rental agreements with local landowners and or communities. This information is required so as to indicate how local landowners and communities stand to benefit from the project.
4 TERMS OF REFERENCE FOR IMPACT ASSESSMENT PHASE

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

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

In this regard the study will include:

- Review of demographic data from the 2001 Census Survey and other relevant sources, including local IDP documents etc;
- Review of relevant planning and policy frameworks for the area, including the Western Cape Provincial SDF;
- Collation of site specific information during the site visits to the area;
- Review of information from similar projects;
- Interviews with key interested and affected parties and stakeholders;
- Identification of social issues associated with the proposed project; and
- Identification of potential mitigation and or enhancement measures.

The detailed public consultation process will be undertaken during the EIA phase of the project. Issues raised through this process will feed into the SIA for the proposed power lines.
5 CONCLUSIONS AND RECOMMENDATIONS

The key conclusions of the Scoping level study are the following:

- The establishment of wind energy facilities are supported at national, provincial and local levels;
- The proposed WEF site appears to be compatible with the spatial development vision of the Theewaterskloof LM;
- Key potential construction phase issues for further investigation during the EIA phase relate to the recruitment and on-site management of construction labour and the management of impacts on local roads; and
- Key potential operational phase issues relate to the potential negative impacts on the scenic integrity (visual) of the landscape, and on potential losses in agricultural productivity.
REFERENCES

- Provincial Government Western Cape Department of Environmental Affairs and Development Planning (2009). Western Cape Provincial Spatial Development Framework.
- Republic of South Africa. The National Energy Act (2008);
- Theewaterskloof Local Municipality (September 2010). Draft Spatial Development Framework.

Internet sources

- www.capegaetway.gov.za (Municipal profile information).