

Inyanda Roodeplaat Wind Energy Facility Socio - Economic Impact Assessment

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CHAPTER 1

INTRODUCTION

Urban-Econ has been appointed by SRK Consulting to undertake a specialist socio-economic impact assessment on behalf of Newcombe Wind Developments (NWD) with regards to the planned development of a Wind Energy Facility (WEF) on the farm Roodeplaat 55km south-west of Kirkwood in the Eastern Cape, from here onwards referred to as the Inyanda Roodeplaat WEF.

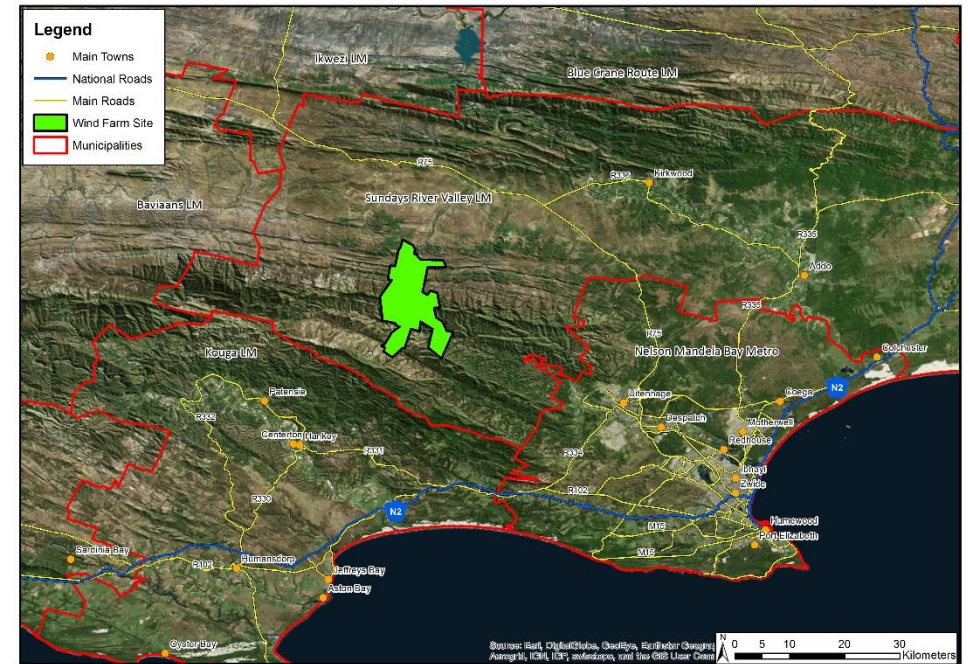
1.1 Study Goals and Objectives

The purpose of this study is to undertake the necessary research to produce a specialist report for the Environmental Impact Assessment (EIA) for the envisaged project. This report will be focused on the socio-economic impact assessment as required by the Environmental Impact Assessment (EIA) Guidelines and Legislature. Specific objectives of the study include:

- Generating a profile of the local and regional economy in order to understand the economic dynamics, potential and challenges of the area
- Developing a profile of the affected environment which would then represent the “do nothing” alternative
- Identifying all possible positive and negative socio-economic impacts that could be expected to arise from the project during both the construction and operational phases of the development
- Where possible, quantify socio-economic impacts using an economic model developed on the basis of a Social Accounting Matrix (SAM) or other techniques
- Determine the significance of potential impacts using criteria determined by the environmental practitioner
- Compare various alternatives and advise on the most advantageous option
- Provide, where possible and when necessary, practical mitigation measures to reduce or completely eliminate the potential negative impacts of the proposed development

1.2 Location

FIGURE 1.1: LOCATION OF THE PROPOSED WIND ENERGY FACILITY



Source: Urban-Econ (2015)

The proposed WEF site is located in the Sundays River Valley Local Municipality (LM) which forms a portion of the Sarah Baartman District Municipality (formerly Cadadu District Municipality). The proposed site is located in the western portion of the Sundays River Valley LM and is in close proximity to Nelson Mandela Bay Metro, Kouga LM and Baviaans LM. The closest towns to the site are Patensie, Hankey and Loerieheuwel but no direct route exists between the Kouga LM and Sundays River Valley LM. The closest town connected by a road is Kirkwood (55km from the site) and Uitenhage (60km). The main points of entry to the site are along then R75 and an untarred route. There are a number of towns and game farms located close to the proposed WEF namely:

- Kirkwood is a predominantly farming community but also functions as the largest commercial centre in the Sundays River Valley. The town has a fairly large residential population (5 371) and serves as central node for the farming community surrounding it. Agricultural related services are a predominant part of the economy which serves the agricultural community surrounding it. Tourism also plays a part in the local economy with attractions such as the Daniell Cheetah Breeding Project, Kronenhoff, and Spotted Cats Conservation. Kirkwood is perhaps most famous for the Wildlife Festival in June of every year. The town of Addo is located only 35km east from Kirkwood.
- Uitenhage is the closest large town from the proposed WEF site after Kirkwood and is located in Nelson Mandela Bay. Uitenhage has a population of 103 639 and is well known for automotive manufacturing. The Volkswagen automotive facility and Goodyear both have plants here with smaller automotive component manufacturers located in the town as well.
- The Groendal Wilderness Area protects the water catchment area of the Swartkops River (KwaZunga River), with the Groendal Dam in its centre. The entire reserve is approximately 30 000 hectare large and is divided into three areas. The Mierhoop Plaat Nature Reserve forms part of the western boundary of the WEF site while the majority of the Groendal Reserve forms part of the western boundary. This wilderness area has rugged terrain incised by numerous streams and ravines. The vegetation is predominantly fynbos with a great diversity of individual species. Birdlife within the Groendal Wilderness Area is fairly diverse, with approximately 180 species having been recorded.
- Baviaanskloof Nature Reserve lies approximately 30km away from the WEF development in the Baviaans LM. The nature reserve is very large and is broken up into various sections. The whole reserve is approximately 270 000 hectares and is one of the eight protected areas of the Cape Floristic Region. The reserve has a rich diversity in plant, mammal and birdlife and is considered to be one of the most diverse in the country as it includes seven of the eight South African biomes with its boundaries.

- Longmore State Forrest is located within 25km of the proposed development and is in the Kouga LM. The forest is part of the Department of Agriculture, Forestry and Fisheries (DAFF) forest area and is approximately 4047 hectares large. It is fairly popular among mountain bikers and there are numerous trails through the forest.
- Schuilpatdop Game Farm is a large (2664 hectares) private game farm which is located close to the proposed WEF development. The game farm is hectares large and is on the R75 route.

1.3 Methodology

Socio-Economic Impact Assessment studies are undertaken to determine, evaluate, and where possible, quantify the effects of an intervention. This intervention could be either an existing activity within the economy or a new activity (i.e. the development of the Inyanda Rooideplaat WEF).

Socio-economic impacts generated by an intervention can be disaggregated in terms of the initial or direct impacts that occur when the intervention begins. Such impacts in turn trigger secondary and further flow-on rounds of impacts thereby creating a multiplier effect. This multiplier effect can be either positive or negative. In pure economic terms these impacts are expressed as indirect and induced effects, where:

- Indirect effects relate to the changes in economic indicators that are triggered along the upstream industries that supply goods and services to the intervention
- Induced effects refer to the changes in economic indicators that are stimulated by changes in consumption expenditure of households that were directly or indirectly affected by the intervention.

In addition to the above, two additional types of socio-economic impacts can be distinguished. These include:

- Secondary impacts that are caused by the intervention, but that are further removed in distance or take a greater amount of time to materialise, but are still reasonably foreseeable. Secondary impacts generally relate to changes in land use

patterns, economic performance, changes to the character of a community in the vicinity of the interventions location.

- Cumulative effects are the results of incremental consequences of the intervention when added with other past, present and anticipated future interventions. Cumulative effects consider the manner in which the impacts of a project may affect or be affected by other projects. Such effects are generally difficult to identify as they require a complete knowledge of local conditions and development plans, and accordingly are sometimes even more difficult to quantify.

Projection of the initial impacts and multiplier effects are usually done by employing an input-output model or a General Equilibrium Model. The use of these models in socio-economic impact assessments allows for the quantification of potential impacts in terms of a number of economic indicators such as production, Regional Gross Domestic Product (GDP_R), employment and income. The scale of these impacts is dependent on the size and diversification of the economy under analysis which in turn determines the leakage. Leakage is defined as revenue which is generated that is lost or leaves the economy. In this situation leakage is revenue that is lost from Sundays River Valley Municipality. Secondary and cumulative effects can be identified through an expert opinion technique, consultations, development matrices and interviews. Such impacts can be difficult to quantify. Overall, a socio-economic impact analysis that includes the assessment of primary impacts, multiplier effects, secondary impacts and cumulative effects provides a comprehensive assessment of potential impacts. It furthermore assists in ranking the intervention using a methodology prescribed by the Department of Environmental Affairs.

The socio-economic impact assessment made use of the economic models based on the Eastern Cape Social Accounting Matrix (SAM) developed in 2006 and adjusted to represent 2015 figures. The SAM is a comprehensive, economy-wide database that contains information about the flow of resources that takes place between the different economic agents in this case the Eastern Cape economy. The selection of this model in the assessment is attributed to the expected spatial distribution of procurement during both the construction and operational phases of the project.

1.4 Impact Evaluation Model

All impacts identified were evaluated in terms of the extent, duration, magnitude, probability and significance. The model also assesses whether impacts will be positive or negative, in line with DEAT (2006) guidelines. The following approach was used to assess each of these aspects of the impact:

- Nature of impact
- Spatial extent
- Intensity or magnitude of impact
- Duration
- Probability
- Significance

In addition to the above, each impact is evaluated in terms of the following:

- The degree to which the impact can be reversed (Reversible or Not)
- The degree to which the impact may cause irreplaceable loss of resources (Yes or No)
- The degree to which the impact can be mitigated (Yes or No)

It is important to state that the evaluation undertaken using this method will in many cases be based on subjective criteria that are difficult to quantify at a high percent confidence interval. This is a result of the nature of this project whereby:

- Wind energy is a relatively new form of energy (at this scale) in the South Africa context
- Given the relatively new nature of this form of energy production, there is very limited historical data on factors such as its impact on tourist visits, land prices and business value in a context similar to that of the proposed Inyanda Rooideplaas WEF.
- Emphasis is thus to be drawn away from the numerical value of the significance rating and more to the issues discussed (extent, duration, magnitude and probability). Although these are often subjective matters (given the absence of historical data on which to base econometric modelling for extrapolation of trends). It is thus recognised that while no absolute value can be ascertained to the impacts identified in this report, it is still important to identify these potential

impacts and highlight some of the critical issues that will apply in the specific case of the proposed Inyanda Roodeplaat WEF.

1.5 Data Collection

As part of the data collection process for the socio-economic impact assessment of the Inyanda Roodeplaat WEF the following activities were undertaken:

- **Review of planning documents**

In order to document the socio-economic context of the study area within the Sundays River Valley Local Municipality, important policy, planning and strategic documents were reviewed, referenced and used to inform this SEIA. These documents included:

- South African Constitution (1996)
- Eastern Cape Spatial Development Framework (2010)
- Sundays River Valley Local Municipality Integrated Development Plan (2015)
- Sundays River Valley Local Municipality Spatial Development Plan (2009)

- **Literature Review**

In order to substantiate the findings of the socio-economic impact assessment a number of secondary research documents have been considered as they relate to the proposed wind farm. These documents include academic journals and studies available on the internet or in print media. It is intended that these documents substantiate the baseline profile while at the same time providing context to the project.

- **Interviews with stakeholders**

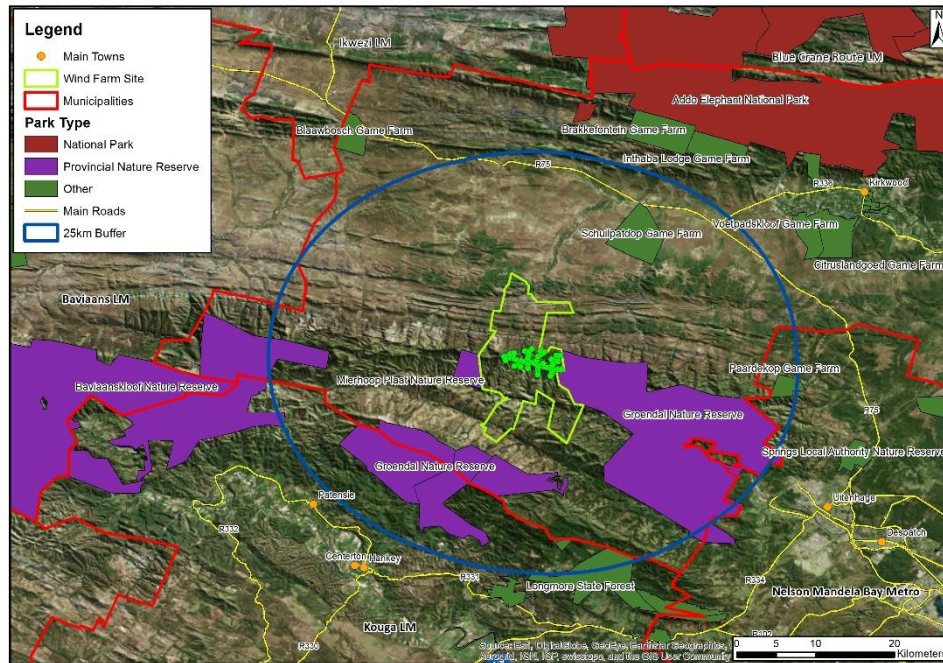
Select interviews are currently being undertaken as part of the SEIA to collect information from key parties that are likely to be interested in and affected by the proposed wind farm. These interviews are primarily being conducted telephonically. These interviews will form the basis of the primary data collection and establish the stakeholder's perceptions, interests and concerns.

It is recognised that responses to standardised questions based on subjective opinions that are difficult to quantify. Despite this shortcoming, it will however still be important to gauge the perceptions of selected identified interested and affected parties as they represent local community, business and government interests.

1.6 Study Area Determination

The study area was determined by using a Geographic Information System (GIS) to locate the development and calculate how far the impact of this development might be felt. A 25km buffer was applied to the wind turbines and an area of influence was created. Certain towns, and farm portions fell into this buffer zone such as Patensie, Hankey and Groendal Nature Reserve. Along with the specialist Visual Impact Assessment, the 25km buffer was created to determine which stakeholders would be consulted as well as developing a primary study area around the wind farm. Patensie and Hankey are located 25km (direct distance) away from the development but no direct route exists between the development and these towns and thus are 130km away via road. The Baviaans LM was not selected as there was only a small portion of the Baviaans Reserve that is located in the buffer area did not have a large population in it and the effects of the WEF is likely to be extremely negligible to the local population. The WEF is almost completely contained in the Sundays River Valley LM and thus there is likely a limited impact on neighbouring municipalities. Due to the remote nature of the WEF site the possibility of labour and expertise coming from beyond the LM is highly likely.

FIGURE 1.2 LOCATION OF THE WEF IN RELATION TO PROTECTED AREAS (Annexure A)



Source: Urban-Econ (2015)

It was thus decided that the following municipalities would be examined:

- Sundays River Valley LM – Primary Study Area
- Nelson Mandela Bay Metro – Secondary Study Area
- Sarah Baartman District DM – Tertiary Study Area

1.6.1 Primary study area

The primary study area (hereafter referred to the local area) refers to the locality where the direct economic impacts of the proposed development will be concentrated. The primary study area is defined based on the actual location of the proposed development, proximity to skilled and unskilled labour, position relative to suppliers of products and data availability.

Based on these criteria the Sundays River Valley Local Municipality was selected as these were the smallest administrative units for which current economic and demographic data can be obtained.

1.6.2 Secondary and tertiary study areas

The secondary study area is where the majority of indirect and induced effects will be concentrated. The proposed wind energy facility is located an estimated 85 km from Nelson Mandela Bay and it is anticipated that a portion of construction inputs will be sourced from the Nelson Mandela Bay Metro.

This suggests that the Nelson Mandela Bay Metro will likely benefit more from the indirect and induced effects of the development than Sundays River Valley Local Municipality. The procurement of construction inputs are however unlikely to be limited to the Nelson Mandela Bay Metro and will likely be sourced from other parts of the Eastern Cape. It is likely that much of the skilled and unskilled labour would be sourced from Nelson Mandela Bay.

The Sarah Baartman DM was included as the tertiary area as the Sundays River Valley LM makes up an important part of the District Municipality. It is also important to examine the impacts the WEF may have at a larger level and thus the District Municipality was included.

1.7 Report Outline

The remainder of the report is broken down into the following chapters:

Chapter 2: Socio-Economic Profile – this section presents the baseline context on the study area against which potential impacts were assessed.

Chapter 3: Policy Review and Projects – this section includes a review of all the relevant policies to indicate how the proposed developments are aligned to government objectives and includes a list of projects (public and private) happening in the area.

Chapter 4: Economic Modelling Results – this section presents the findings of the SAM modelling process.

Chapter 5: Socio-Economic Impact Interpretation – this section assesses the socio-economic impacts of the proposed development.

Chapter 6: Management Guidelines – this section concludes the report based on the findings of the previous sections.

2.1 Introduction

The purpose of a socio-economic profile is to determine and understand the local economy in terms of macro and micro context. The socio-economic profile allows for an understanding of the trends of the area using existing data from various sources.

The basis of any development are the households and population living in the immediate area. Analysis of the population of the area is vitally important as the local population supplies labour and expertise to any development.

The purpose of the following sub-section is to provide an insight into the socio-economic situation of the Sarah Baartman DM, Sundays River LM and Nelson Mandela Bay Metro.

2.2 Local Demographic Profile

Selected demographic information is presented in Table 2.1. The Sundays River Valley LM falls within the Sarah Baartman District Municipality and accounts for 12.1% of the district population, making it the fourth most populous locality after the Kouga LM, Makana LM, and Ndlambe LM. Population growth between 2001 and 2011 was 2.16%. This compares favourably with the Sarah Baartman District Municipality’s population growth rate, which grew at 1.5% over the same period. The average household size in Sundays River Valley LM was 3.7 which is similar to those of Nelson Mandela Bay and Sarah Baartman DM. Nelson Mandela Bay has a population of 1.15 million people and grew at a rate of 1.36% over the period of 2001 – 2011.

TABLE 2.1: POPULATION AND HOUSEHOLD POPULATION

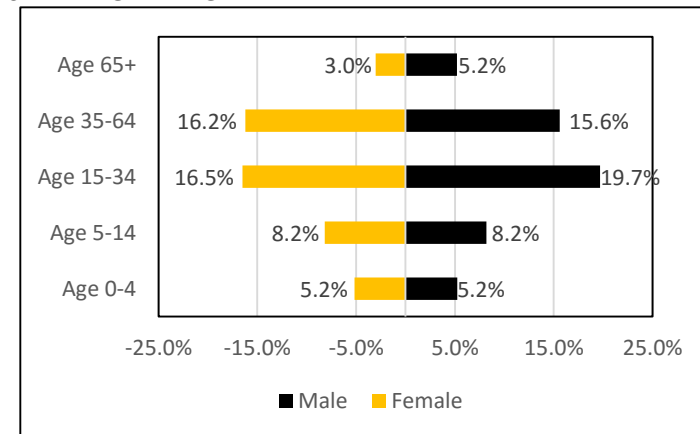
	Population	Population Growth (2001 - 2011)	Household Total	Average Household Size
Sarah Baartman DM	450 585	1.30%	125 631	3.6
Sundays River Valley	54 504	2.16%	14 749	3.7
Nelson Mandela Bay	1 152 115	1.36%	324 292	3.6

Source: StatsSA (2011)

2.2.1 Age and Gender Profiles

Age and the gender profiles provide insight into the composition of the local population. These profiles help establish the Potential Economically Active population (PEA) which refers to the population which falls between the ages of 15 and 64. This segment of the population is most likely to be willing and able to be employed. Some members of this segment do not work as they may stay at home or students. They are however, still considered part of the labour pool.

FIGURE 2.1: SRVLM AGE AND GENDER PYRAMID

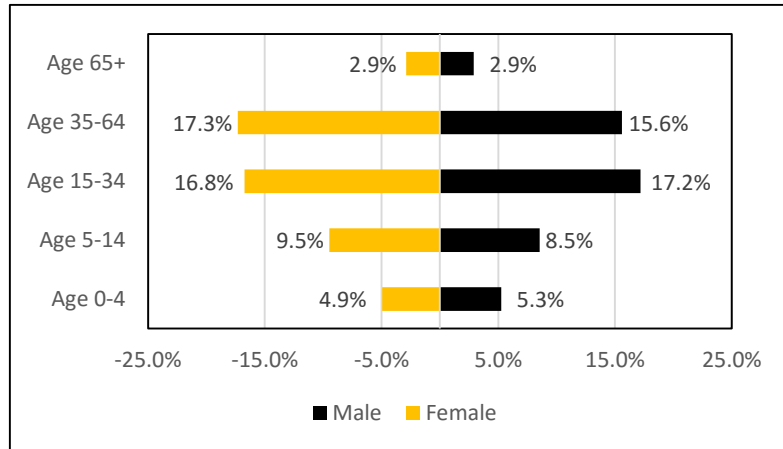


Source: StatsSA (2011)

The age pyramid of SRVLM indicates that there are large numbers of males between the ages 15 – 34. In general there are also a larger proportion of males (53.9%) than females in

the municipality. This is likely because of the citrus industry which employs a large number of people in the municipality. The PEA population for SRVLM is 68% with 8.2% over the age of 65 and 26.8% under the age of 14.

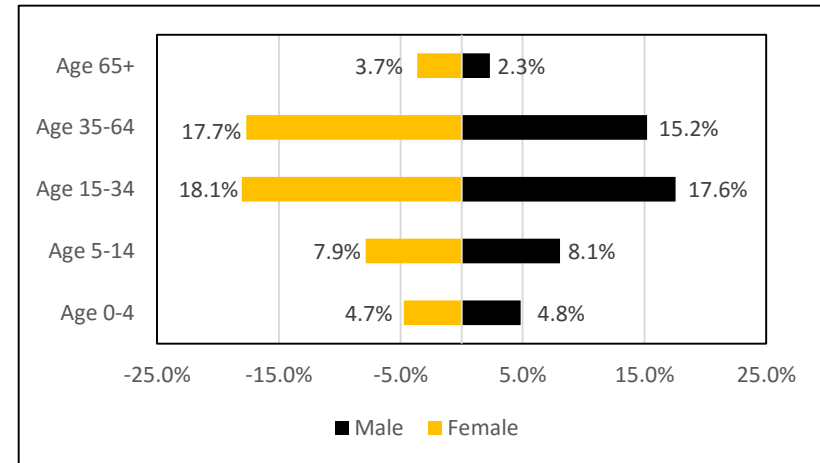
FIGURE 2.2 SARAH BAARTMAN DM AGE AND GENDER PYRAMID



Source: StatsSA (2011)

The age and gender pyramids of Sarah Baartman DM indicate that 65.9% of the population are part of the PEA. The proportion of the population under the age of 14 is 28.2%. The total percent of dependents is 34%. This is a significant proportion of the population and therefore interventions in terms of education and appropriate skills development should be considered in terms of social investment.

FIGURE 2.3: NMBM AGE AND GENDER PYRAMID



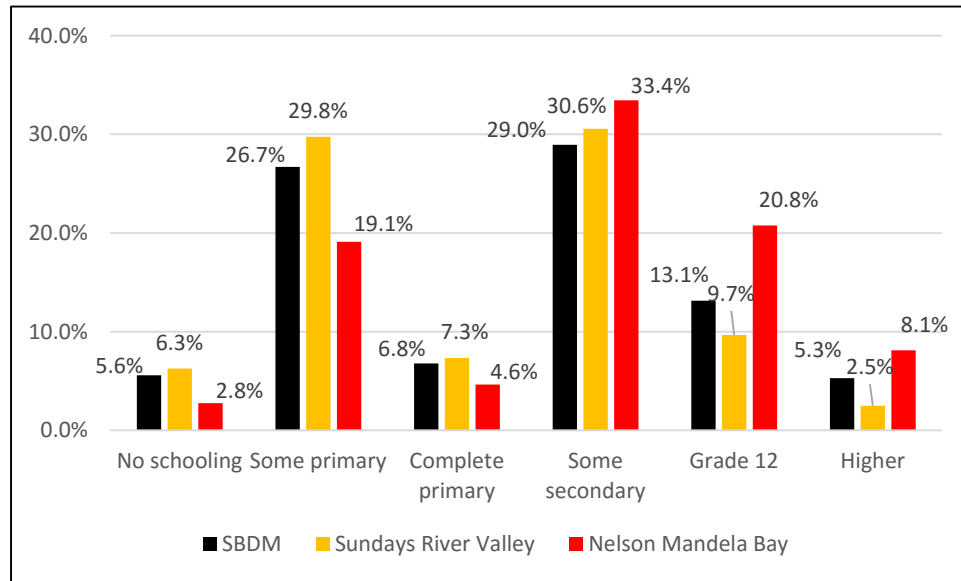
Source: StatsSA (2011)

The age gender pyramid of NMBM is similar to that of Sarah Baartman as those in the PEA group is 68.6% while dependents in the area account for 31.4% of the population.

2.2.2 Education

It is important to examine the education levels of the population in the affected areas. Educational attainment is directly related to skills development. Low education levels generally indicate low skill levels of the population while higher levels of education generally correlate to higher skills in a population. Educational attainment also affects household income levels. Poorer households generally do not have high levels of educational attainment.

FIGURE 2.4: EDUCATION LEVELS



Source: StatsSA (2011)

The SRVLM has the highest proportion of “no schooling” (6.3%) and “some primary” (29.8%) education while also having low levels of “Grade 12” (9.7%) and “Higher” (2.5%) qualifications. NMBM has higher levels of “Grade 12” (20.8%) and “Higher” (8.1%) qualifications. This indicates that there are a higher proportion of people in NMBM who have completed school and have higher qualifications than there are in SRVLM. The larger number of people who have no schooling and some secondary schooling in SRVLM also indicates that there are a higher proportion of low skilled workers in the municipality compared to Sarah Baartman and NMBM.

2.2.3 Employment

Employment is important to quantify as this directly relates to household income and can thus be used to determine the development of a region. The following table indicates the employment rate, unemployment rate and not economically active rate.

The employment rate is the rate of employed persons and the unemployment rate is a measure of unemployment among the workforce. This table also includes the not economically active population, which are people who are not working, but are housewives, scholars/full-time students, pensioners, disabled people and people not wishing to participate in employment.

TABLE 2.2: EMPLOYMENT PROFILE

	Employment Rate	Unemployment rate	Not Economically Active Rate
Sarah Baartman	41.3%	25.0%	45.0%
Sundays River Valley	43.5%	15.3%	48.7%
Nelson Mandela Bay	37.1%	36.3%	41.8%

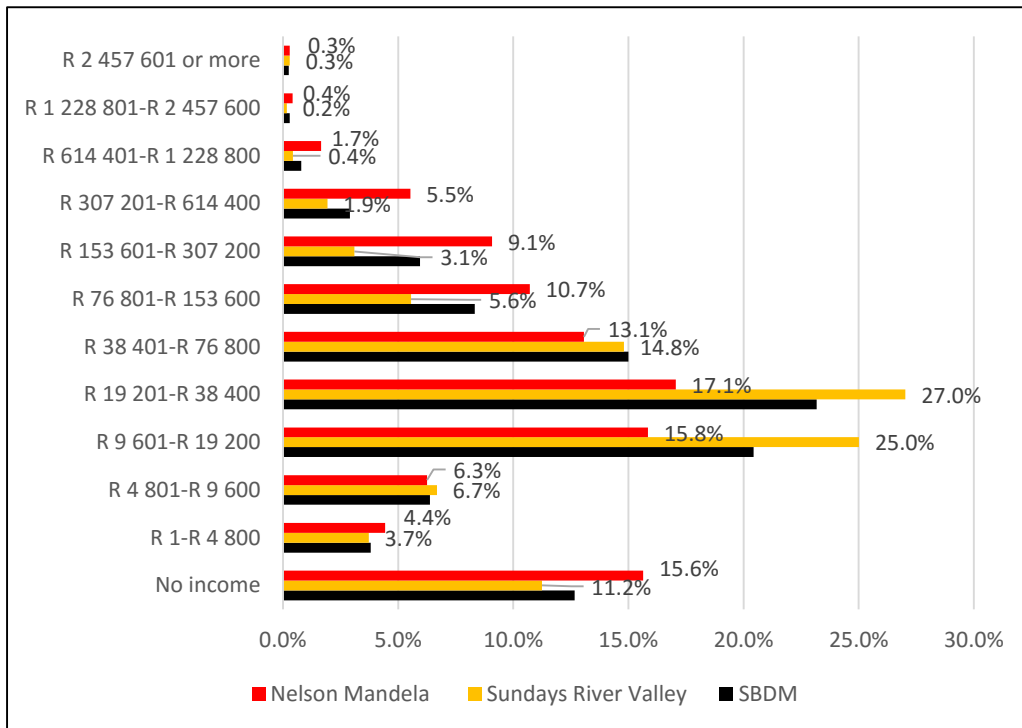
Source: StatsSA (2011)

The SRVLM has slightly high employment rates (43.5%) compared to Sarah Baartman DM (41.3%) and NMBM. Nelson Mandela has the lowest employment rate of 37.1%. The SRVLM also has the lowest unemployment rate (15.3%) among the three municipalities. NMBM has the highest unemployment at 36.3% while Sarah Baartman DM has an unemployment rate of 25%. The not economically active rate in SRVLM is fairly high (48.7%) but similar to that of Sarah Baartman (45%). NMBM has the lowest not economically active rate at 41.8%.

2.2.4 Household Income

Household income levels are a basis for determining poverty levels in a community. In addition, the income levels of a particular area provide some insight into the economic behaviour of a particular community, i.e. the purchasing power of that community, the potential poverty levels that a community might be experiencing and vulnerability to changes in the economy.

FIGURE 2.5: ANNUAL HOUSEHOLD INCOME LEVELS



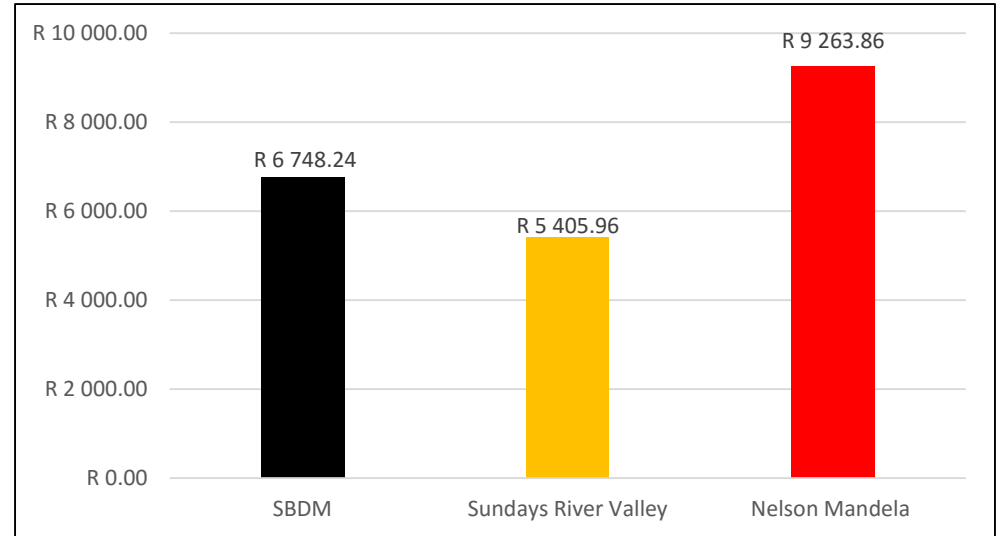
Source: StatsSA (2011)

Figure 2.5 indicates that the majority of household income earned in SRVLM is between the values of R 9 601 and R 38 400. Only 11.2% of households have no income compared to 12.7% for Sarah Baartman and 15.6% for the NMBM. There are however a lower proportion of high income earners than in NMBM or in Sarah Baartman LM. Only 5.9% of the households earn more than R153 601 per annum whereas this proportion is far higher in NMBM (17%) and Sarah Baartman DM (10.2%).

Most households in SRVLM fall into the R4 801 – R38 400 range which places them in the low income category.

This evidence indicates that SRVLM has a larger proportion of lower income and poorer households than the other local municipalities.

FIGURE 2.6: AVERAGE WEIGHTED MONTHLY HOUSEHOLD INCOME



Source: StatsSA (2011); Urban-Econ Calculations (2015)

The average weighted monthly household income is a measure of the average income for a household in a particular area. It can be used to determine how much a household may earn in a particular area. The average for SRVLM is R 5405.96 while for Sarah Baartman it is R6748.24 and NMBM it is R9263.86. The average income for SRVLM is far lower than that of NMBM and R 1 342. 28. The Sundays River Valley monthly household income is considerably lower than the average monthly household income in Sarah Baartman DM.

Coupled with the employment statistics, education and the household income, one can assume that a large number of people are employed in low skilled jobs which pays less than employment opportunities in in Sarah Baartman and NMBM. This could be as a result of the larger presence of agriculture than in NMBM.

2.3 Local Economic Profile

The local economy is analysed at the municipal level as this is the lowest level to which economic data is available. This subsection provides the economic context of the Sundays

River Valley LM as well as the Eastern Cape, Sarah Baartman DM and Nelson Mandela Bay Metropolitan Municipality.

The economic profile is assessed under the following headings:

- Sector Contributions to GDP_R
- Sector Contributions to Employment

2.3.1 Sector Contributions to GDP_R

Gross Domestic Product (GDP) is defined as the market value of all officially recognised final goods and services produced within a country in a year, or other given period of time. Regional Gross Domestic Product (GDP_R) pertains to a specific region. Figure 2.1 displays the contributions of each economic sector to GDP_R for 2003 and 2013. The largest contributors to GDP_R are highlighted.

TABLE 2.3: SECTOR CONTRIBUTIONS TO GDP_R

	EC	SBDM	SRVLM	NMBM
Agriculture, forestry & fishing	2.06%	5.35%	9.14%	0.53%
Mining & quarrying	0.11%	0.06%	0.04%	0.11%
Manufacturing	17.19%	12.63%	15.80%	24.20%
Electricity, gas & water	0.95%	1.27%	2.78%	0.99%
Construction	2.65%	3.66%	1.91%	2.69%
Wholesale & retail trade, catering & accommodation	13.87%	12.07%	19.32%	12.17%
Transport, storage & communication	8.78%	4.63%	3.08%	11.70%
Finance, insurance, real estate & business services	22.83%	24.75%	27.69%	23.67%
Community, social & personal services	10.38%	11.42%	7.33%	8.56%
General government	21.16%	24.17%	12.90%	15.37%
GDP_R Growth between 2003 and 2013	3.22%	3.66%	6.76%	0.86%

Source: Quantec Standardised Regional (2013)

Table 2.4 indicates that the largest contributors to GDP_R in SRVLM are finance, wholesale and manufacturing sectors. This is similar to the Eastern Cape, Sarah Baartman and NMBM

but there is a large contribution to GDP_R by Wholesale retail trade, catering and accommodation. This sector includes tourism and associated sectors. It should be noted that the Addo Elephant National Park main camp is located in SRVLM as well as the town of Addo which has numerous tourism products on offer for visitors. Another important note is that agriculture, forestry and fishing is a large contributing sector to the GDP_R of SRVLM and proportionally larger than agriculture in other municipalities and the Eastern Cape and Sarah Baartman as a whole. Specifically of great importance in the SRVLM is citrus industry which contributes to both GDP_R and labour employment in the agriculture sector.

The GDP_R growth rate for SRVLM for the period between 2003 and 2013 was 6.76% which is significantly higher than NMBM and higher than that of Eastern Cape and Sarah Baartman DM.

2.3.2 Sector Employment

Table displays the contributions of each economic sector to employment for 2013. The largest contributors to employment are highlighted.

TABLE 2.4: SECTOR EMPLOYMENT

	EC	SBDM	SRVLM	NMBM
Agriculture, forestry & fishing	6.15%	13.56%	21.39%	2.13%
Mining & quarrying	0.17%	0.05%	0.04%	0.12%
Manufacturing	8.80%	5.95%	7.16%	13.10%
Electricity, gas & water	0.15%	0.18%	0.37%	0.20%
Construction	10.73%	14.17%	7.35%	11.91%
Wholesale & retail trade, catering & accommodation	25.93%	20.80%	25.98%	24.13%
Transport, storage & communication	5.93%	3.09%	3.52%	7.81%
Finance, insurance, real estate & business services	9.93%	9.04%	7.20%	12.80%
Community, social & personal services	16.94%	19.43%	18.60%	14.71%
General government	15.27%	13.73%	8.40%	13.08%
Labour Growth between 2003 and 2013	1.16%	-2.43%	-3.45%	0.65%

Source: Quantec Standardised Regional (2013)

The table indicates that wholesale & retail trade, catering & accommodation, agriculture, forestry and fishing and community, social & personal services employ the most people. The large proportion of labourers employed in the agriculture, forestry and fishing sectors indicate that primary activities such as farming are extremely common in SRVLM. While there are relatively more jobs in agriculture, jobs often are seasonal, low-skilled jobs and therefore skills development and opportunities for full-time employment are necessary in the SRVLM. Tourism which is also a large contributor to the economy also employs a large proportion of people which is part of the wholesale & retail trade, catering & accommodation sector. The importance of the sector to the SRVLM can be seen as it employs 8% more of the labour pool.

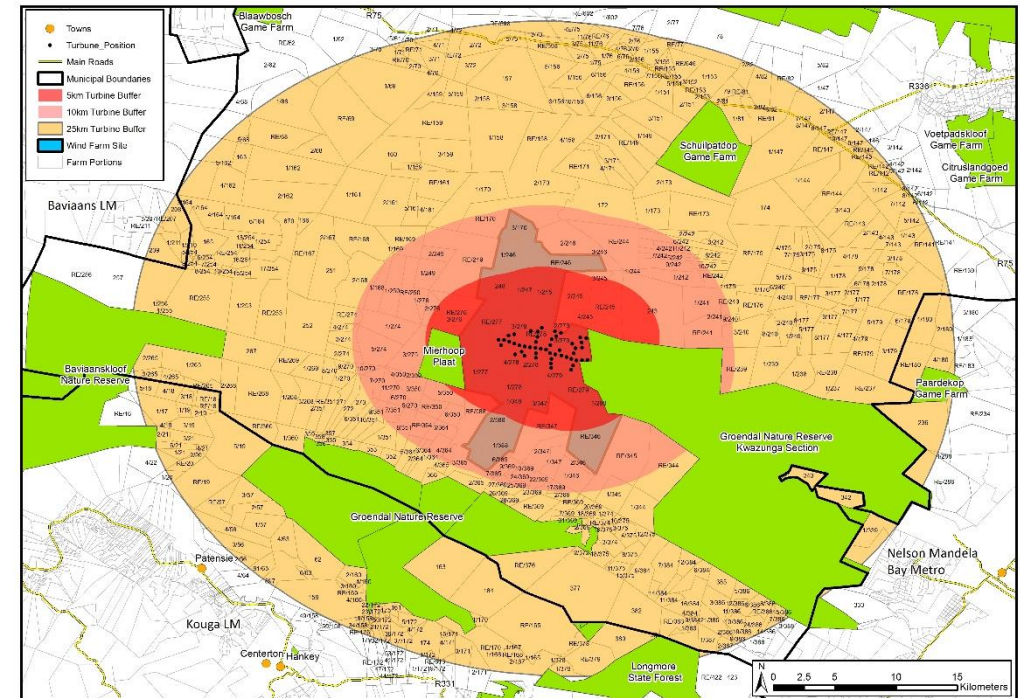
2.4 Land Use Profile

The figure below shows farm numbers of properties within a 25 kilometre radius of the site of the proposed Inyanda Roodeplaat Wind Farm. The purpose of the figure is to provide a spatial perspective to the locality of the site in relation to properties in the immediately affected environment. The map contains properties with different levels of visual exposure to the wind farm (ranging from no impact to high impact). The distances provided (25km, 10km and 5km) are thus not representative of deemed visual impacts, but merely to provide spatial reference points. Farm numbers were used rather than farm names as it is recognised that colloquial names are often used as reference points for farms, and these may not always match with farm names registered at the Surveyor General's offices. The figure informs the interviews that are currently being undertaken.

The area surrounding the proposed Inyanda Roodeplaat WEF is to large extent used for game farming, hunting and eco-tourism. Livestock farming and to a lesser extent crop is also undertaken on some properties. Some properties are dedicated to hunting activities while others are dedicated to accommodation of tourists that do not hunt on the properties. Such accommodation facilities host people that visit the area for hunting, as well as other activities. A more detailed land use profile can be determined once the interviews with key stakeholders are completed.

It is important to distinguish between farm portions and farm owners. One farm owner may own several farm portions of one or multiple farms.

FIGURE 2.7: FARM NUMBERS OF THE IMMEDIATELY AFFECTED ENVIRONMENT (Annexure B)



Source: Urban Econ GIS Unit (2015)

2.4.1 Land use: Agriculture

The SRVLM has a very small urban population with the majority of residents living in rural areas. The rural land is primarily used for either commercial agricultural activities (i.e. livestock, game farming) or conservation/tourism.

The most common produce grown in the area is mainly citrus (oranges, lemons and naatjies) but other crops are also present. Animal products are also produced namely cattle,

sheep and game. Agriculture is an extremely important part of the economy of the SRVLM and employs a large number of people.

Maintaining the agricultural output of the area and expanding commercial agriculture to include the local population is considered an important goal in the municipality.

2.4.2 Land use: Tourism

Tourism, in particular those activities that are related to eco-tourism, game farming and cultural tourism, were identified as some of the major economic development priorities in the SRVLM Responsible Tourism Sector Plan (RTSP) in 2009. The main tourist nodes identified by the RTSP were Addo/Addo Elephant National Park (AENP), Sunland, and Kirkwood.

The Sundays River LM 2009 RTSP identified the top 6 niche markets to cater for namely:

1. Safari Tourism (Game viewing)
2. Eco-tourism
3. Events tourism
4. Agri-tourism / Farm stays
5. Adventure tourism
6. Avi-tourism

A large portion of the LM is made up of the AENP as well as other smaller game reserves such as Groendal Nature Reserve and Amakhala Game Reserve. AENP is situated along the northern section of the LM, along the centre of the LM and along the coast near Alexandria. The tourism industry is largely focused around the AENP and caters to the tourists who visit the AENP. The main camp of AENP is located in the Sundays River Valley LM.

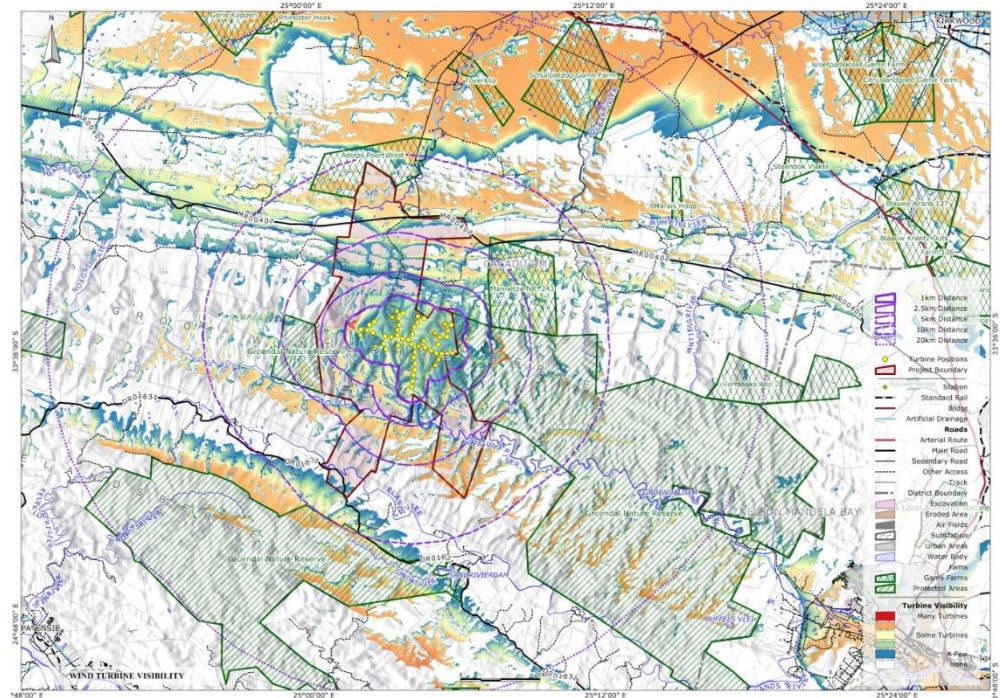
Eco-tourism is seen as the main form of tourism in the LM. Tourism is seen as an opportunity to reduce the reliance on agriculture and would complement the seasonality of the citrus industry which is busiest during the winter months.

2.4.3. Visually Affected Study Area

Visual impacts (including sense of place) are likely to be among the most significant impacts on this project. Much of the public comment that has been raised relates to the visual impacts of the WEF.

In order to determine, and where possible quantify, the secondary economic impacts that can potentially be induced by the proposed Inyanda Roodeplaat Wind Energy Facility, a visually affected zone was delineated by the visual impact specialist (Inyanda Roodeplaat Visual Impact Assessment, 2015). This area was restricted to the potential visual exposure that was determined by the visual specialist on the project team. This area is illustrated in Figure 2.8.

FIGURE 2.8: CUMULATIVE VIEWSHED OF WIND TURBINES (Annexure C)



Source: Inyanda Roodeplaat Visual Impact Assessment (2015)

3.1 Introduction

This section reviews any on-going national or sector specific policies that may affect the study area or the project itself. This section only aims to give a brief summary of these policies, as well as any projects (public or private) that are highlighted by the policies within the study area and through interviews with stakeholders in the study area.

3.2 National Policy

TABLE 3.1: NATIONAL POLICY

Policy	Description	Implication
South African Constitution 1996	<p>The Constitution (Act 108 of 1996) is the cornerstone for all legislation and policy-making in South Africa. In particular, Chapter 7 defines the role of local government in its community. Five objectives of local government are described in section 152:</p> <ul style="list-style-type: none"> To provide democratic and accountable government for local communities. To ensure the provision of services to communities in a sustainable manner. To promote social and economic development. To promote a safe and healthy environment. To encourage the involvement of communities and community organisations in the matter of local government. 	<p>The Constitution of South Africa outlines the need to promote social and economic development. The proposed WEF aims to increase the economic opportunities of the area by providing more job opportunities for the residents of the study area, and surrounding areas. The renewable energy source created by the proposed development will</p>

New Growth Path Plan 2012

The New Growth Path Plan is the government’s programme of action that focuses on the **creation of decent employment opportunities through the support of labour-intensive sectors** and on ensuring long-term growth through the support of more advanced industries. The strategy sets a target of creating 5 million new jobs by 2020. As a first step, government will focus on unlocking the employment potential in six key sectors and activities. These are:

- **Infrastructure**, through the massive **expansion of** transport, **energy**, water, communications capacity and housing, underpinned by a strong focus on domestic industry to supply the components for the build-programmes.
- The agricultural value chain, with a focus on expanding farm-output and employment and increasing the agro-processing sector.
- The green economy, with programmes in **green energy**, component manufacturing and services
- Manufacturing sectors in Industrial Policy Action Plan (see below).
- Tourism and certain high-level services.

As a starting point, employment creation is planned to be stimulated in a few sectors including the green economy sector. Government plans to create 300,000 employment opportunities in the green

provide services to communities in a sustainable manner.

Employment opportunities will also be created once the proposed wind farm is constructed. The proposed development also contributes to the expansion of energy infrastructure, specifically green energy.

	economy by 2020, more than two thirds of which is intended to be created in construction, operation and maintenance of new environmentally friendly infrastructure.	
National Development Plan 2030	<p>The National Development Plan aims to eliminate poverty and reduce inequality by 2030. Given the complexity of national development, the plan sets out six interlinked priorities:</p> <ul style="list-style-type: none"> • Bringing about faster economic growth, higher investment and greater labour absorption. • Focusing on key capabilities of people and the state. • Building a capable and developmental state. • Enabling milestones include: • Increase employment from 13 million in 2010 to 24 million in 2030. • Establish a competitive base of infrastructure, human resources and regulatory frameworks. • Ensure that skilled, technical, professional and managerial posts better reflect the country's racial gender and disability makeup. • Increase the quality of education. • Provide affordable access to quality health care. • Establish effective, safe and affordable public transport. • Produce sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing 	<p>The National Development Plan aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed WEF will create jobs in the local area and assist in creating a competitive infrastructure base in terms of energy contribution to the national grid.</p>

	<p>carbon emissions per unit of power by about one-third.</p> <ul style="list-style-type: none"> • Ensure that all South Africans have access to clean running water in their homes. • Make high-speed broadband internet universally available at competitive prices. • Realise a food trade surplus, with one-third produced by small-scale farmers or households. 	
Strategic Infrastructure Plan 2012	<p>Government recently adopted an Infrastructure Plan that is intended to transform the economic landscape of South Africa, create a significant number of new jobs, strengthen the delivery of basic services to the people of South Africa and support the integration of African economies. The following Strategic Integrated Projects are highlighted:</p> <p>1. Catalytic projects:</p> <ul style="list-style-type: none"> • Unlocking the Northern mineral belt. • Durban-Free State-Gauteng Corridor Development. • South Eastern Node & Corridor Development. • Saldanha-Northern Cape Corridor Development. <p>2. Enabling socio-economic projects:</p> <ul style="list-style-type: none"> • Greening the South African economy. • Electricity Generation. • Electricity Transmission and Distribution. • Integrated Municipal Infrastructure. • Integrated Urban Space and Public Transport. • Agro-logistics and rural Infrastructure. • Regional Integration. 	<p>The proposed WEF will contribute to electricity generation contributing to the green economy and create job opportunities for the local communities.</p>

	<p>3. Crosscutting projects:</p> <ul style="list-style-type: none"> • Access to communication technology. • SKA and MeerKat. • National school build. • Higher Education. • Revitalisation of public hospitals. • Unlocking the economic opportunities in North West Province. 	
<p>National Environmental Management Act 1998</p>	<p>The National Environmental Management Act (Act No. 107 of 1998) aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment. The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment. Sustainable development requires the consideration of all relevant factors including the following:</p> <ul style="list-style-type: none"> • That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied. • Pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied. • The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied. 	<p>The proposed WEF will aim to comply with EIA regulations once all the specialist studies have been drafted and mitigation measures have been considered and worked into the possible design of the proposed project.</p>

	<ul style="list-style-type: none"> • The use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource. • A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions. • Negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied. 	
<p>National Spatial Development Perspective 2006</p>	<p>The National Spatial Development Perspective was produced by the Policy Co-ordination and Advisory Services in the Presidency as was endorsed by Cabinet in March 2003. The four principals in this document include the following:</p> <ul style="list-style-type: none"> • Rapid economic growth that is sustained and inclusive is a pre-requisite for the achievement of other policy objectives, amongst which poverty alleviation is key • Government has a constitutional obligation to provide basic services to all citizens (e.g. water, energy, health and educational facilities) wherever they reside • Government spending on fixed investment, should be focused on localities of economic growth and/or economic potential in order to: <ul style="list-style-type: none"> ○ Gear up private sector investment 	<p>This strategy advocates rapid economic growth that focuses on sustainable long-term employment opportunities, and private sector investment. The proposed WEF aims to provide long-term employment opportunities and will increase private sector investment.</p>

	<ul style="list-style-type: none"> ○ Stimulate sustainable economic activities ○ Create long-term employment opportunities <ul style="list-style-type: none"> • Efforts to address past and current social inequalities should focus on people not places <ul style="list-style-type: none"> ○ In localities where there are both high levels of poverty and development potential, this should include fixed capital investment beyond basic services to exploit that potential ○ In localities with low development potential, Government spending should focus on providing social transfers, human resource development and labour market intelligence which would enable people to make choices: become more mobile and migrate to localities that are more likely to provide sustainable employment or other economic opportunities <p>The strategy identified six categories of potential and these include the following:</p> <ol style="list-style-type: none"> 1. Innovation and experimentation. 2. The production of high-value differentiated goods 3. Labour intensive mass-production. 4. Public service and administration. 5. Tourism. 6. Commercial services and retail. 	
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	<p>The NSDP does however recognise that these potentials are spread across a range of urban and rural localities.</p>	
Integrated Sustainable Rural Development Strategy 2000	<p>The Integrated Sustainable Rural Development Strategy aims to transform rural South Africa into an economically viable sector, which can make a significant contribution to the GDP of South Africa. The strategy is designed to realise a vision that will “attain socially cohesive and stable rural communities with viable institutions, sustainable economies and universal access to social amenities, able to attract and retain skilled and knowledgeable people, who are equipped to contribute to growth and development”. A successful strategy to achieve integrated sustainable rural development will reflect each of its three key elements:</p> <ul style="list-style-type: none"> • Rural Development – rural development is a multi-dimensional concept, encompassing improved service provision, better opportunities for income generation, Local Economic Development, improved physical infrastructure, social cohesion and physical security within rural communities. • Sustainability – sustainability in this context refers to the increased participation of local communities in development projects and initiatives to ensure their success at a local level. • Integration – the integration of rural development is a comprehensive task because it involves all of the economic sectors that necessities effective 	<p>The proposed WEF aims to contribute to the growth and development of the study area by expanding the economic base, and creating employment opportunities.</p>

	coordination between the various spheres of government.	
Industrial Policy Action Plan 2014 – 2017	<p>This strategy constitutes a central tool in the New Growth Path Plan job-creation strategy. It has been anticipated that these strategy interventions will lead to 43,000 direct jobs and 86,000 indirect jobs, totalling 129,000 jobs across the following list of priority sectors as identified:</p> <ul style="list-style-type: none"> • Metal fabrication, capital equipment and transport equipment • Green' and energy-saving industries (specifically, solar power projects and the establishment of solar water heating systems) • Agro-processing • Automotives, components and medium and heavy commercial vehicles • Downstream minerals beneficiation • Plastics, pharmaceuticals and chemicals • Clothing, textiles, leather and footwear • Biofuels (although the viability and appropriateness of this has already come into question) • Forestry, paper and pulp, and furniture • Cultural industries: crafts and film • Tourism • Business Process Services (such as call centres) • Advanced manufacturing <p>Currently work is underway to develop a wind energy generating strategy and action plan, the targets from which will be included in the strategy for the next term.</p>	<p>This strategy does advocate green and energy-saving industries and the proposed WEF is a renewable energy source.</p>

White Paper on the Energy Policy of SA 1998	<p>The White Paper on the Energy Policy of SA 1998 stated the need to improve the energy security in the country by means of expanding the energy supply options. This implies the increase in the use of renewable energy sources and encouraging new entries into the generation market.</p>	<p>The proposed WEF contributes to the targets in this policy.</p>
White Paper on Renewable Energy 2003	<p>In this policy, government's goal is to achieve a target of 10,000GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. However, the policy is being reviewed to assess progress after the first 5 years of policy implementation and also to propose medium to long-term Renewable Energy (RE) targets.</p>	<p>The proposed WEF contributes to the targets in this policy.</p>
National Integrated Resource Plan for Electricity 2010 – 2030	<p>The National Integrated Resource Plan for Electricity 2010 – 2030 projected that an additional capacity of 56,539 MW will be required to support the country's economic development and ensure adequate reserves over the next twenty years. The required expansion is more than two times the size of the existing capacity of the system. A significant component of the above-mentioned plan is, amongst others, the expansion of the use of renewable energy sources to reduce carbon emissions involved in generating electricity.</p>	<p>The proposed WEF contributes to the targets in this policy.</p>

3.3 Provincial Policy

TABLE 3.2: PROVINCIAL POLICY

Policy	Description	Implication
Eastern Cape Spatial Development Framework 2010	<p>The objectives of the Eastern Cape Spatial Development Framework include:</p> <ul style="list-style-type: none"> • Protection of the core bio-diversity areas, natural resources and the ecological system through integration and alignment of SDFs with the environmental policy and spatial frameworks. • Managed development of compact and sustainable human settlements. • Integrated and broad based agrarian transformation. • Efficient, integrated spatial development of infrastructure and transport systems in shared focus areas. • Enforceable integrated SDFs and Land Use Management systems, supporting stakeholder decision makers to implement a common Provincial development philosophy. <p>Electricity supply capacity is under stress in the province and large development projects are often affected by these limitations. The East London IDZ Renewable Energy Study (Agama Energy; 2009) concludes the Eastern Cape is “rich in renewable energy resources which provide a diversity and complimentarily in primary energy which provides increased levels of energy security and risk mitigation.” The Western region is however a high potential</p>	<p>The proposed WEF will create more electricity that is in high demand in the area and will provide a renewable energy source that contributes to the objective of sustainable settlements.</p>

	<p>area for alternative energy sources with more than 300 days of continuous sunshine per year and many good sites for wind farming. The Eastern Cape PIDS is prioritising the development of green industries and the Western Region is the provinces’ principal potential area for solar and wind power generation.</p>	
Eastern Cape Industrial Development Strategy 2011	<p>The Provincial Industrial Development Strategy provides a framework for state-led plans and interventions designed to build the productive capability to place the province on a more equitable and labour absorptive growth path. The strategy has a time horizon of fifteen years, and its vision is “a state-led industrialisation path towards a robust, resilient and sustainable industrial base by 2025.” The success of the strategy will be measured on the extent to which it will be able to protect and create jobs, as well as grow the economy. The strategic imperatives or goals are thus set out as labour absorption, economic growth and job retention.</p> <p>Priority sectors include:</p> <ul style="list-style-type: none"> • Agro Processing • Capital Goods sector • Auto sector • Green Industries • Tourism • Petrochemicals 	<p>The proposed WEF contributes to the targets in this policy, by creating job opportunities and fulfilling the green industries priority sector.</p>
Eastern Cape Sustainable Energy Strategy 2012	<p>This strategy seeks to lay out the provinces strategic direction in terms of the renewable energy industry. The focus of the strategy is to encourage sustainable, affordable and</p>	<p>The proposed WEF contributes to the targets in this policy.</p>

	<p>environmentally friendly energy production by creating an enabling environment for energy production and sustainable technology, skills and industry development. This is to be achieved through several initiatives including:</p> <ul style="list-style-type: none"> • An intensive training programme among relevant decision makers with respect to renewable energy project approvals. • The establishment of an implementation task team to provide potential investors with a one-stop-shop for renewable energy information in the province. • Development of a provincial locational perspective of renewable energy. • Lobbying Eskom to expedite and strengthen the transmission capacity of the former Transkei area. • Lobbying the Department of Energy to set out long-term programme for the procurement of renewable energy generation. <p>Through the pursuit of these initiatives the Eastern Cape Province seeks to become a leading and preferred destination for renewable energy investment in South Africa.</p>	
<p>Poverty Eradication Strategy for the Eastern Cape 2009</p>	<p>Poverty in the Eastern Cape is both widespread and deep. While poverty is concentrated in rural areas, there is also significant urban poverty, with growing township and informal settlement populations. The underlying structural causes of poverty are addressed through (1)</p>	<p>The proposed WEF contributes to this policy by providing some employment opportunities to those who may be unemployed. It will be</p>

	<p>greater control over and access to decision-making processes by poor people; (2) poverty reduction initiatives that address the income, asset and skills capabilities of the poor; and (3) linkages between the micro and macro levels of intervention in a mutually reinforcing manner. The strategy focuses on:</p> <ul style="list-style-type: none"> • Income security • Basic services and non-financial transfers • Assets • Health 	<p>important to include a social component in the labour plans of this development.</p>
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3.4 District and Local Municipal Policy

TABLE 3.1: DISTRICT AND LOCAL MUNICIPAL POLICY

Policy	Description	Projects	Implications
<p>Sundays River Valley Local Municipality Integrated Development Plan 2015/2016</p>	<ul style="list-style-type: none"> • The vision of the Sundays River Valley Local Municipality Integrated Development Plan is: “to be a united, responsive municipality that is prosperous and financially viable delivering professional and excellent services to its entire community”. Some of the objectives include: • Ensure access and a continuous supply of good quality water and 	<ul style="list-style-type: none"> • Enon-Bersheba Development Forum • Facilitate Small Business Expo • Addo Tourism Corridor • Shamwari Agri-Village • Addo Agri-Village • Paterson Micro Craft Market • Kirkwood Hawkers Facility • Kirkwood Wildlife Festival 	<p>The proposed WEF contributes to this policy’s objectives by upgrading the electricity network for future development purposes and contributing to economic infrastructure development in the area.</p>

	<p>sanitation to each user by 2014.</p> <ul style="list-style-type: none"> • Ensure farm workers and dwellers have improved livelihoods and health. • To ensure that poor households have access to free basic services. • Community has access to good quality roads built according to applicable standards. • Upgrade electricity network for future development. • Ensure the availability of land as well as the sustainable utilization thereof for household and economic development initiatives within the principles of spatial planning and land use management. • Communities have sufficient and affordable solid waste disposal options to encourage clean and healthy environment. • To ensure the provision of effective and efficient fire and disaster management services. 		
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	<ul style="list-style-type: none"> • To facilitate employment creation. • To mobilize resources for unfunded projects. • To create 10 linkages for SMMEs to widen market access per annum. • To provide and invest in the economic infrastructure development. 		
<p>Sundays River Valley Local Municipality Spatial Development Plan 2011</p>	<p>The vision of the Sundays River Valley Local Municipality Spatial Development Plan is: “a transformed and integrated organisation which subscribes to the principles of developmental Local Government which provides a sustainable quality of life including a safe and healthy environment for all our communities, especially the poor and rural communities”. The Spatial Development Plan presents the following outcomes:</p> <ul style="list-style-type: none"> • Set out objectives, strategies and policies with respect to a desired spatial form for the Municipal area. • Set out guidelines for Land Use Management. 	<ul style="list-style-type: none"> • Manufacture cartons for packaging • Brick making • SMME support centre 	<p>The proposed WEF will contribute to sustainable development of the area.</p>

	<ul style="list-style-type: none"> • Indicate desired patterns of land use within the Municipality. • Address spatial reconstruction in line with the principles of National Spatial development. • Provide strategic guidance with respect to location and nature of development. • Identify programmes and projects for development of land. 		
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3.5 Conclusion

The review of the policy environment suggests that utilisation of renewable energy sources in South Africa is considered to be an integral means of reducing the carbon footprint of the country, diversifying the national economy and reducing poverty. Any project contributing to the above mentioned objectives can therefore be considered strategically important to South Africa.

From a provincial and municipal policy perspective the facilitation of renewable energy projects and interventions that related to the broader green economy are seen as a priority. The Eastern Cape Provincial Industrial Development Strategy makes particular reference to the need to develop green industries which includes renewable energies.

CHAPTER 4

Economic Modelling Results

4.1 Introduction

The purpose of this section is to quantify the potential and anticipated economic impacts of the proposed Inyanda Rooideplaat wind farm development within the Sarah Baartman District Municipal area. Economic impacts refer to the change or effect on the level of economic activity in a given area as a result of some form of external intervention in the economy. In the case of this study the local impacts will be anticipated on a regional level. These impacts are measured as a result of the capital investment in the proposed development both in the short and long-term. The analysis focuses on the changes that could be expected in the economy and community and will be calculated by using a technique called the Social Accounting Matrix (SAM) model (discussed below).

4.2 Understanding the SAM Model

While there are many methods of regional economic impact analysis, the Social Accounting Matrix (SAM) modelling approach has proven to be a particularly effective method for evaluating the implications of introducing an exogenous change to the economy. The modelling approach is recognised and accepted both nationally and internationally. The model utilised as part of this report was based on the national model and it has been adapted to reflect local economic dynamics and local forward and backward linkages.

A Social Accounting Matrix (SAM) represents flows of all economic transactions that take place within an economy (regional or national). It is at the core, a matrix representation of the National Accounts for a given country, but can be extended to include non-national accounting flows, and created for whole regions or areas, as has been done for the study area.

SAMs refer to a single year providing a static picture of the economy, based on national accounting statistics and input-output tables that are compiled and published by Statistics South Africa (Stats SA), using primarily South African Reserve Bank Accounts data. The sectoral parameters utilised in the model are therefore strictly compatible with the macro

national accounting data published by the South African Reserve Bank and Stats SA on a regular basis. However the model has been amended to include the local conditions.

Importantly, it is the matrices that can be derived from the model that are used as instruments for economic analysis. The fundamental assumptions with regard to the model, as well as the use of this model for analytical purposes, are:

- Production activities in the economy are grouped in homogeneous sectors.
- The mutual interdependence of sectors is expressed in meaningful input functions.
- Each sector's inputs are only a function of the specific sector's production.
- The production by different sectors is equal to the sum of the separate sectors' of production.
- The technical coefficients remain constant for the period over which forecast the projections is made.
- There will be no major change in technology.

It should also be noted that:

- All the Rand values in this report represent 2015 Rand values (cost excluding 14% VAT).
- The different measures of economic impact (employment, GDP_R and new business sales) cannot be added together and should be interpreted as separate economic impacts.
- The model quantifies direct and indirect economic impacts for a specific amount of time. Therefore, the estimates that are derived do not refer to gradual impacts over time.

Economic impacts can be defined as the effects (positive or negative) on the level of economic activity in a given area(s). The net economic impact is usually measured as the expansion or contraction of an area's economy, resulting from the changes in (i.e. opening, closing, expansion or contraction of) a facility, project or programme. The net economic impact of an exogenous change in the economy will be translated according to various direct and indirect economic effects, as are defined below:

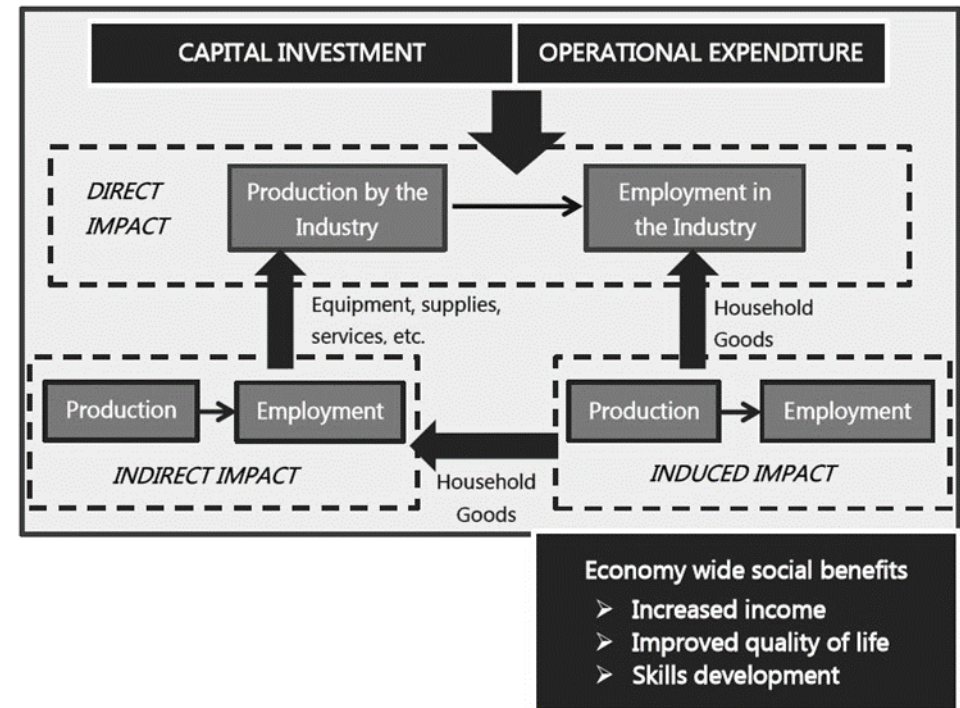
- **Direct economic impacts** - are the changes in local business activity occurring as a direct consequence of public or private activities in the economy, or public programmes and policies. Furthermore, increased user benefits lead to monetary

benefits for some users and non-users (individuals and businesses) within the geographical area:

For affected businesses, there may be economic efficiency benefits in terms of product cost, product quality or product availability, stemming from changes in labour market access, cost of obtaining production inputs and/or cost of supplying finished products to customers. For affected residents, benefits may include reduced costs for obtaining goods and services, increased income from selling goods and services to outsiders, and/or increased variety of work and recreational opportunities associated with greater location accessibility.

- **Indirect Impacts** – occur when the suppliers of goods and services to the new business experience larger markets and potential to expand. Indirect impacts result in an increase in job creation, GDP, and household income.
- **Induced Impacts** – represent further shifts in spending on food, clothing, shelter and other consumer goods and services as a consequence of the change in workers and payroll of directly and indirectly affected businesses. This leads to further business growth/decline throughout the local economy. Examples include the income of employees and shareholders of the project as well as the income arising through the backward linkages of this spending in the economy. The impact is sometimes confused with the forward linkages of a project. Figure 4.1 indicates direct, indirect and induced impacts in more detail.

FIGURE 4.1: DIRECT, INDIRECT AND INDUCED IMPACTS.



Economic impacts can also be viewed in terms of their duration, or the stage of life cycle in which the development takes place, (1) the construction phase (CAPEX) and (2) the operational phase (OPEX). Due to the duration of these phases, the impacts are therefore, separated into those observed during the construction phase and those experienced during the operational phase. The construction phase economic impacts are of a temporary nature, they have, therefore, a temporary effect. On the other hand, the operational phase of the proposed project would last decades; hence the impacts during this stage would be of a sustainable nature.

The direct and indirect economic impacts listed are measured according to the following broad economic variable categories:

- **Production/ New Business Sales (NBS):** Production/ NBS is defined as the process, in which labour and assets are used to transform inputs of goods and services into

outputs of other goods and services. The economic impact assessment will measure the change in the level of production that has resulted from the project.

- **Gross Domestic Product (GDP):** Gross Domestic Product refers the market value of all final goods and services produced within a country in a given period of time.
- **Employment created:** Employment opportunities refer to one person employed for one year created through the development of the Inyanda Roodeplaat WEF.
- **Income generated:** The income generated by the project refers to the salaries and wages earned by the labour force employed in the project as well as the suppliers of goods and services.

Any of these measures can be an indicator of improvement or reduction in the economic well-being of residents, which is generally the goal of any investment project. The net economic impact is usually viewed as the expansion or contraction of an area’s economy, resulting from the induced changes. The precise quantum of these impacts will be influenced by changes in the project (such as precise land-use mix, technologies employed, imported versus local goods and services, timing and funding options, amongst others) and changes in the project environment (such as property market cycles, interest rates, legislation, the structure of the economic sectors primarily influencing and affected by the development and the labour market, amongst others).

TABLE 4.1: IMPACTS MODELLED

IMPACT ON:	CAPEX	OPEX
Additional new business sales (NBS) (additional production/output generated by the development	The construction work on the infrastructure and buildings will lead to the expansion of business sales for existing businesses located within the area, as well as the broader Eastern Cape region. For example, materials used in the construction process such as bricks, concrete, building sand and materials, and so on will be purchased, as well as	The increased need for goods and services, as a result of the construction of infrastructure and the operation of different activities in the proposed development, particularly as a result of maintenance and upkeep of the WEF will result in an overall

	particular services such as engineers and other specialists. These changes are measured in terms of new business sales, i.e. new sales that will be generated in the economy as a direct result of the capital investment in the development project.	sustainable expansion of the business sales/annual turnover generated in the area.
Additional GDP_R	One of the most important indicators used to indicate economic growth and value is the GDP_R. The GDP_R measures the value of all final goods and services produced/provided within one year of the area’s economy.	The generation of additional business sales and employment opportunities will initiate an on-going ripple effect through the sub-region, resulting in an increase in product and service value (measured in GDP_R).
Additional employment (direct and indirect)	Construction activities will result in direct employment being created on site and other directly related sectors such as the transport and manufacturing sectors. Indirect employment positions also created due to the multiplier effect in the economy. For example, an additional number of goods used in the construction sector will be required from businesses and industries related to the construction sector. This could lead to an increased number of employment positions being created in these businesses, i.e. in order to increase the output of these businesses.	As a result of the new activities on the site, it can be estimated that the study area will be able to eventually sustain a substantial number of new employment opportunities.

Additional Household Income (HHI)	Construction activities will directly result in the increased income to households through the employment of labour for construction of the WEF	The WEF would need to be staffed in order to operate efficiently. Employing staff to manage the facility would improve household income.
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TAKE NOTE: It is important to note that all inputs and projected outputs are calculated on a 'build-today-operate-today' scenario (i.e. constant 2015 Rand values and no change in the multipliers). In reality, the structure of the economy, consumer spending patterns, and the ratios of local versus imported goods and services in the economy will change over time.

4.3. Project Assumptions

For the purpose of the study, the following key assumptions were used as seen in Table 4.2. These assumptions were used specifically in the economic modelling exercise which aims to quantify the economic impact of the project. For the purpose of this report only the money spent in the South African economy will be used to calculate the economic impacts on the South African economy. The total spend in South Africa is R1.6 billion (which includes civil, electrical, engineering, EIA, grid connections, finance and development) and total spend of the project is expected to be R 4.3 billion. Operational expenditure is expected to be R 60 million per annum and maximum generating output is expected to be approximately 158MW. The start date for full operation is expected to be in 2018 or 2019.

TABLE 4.2: PROJECT ASSUMPTIONS (R 000S)

Project Item (CAPEX)	
Civil	R 350 000
Electrical	R 350 000
EIA, Legal	R 50 000
Engineering	R 60 000
Eskom Grid Connections	R 150 000
Finance	R 179 740

Development	R 98 860
Contingency	R 197 710
Escalation	R 179 740
TOTAL Spend in South Africa	R 1 616 050
TOTAL Spend Overall	R 4 250 820
Project Item (OPEX)	
Annual average operating expenditure per annum	R 60 000
Maximum generating output (3.3 MW x 48 turbines)	158.4 MW
Start date of full operation (year)	2018/19
Labour (Assumption 40% from client)	R 24 000

(Newcombe Wind Developments, 2016)

4.4. Capital Expenditure Impacts (CAPEX)

This sub-section focuses on the potential economic impacts of the CAPEX phase of the proposed development. It is important to note that the estimated impacts are for the duration of the construction and development process (of 1 year), including potential leverage effects. This implies that the impact during the construction phase will fade once the development has been completed.

Overall construction methodology will be labour intensive and will involve the use of an appropriate mix of labour and machines, with a preference for labour where technically and economically feasible, without compromising the quality of the product. Concrete construction, aside from the use of a concrete batching plant and cranes, will be very labour intensive. Scaffolding, shuttering, formwork and reinforcing steel fixing will be manual. The following table indicates the results of the impact modelling exercise for the construction period of the proposed development.

TABLE 4.3: IMPACTS DURING CONSTRUCTION PHASE (R 000S)

Impact on:	Direct Impacts	Indirect Impacts	Induced Impacts	Total Impacts
Production (2015 prices)	R 1 616 050	R 1 750 090	R 681 490	R 4 047 630
GDP_R (2015 prices)	R 482 120	R 682 090	R 257 650	R 1 421 870
Employment	461	1024	332	1 817

HH Income (2015 prices)	R 204 850	R 264 290	R 97 920	R 567 070
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(Urban-Econ Calculations, 2016)

The following can be concluded:

- As indicated in the table, the construction of the proposed development will generate R4 billion in production. Of this amount, R1.6 billion will be created through direct effects. The major beneficiary of these effects will be the construction industry (Table 4.4 below).
- The increase in production output, or new business sales, will result in an increase in the gross value added in the country to the value of R482 million.
- The proposed development will create 1,817 (direct and indirect) employment opportunities during the construction period.
- The proposed development will increase household incomes by R567 million over the construction period.

The following table indicates the results of the impact modelling exercise for the construction period on each SIC sector.

TABLE 4.4: IMPACTS DURING CONSTRUCTION PHASE ON EACH SECTOR (R 000S)

Sector	Total Impact on Production	Total Impact on GDP	Total Impact on Employment (jobs created)	Total Impact on Household Income
Agriculture	R 28 420	R 13 640	55.3	R 2 960
Mining	R 11 350	R 6 250	19.6	R 1 410
Manufacturing	R 592 140	R 128 390	82.9	R 59 990
Electricity	R 267 370	R 142 660	56.6	R 46 770
Water	R 8 410	R 2 910	1.8	R 750
Building and Construction	R 1 977 490	R 558 590	729.7	R 243 810
Trade and accommodation	R 172 040	R 84 170	110.3	R 34 560
Transport and storage	R 197 930	R 82 690	27.6	R 26 190
Financing	R 244 830	R147 800	242.9	R 54 970

Real estate and business services	R 447 080	R 207 860	443.6	R69 750
Government services	R 64 480	R 26 670	29.8	R 10 790
Other	R 36 090	R 20 240	16.7	R 15 100

(Urban-Econ Calculations, 2016)

As can be seen from the table above the proposed development will, during construction, have the most significant impact on the economy. The total production impact on the economy will largely be experienced in the manufacturing (R592 million) and Building and Construction (R2 billion) SIC sectors. The total impact on the GDP during construction will be significant throughout the SIC sectors but most notably in Building and Construction (R559 million) and Real Estate and Business Services (R208 million). Employment will largely be created in Building and Construction (730 employment positions) and Real Estate and Business Services (444). The total impact on household income will largely be in the Manufacturing (R60 million), Building and Construction (R244 million) and Real Estate and Business Services (R70 million). It must be noted that these are the total impacts (direct + indirect + induced).

4.5. Operational Expenditure Impacts (OPEX)

It is generally known that after the construction of a development or facility, on-going economic impacts (expenditure, output and job creation) will be sustained following the commencement of the economic activities on site. These activities expand the markets for goods and services, increase the labour market and serve as an impetus for new commercial development. The economic impact is determined by the level of economic activity generated or lost as a result of a fully functional development that will require and/or induce on-going operational and maintenance activities. As with the construction phase, the proposed development is assessed in terms of new business sales (production), GDP_R and employment opportunities generated. The following table indicates the results of the impact modelling exercise for the operational period. The results are given per annum.

TABLE 4.5: IMPACTS DURING OPERATIONAL PHASE (R 000S)

Impact on:	Direct Impacts	Indirect Impacts	Induced Impacts	Total Impacts
Production per year (2015 prices)	R 60 000	R 44 700	R 25 840	R 130 540
GDP_R per year (2015 prices)	R 32 010	R 15 880	R 9 750	R 57 640
Employment per year	51	84	50	185
HH Income per year (2015 prices)	R 10 550	R 6 200	R 3 700	R 20 450

(Urban-Econ Calculations, 2016)

The following can be concluded for the proposed development:

- As indicated in the table, the operation of the proposed development will generate R130.5 million of new business sales annually. Of this amount, R60 million will be created through direct effects. The major beneficiary of these effects will be the finance and business service sector.
- The increase in production output, or new business sales, will result in an increase in the gross value added in the country to the value of R57.6 million per year.
- The proposed development will create 185 (direct and indirect) annual permanent employment opportunities during its operation.
- The proposed development will increase household incomes by R20.5 million per year during its operation.

The following table indicates the results of the impact modelling exercise for the operational phase on each SIC sector.

TABLE 4.6: IMPACTS DURING OPERATIONAL PHASE ON EACH SECTOR (R 000S)

Sector:	Total Impact on Production	Total Impact on GDP	Total Impact on Employment (jobs created)	Total Impact on Household Income
Agriculture	R 1 100	R 520	8.5	R 110
Mining	R 160	R 90	1.1	R 20
Manufacturing	R 23 930	R 5 160	13.9	R 2 460
Electricity	R 61 440	R 32 780	52.2	R 10 800

Water	R 590	R 210	0.5	R 50
Building & Construction	R 7 010	R 1 600	20.8	R 790
Trade & accommodation	R 8 210	R 3 960	21.0	R 1 620
Transport and storage	R 10 890	R 4 570	6.5	R 1 480
Financing	R 3 460	R 2 090	13.7	R 780
Real estate & business services	R 9 900	R 4 880	39.3	R 1 350
Government services	R 2 570	R 1 070	4.8	R 450
Other	R 1 280	R 710	2.4	R 530

(Urban-Econ Calculations, 2016)

As can be seen from the table above the proposed development will, once construction is completed, have the most significant impact on the economy. The total production impact on the economy will be in the Manufacturing and Real Estate & Business Services. The electricity Sector will also be impacted during operational phase. The total production impact on the economy will largely be experienced in the manufacturing (R61 million) and Electricity (R23 million) sectors. The total impact on the GDP during operation will be most notably in Manufacturing (R5 million), Electricity (R33 million) and Real Estate and Business Services (R4 million). Employment will be created in the Electricity sector (52) and Real Estate and Business Services (39). The total impact on household income will largely be in the Manufacturing (R2 million) and Electricity sectors (R11 million). It must be noted that these are the total impacts (direct + indirect + induced).

4.6. Decommissioning Phase

It is not envisaged that the wind farm will be decommissioned, since wind farms are generally re-powered. Should it be decided not to re-power the farm after the 20-year operation phase, the site will be decommissioned. Limited information is available at this stage regarding the costs of the decommissioning of the Inyanda Roodeplaat WEF. The engineers/developers may know this specific information at a later stage.

When it is decided that decommission should commence then spending on the disassembly of the components will increase the demand for construction services and other industries, thus stimulating economic activity in the local area, albeit over a temporary period. Socio-economic impacts stimulated during the decommissioning phase are expected to be similar

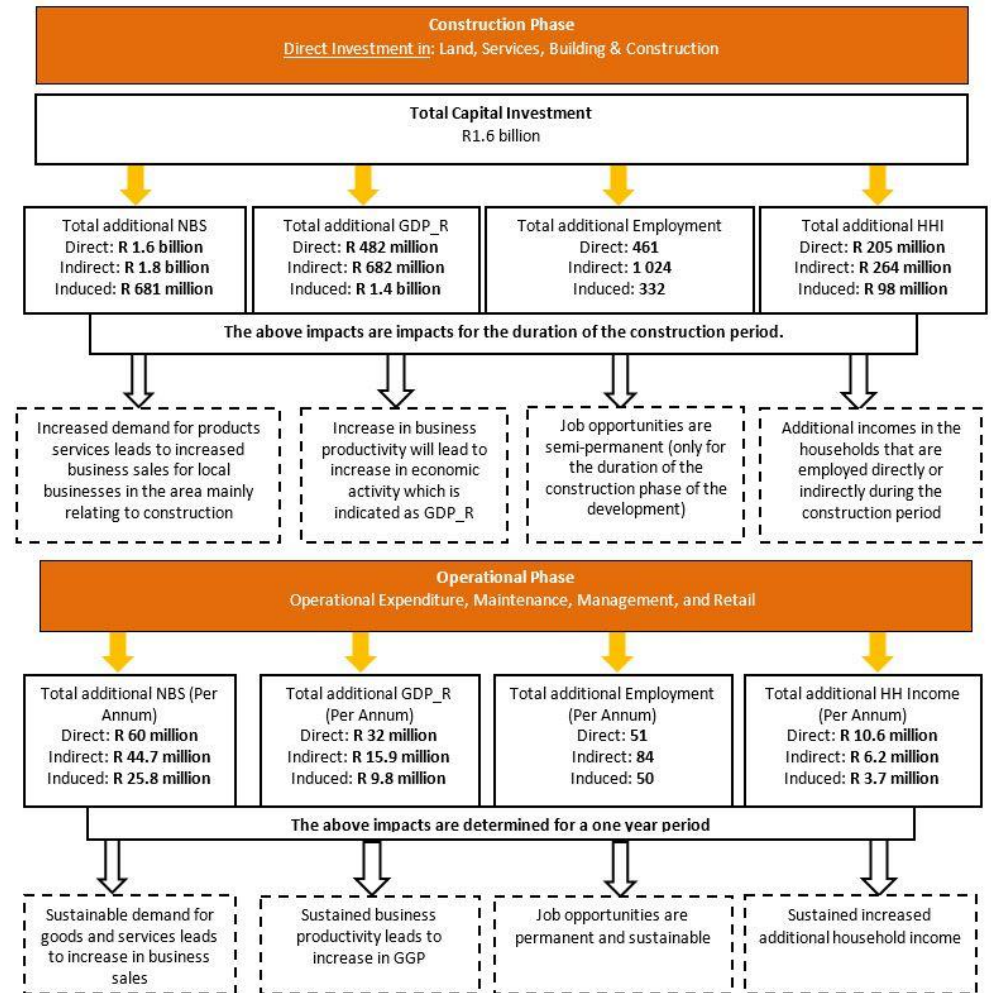
to those that took place during the construction phase. They will also be temporary in nature, but most likely will take a much shorter time than the construction phase. They will also be associated with some expenditure, although it will be considerably less than the investment required during the development phase.

Limited information is available at this stage regarding the costs of the decommissioning of the WEF.

4.7. Conclusion

The impact modelling exercise involves calculation and assessment of the socio-economic direct, indirect, and induced impacts during the construction and operational phases of the proposed development. From the modelling in the above section it is evident that the development will have a significant impact on the local and regional economies. Figure 4.3 below gives an outline of the costs. It is also important to consider the overall impact on eco-tourism and hunting in the area as these potential losses need to be balanced against the potential gains made from the development of the wind farm. This is further discussed in section 5.6. Even in the event of a “high impact scenario” tourism loss, this loss will be a fraction of the value of the positive economic impacts for the proposed wind farm development.

FIGURE 4.3: SUMMARY OF TOTAL ECONOMIC IMPACTS



5.1 Introduction

The Inyanda Roodeplaat WEF development will have various socio-economic impacts as discussed in previous sections of this report (Chapter 4) namely impacts on income, GDP, and employment. The purpose of this study is to identify possible socio-economic impacts which could occur as a result of activities which will take place during the construction and operational phase of the development. The following section will describe the various types of impacts which have been identified and describe their relevance to the proposed development and the local economy in which it is to be located in the SRVLM namely the impact on the economy, in-migration, investment, economic and social infrastructure, employment and skills transfer, the surrounding economy, as well as examining the impact on development planning and household earnings.

The assessment of the additional new business sales (production), additional gross domestic regional product (GDP_R) and additional employment are measured against the baseline numbers as indicated in the Socio-Economic Profile (HHI and GDP). As previously explained, these impacts are determined as direct impacts and indirect impacts for both the construction and operational phases of the proposed development. Each of the economic and social outputs will be evaluated in terms of the following criteria:

- Nature of impact
- Spatial extent
- Intensity or magnitude of impact
- Duration
- Probability
- Significance

5.2. Impact Criteria

The following section will provide a standardised impact table to explain what the impacts of the development activities will be during construction and operation of the Inyanda Roodeplaat development. The impacts will be rated using the specific impact criteria. The following sections indicate the specific socio-economic impacts that are likely to occur

during the construction and operational phase of the proposed wind farm. Some of these impacts are likely to be negative or positive some will be considered to have elements of both. The following are discussed below:

- Impact on the Economy
- Impact on In-migration
- Impact on Investment
- Impact on Economic & Social Infrastructure
- Impact on Employment & Skills Transfer
- Impact on Surrounding Economy (Agriculture, Tourism and Game Farming)
- Consistency with development planning
- Increase in Household Earnings

This section will also discuss need and desirability in terms of how it will impact the proposed development. Each of the identified impacts will be evaluated according to the following criteria which will be scored:

TABLE 5.1: IMPACT CRITERIA

Criteria	Rating	Description	Score
A. Extent	The area over which the impact will be experienced		
None			0
Local	Confined to project or study area or part thereof (e.g. site)		1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic		2
(Inter) national	Nationally or beyond		3
B. Intensity	The magnitude of the impact in relation to the sensitivity of the receiving environment		
None			0
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered		1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way		2
High	Site-specific and wider natural and/or social functions or processes are severely altered		3
C. Duration	The time frame for which the impact will be experienced		
None			0

Short-term	Up to 2 years	1
Medium-term	2 – 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Table 5.2: Method used to determine the Consequence Score

Combined Score	0-2	3-4	5	6	7	8-9
A+B+C						
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Table 5.3: Probability Classification

Probability	The likelihood of the impact occurring
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts will be determined by considering consequence and probability using the rating system prescribed in the table below.

Table 5.4: Impact Significance Ratings

Significance Rating	Possible Impact Combinations		
	Consequence		Probability
Insignificant	Very Low	&	Improbable
	Very Low	&	Possible
Very Low	Very Low	&	Probable
	Very Low	&	Definite

Low	Low	&	Improbable
	Low	&	Possible
	Low	&	Probable
	Low	&	Definite
Medium	Medium	&	Improbable
	Medium	&	Possible
	Medium	&	Probable
	Medium	&	Definite
High	High	&	Improbable
	High	&	Possible
	High	&	Probable
	High	&	Definite
Very High	Very High	&	Improbable
	Very High	&	Probable
Very High	Very High	&	Definite
	Very High	&	Definite

Finally, the impacts will also be considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The system for considering impact status and confidence (in assessment) is laid out in the table below.

Table 5.5: Impact Status and Confidence classification

Status of Impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a ‘benefit’)
	- ve (negative – a ‘cost’)
Confidence of assessment	
The degree of confidence in predictions based on available information and/or specialist knowledge.	Low
	Medium
	High

Along with these criteria a ‘no-go’ option is also presented. It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. The ‘no-go’ alternative is also regarded as a type of alternative, but is described separately to emphasize its importance. The socio-economic impacts are discussed in more detail below:

5.3. Impact on the Economy

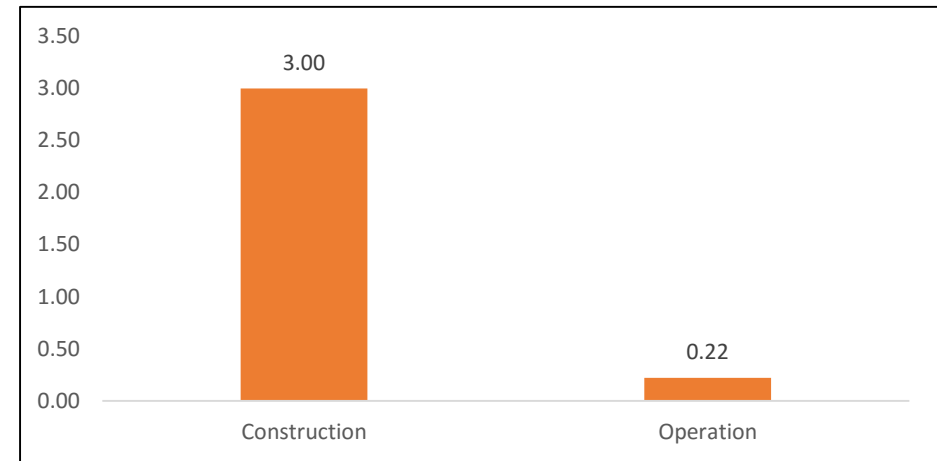
The potential socio-economic impact of the proposed development on GDP is to be two-fold, namely impacts resulting during construction and impacts that will be sustainable in nature once the facility is fully operational. The impacts on GDP during construction would only be temporary whereas the impacts during operation would be long-term.

Figure 5.1 illustrates the impact of direct GDP on the GDP growth rates of the study area per annum. The following assumptions were used to determine the percentage increase in overall GDP per annum as a result of the development:

- The SRVLM annual GDP for 2013 was used as the baseline.
- During construction, a leakage factor of 60% was applied, as some materials and professionals may be contracted from outside of the study area. Leakage is defined as revenue which is generated that is lost or leaves the economy. In this situation leakage is revenue that is lost from Sundays River Valley Municipality.
- During operation, a leakage factor of 60% was applied as some of the business activities will be operating on a regional, national or international scale.

From the figure below it is clear to see that during construction the impact on the GDP of SRVLM will be fairly significant. During operation however, Inyanda Rooideplaas WEF will contribute 0.22% of the GDP of SRVLM. There will clearly be an impact on the GDP of SRVLM both during construction and during operation.

FIGURE 5.1: IMPACT ON THE STUDY AREA'S GDP GROWTH RATES PER ANNUM (%)



Source: Urban Econ Calculations (2016)

During construction: the most notable impacts on production and GDP stimulated during construction economic activities will be created through the multiplier effects, specifically through production and consumption induced effects. The former refers to the impacts generated along backward linkages when the project creates the demand for goods and services required for construction and this in turn stimulates the business sales of the suppliers of inputs that are required to produce these goods and services. The latter refers to effects of household spending, which is derived from an increase in salaries and wages directly and indirectly stimulated by the project's expenditure. Besides the value added that could be generated by the local construction businesses through sub-contracting agreements and employment of free-lancers, the sectors that are expected to benefit the most from the production and consumption induced effects are tertiary services such as trade, accommodation, transport services, personal services, real estate, and insurance.

During operation: the production and consumption induced multiplier effects of the project are considered to be relatively small for wind energy facilities. This is because the energy source used to produce electricity by the proposed Inyanda Rooideplaas WEF comes free. It is because of the free energy source that the facility is a highly attractive business venture.

TABLE 5.2: IMPACTS ON GDP GROWTH RATES

Without Mitigation		With Mitigation
No-Go Option		
The will be no impact and there will be no additional GDP in the economy.		
Construction Phase		
Extent	Regional (2)	Regional (2)
Intensity	High (3)	High (3)
Duration of Impact	Construction Period (Short term) (1)	Construction Period (Short term) (1)
Score and Rating	6 (Medium)	6 (Medium)
Probability	Definite	Definite
Significance	Medium	Medium
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> The developer should encourage the EPC contractor to increase the local procurement practices and employment of people from local communities as far as feasible to maximise the benefits to the local economies. The developer should engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods, and products from local suppliers where feasible. 	
Cumulative impacts	A number of wind energy facilities are proposed to be built (some of which are completed) in the province and it is highly likely that if the projects are approved by government the demand for goods and services required for the construction of similar facilities would grow. This could provide sufficient economies of scale and thus open up opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the economy.	
Residual Impacts	None foreseen at this stage.	
Operational Phase		
Extent	Regional (2)	Regional (2)

Intensity	Medium (2)	High (3)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	7 (High)	8 (Very High)
Probability	Probable	Probable
Significance	High	Very High
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	The operator of the proposed development should be encouraged to procure materials, goods and products required for the operation of the facility from local suppliers to increase the positive impact in the local economy as far as possible.	
Cumulative impacts	<ul style="list-style-type: none"> Improved energy supply in the country. Reduced carbon emissions in generation of electricity. If other renewable energy projects are established around the study area, sufficient economies of scale could be created to establish new businesses in the local economies that would supply goods and service required for the operation and maintenance of the facilities that cannot be acquired in the area currently; this would contribute to the local economies' growth and development. 	
Residual Impacts	None foreseen at this stage.	

5.4. Impact on Investment

Due to the footloose nature of investment capital, local, regional and global investment generally only seeks the best investment opportunities. If the opportunities are not developed, that potential investment could be lost. One of the main aims of both the national and provincial government is to increase the amount of investment, both foreign and domestic. It is accepted that although government investment in infrastructure is seen as an important tool in economic development, investment also needs to be undertaken by the private sector. The proposed development will provide a renewable energy source for not just the study area's but for South Africa as a whole, thereby bringing investment into South Africa. The proposed development will invest the R1.6 billion of capital investment into the economy.

The proposed development will contribute towards government revenue. The project would contribute to local government through payments for utilities used in the operation of the facility. The revenue derived by the project during its operations, as well as payment of salaries and wages to the permanent employees will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, it all adds to the government revenue stream that is then spent on providing public goods and services.

TABLE 5.3: IMPACT ON INVESTMENT

	Without Mitigation	With Mitigation
No-Go Option		
No impact on investment.		
Construction Phase		
Extent	Regional (2)	
Intensity	High (3)	
Duration of Impact	Short-term (1)	
Score and Rating	6 (Medium)	
Probability	Probable	
Significance	Medium	
Status of Impact	Positive	
Confidence	High	
Mitigation	None suggested.	
Cumulative impacts	Lower government debt and servicing costs.	
Residual Impacts	None envisaged.	
Operational Phase		
Extent	Regional (2)	
Intensity	Low (1)	
Duration of Impact	Long Term (3)	
Score and Rating	6 (Medium)	
Probability	Probable	
Significance	Medium	
Status of Impact	Positive	
Confidence	High	
Mitigation	None suggested.	
Cumulative impacts	Possible improvement in local service delivery.	

Residual Impacts	None foreseen at this stage.
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5.5. Impact on Employment and Skills Transfer

The impact of the proposed development on employment would also be two-fold namely impacts during construction and impacts during operation. The impacts on employment during construction would only be temporary whereas the impacts during operation would be long-term.

During construction: the proposed facility will create 1,886 employment positions during construction. The study area’s construction sector is relatively small. In 2013, the construction sector in SRVLM employed 441 people (Quantec, 2013). This means that there is not a sufficient supply of the labour force in the municipality to satisfy the demand for 1,886 employment positions (461 direct, 1,024 indirect and 332 induced). The developer is likely to involve foreign experts during the construction process that will result in skills and knowledge transfer between the foreign and local professionals involved in the project. Besides the direct effects of the project on skills development in the country and in the local economy, the project could contribute to the development of the local Research and Development (R&D) and manufacturing industries associated with wind technology. This will also result in the development of new skills and expertise. This project is likely to directly increase the number of labourers employed in the construction industry by approximately 277 during construction (leakage of 40% applied to direct employment) which is a 60% increase in the number of people working in the industry.

During operation: the proposed facility will create 185 employment positions along the value chain, of which 51 will be direct and will be retained for 20 years (or longer if the proposed project is not decommissioned). South Africa has only recently developed the commercial WEF industry and so the skills base to operate and maintain such facilities is not readily available. WEFs however, do not require complex operating and maintenance procedures, which means that personnel with adequate qualifications and expertise in mechanics, maintenance, management, and security can be trained to operate and maintain the facility. On the contrary, although maintenance is limited, it is highly technical and there is currently a skills shortage. These personnel can however be trained in time. Maintenance crews are normally engineers by occupation. This project is likely to directly increase the number of labourers employed in the construction industry by approximately

31 during operation (leakage of 40% applied to direct employment table) which is a 7% increase in the number of people working in the industry for the duration of the WEFs life span.

TABLE 5.4: IMPACT ON EMPLOYMENT AND SKILLS TRANSFER

Without Mitigation		With Mitigation
No-Go Option		
The will be no impact and there will be no additional employment.		
Construction Phase		
Extent	Regional (2)	Regional (2)
Intensity	Medium (2)	High (3)
Duration of Impact	Construction Period (1)	Short Term (1)
Score and Rating	5 (Low)	6 (Medium)
Probability	Probable	Probable
Significance	Low	Medium
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. Establish a local skills desk (in Jansenville and Kirkwood) to determine the potential skills that could be sourced in the area. Recruit local labour as far as feasible. Employ labour-intensive methods in construction where feasible. Sub-contract to local construction companies where possible. Use local suppliers where feasible and arrange with the local Small and Medium Enterprises to provide transport, catering, and other services to the construction crew. Facilitate knowledge and skills transfer between foreign experts and South African professionals during the pre-establishment and construction phases. 	

	<ul style="list-style-type: none"> Set up apprenticeship programmes to build onto existing or develop new skills of construction workers, especially those coming from the local communities. 	
Cumulative impacts	<ul style="list-style-type: none"> Improved labour productivity and employability of construction workers for similar projects. Possible development of local skills and expertise in R&D and manufacturing industries related to wind technologies. 	
Residual Impacts	<ul style="list-style-type: none"> Experience in building of wind energy facilities. South Africa’s human capital development. 	
Operational Phase		
Extent	Regional (2)	Regional (2)
Intensity	Medium (2)	Medium (2)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	7 (High)	7 (High)
Probability	Probable	Probable
Significance	High	High
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Where possible, local labour should be considered for employment to increase the positive impact on the local economy. Local Small and Medium Enterprises should be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible. The developer should consider establishing vocational training programmes for the local labour force to promote the development of skills required by the wind energy industry and thus provide for the opportunities for these people to be employed in other similar facilities elsewhere around the study area or other parts of the country. Create skills development programmes through which the Sundays River Valley LM community can be uplifted. Specific partnerships could include creating learnerships or 	

	scholarships through the Sundays River Citrus Company (SRCC).
Cumulative impacts	<ul style="list-style-type: none"> Improved living standards of the directly and indirectly affected households. Development of new skills and expertise in the country to support the Wind Energy industry development.
Residual Impacts	<ul style="list-style-type: none"> Experience in operating and maintaining a wind facility. Human capital development of the affected workers.

5.6. Impact on Surrounding Economy (Agriculture, Tourism and Game Farming)

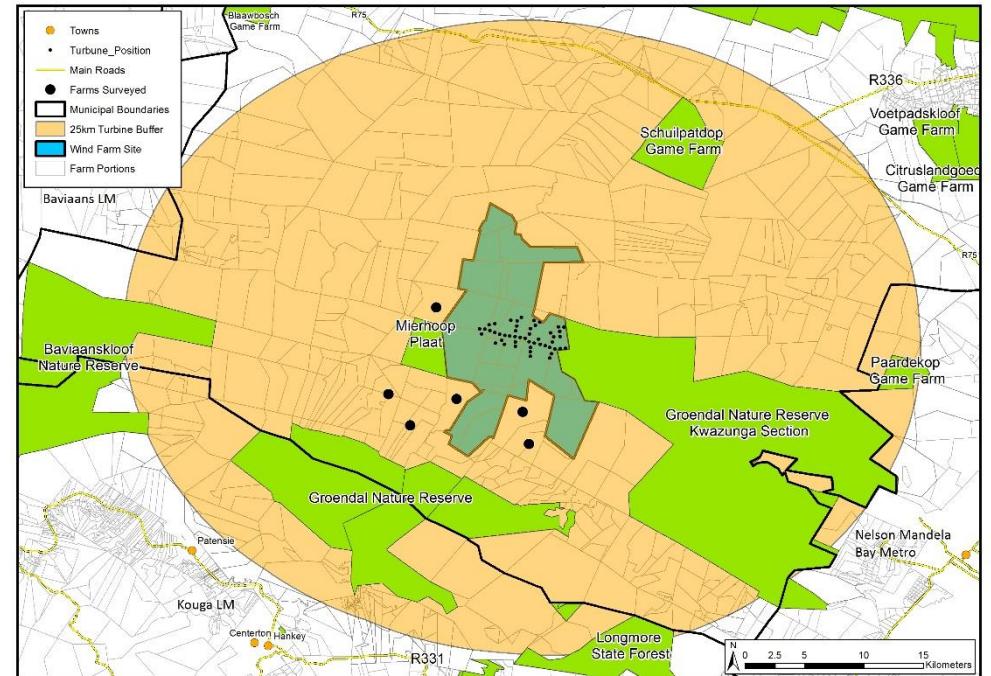
There is a variety of economic activity in the area surrounding the proposed wind farm site which includes agriculture and tourism. Agriculture in the area is largely based on livestock farming with a limited number of crop farming activities. While agriculture is one of the predominant activities in the region, it is unlikely that the wind farm development would have a significant impact on the production of this industry (Department of Energy, 2011). Agriculture has been identified by the Department of energy as an activity that can be undertaken simultaneously with little impact resulting from wind energy facilities (Department of Energy, 2011). The immediate operations within close proximity to the proposed development that are most likely to be affected by the proposed development would be the tourism and game farming industry which are more susceptible to changes in the natural environment.

In order to determine the impact the proposed development may have on the local tourism industry, telephonic interviews were conducted with property owners situated in close proximity to the proposed development site. The property owners were asked a series of questions regarding basic demographics and general operational information about the respective property, the number of labourers employed on the property, economic information regarding game farming and eco-tourism and economic information regarding agricultural operations.

Property owners’ contact details were acquired from the Interested and Affected Parties database which was provided by SRK Consultants. This provided a list of property owners who bordered or have properties within the visually impacted area but a total of eight were interviewed based on availability and willingness to cooperate.

The figure below indicates the location of the property owners interviewed in relation to the wind farm. The eight property owners are all located within a 10km radius of the proposed wind farm site.

FIGURE 5.2: LOCATION OF RESPONDENTS



(Urban-Econ GIS Unit, 2016)

5.6.1 Survey Results

Types of economic activity

Results from the surveys indicate that the majority of the properties surveyed are primarily used for livestock and crop farming (6) while only two properties are primarily used for hunting and eco-tourism. Six of the property owners interviewed derive their primary source of income from the property itself. A total of 280ha of crops are planted on the properties that were surveyed which predominantly consists of lucerne and maize for

livestock feed. There are a total of 560 cattle and 470 sheep on the properties of those surveyed. Of those interviewed 50% had some form of accommodation or tourism product developed that received guests. The majority of these products were based around hunting and eco-tourism.

Game farming and eco-tourism

Based on the outcomes of the surveys conducted with local land owners, approximately 73 hunting tourists visit the area annually with the overwhelming majority approximately 95% being international tourists. If this is extrapolated across the visually impacted area a total of 535 tourists visit the area annual (Note section 5.6.2 below). International tourists visiting farms in the area are almost exclusively trophy hunters. Some of these international tourists however do engage in other activities such as eco-tourism and historical and cultural tourism etc. Domestic tourists are mainly eco-tourists and visiting the farms of their friends. A small number of domestic tourists also visit the area for relaxation and hunting.

International tourists

Determining how wind farms directly affect the tourism industry is highly subjective according to global research conducted, and thus many authors and organisations are of the opinion that it is not possible to always draw directly correlation. As a result, many international surveys have been conducted with tourists to determine how the sight of wind farms affected their visit to a particular area. It should be noted that most of these surveys bear out the finding that a significant number of tourists (between 70% and 91%) are not overly concerned by the presence of wind farms in making their decision to visit a specific tourism site (WorldGroup, 2003).

A report prepared for The Government of Scotland (2008) identified that there was often strong hostility to WEF developments at the planning stage in Scotland on the grounds of the scenic impact and the perceived knock-on effect on the tourism industry. However, once these farms were operational, there was little evidence of a scenic impact.

Another case study is the acceptance of wind farms in Denmark, where it was found that 90% of people supported expansion of wind farms and public perception was that windfarms were generally attractive and blended in well with the natural environment (Energistyrelsen, 2007).

A study completed by the Welsh Government in 2014 was commissioned to determine the anticipated impact of WEFs on the Welsh tourism economy as there (at that time) were not many WEFs operating commercially in the country. The study found that there is limited local evidence of tourism impacts to date (Government of Wales, 2014). The majority of visitors to the sites appear to be either positive or indifferent to the WEFs already in place. When interviewing local experts and consultants, many believed that there had been no impact on the total visitor numbers (Government of Wales, 2014) to tourist activities in the region. The study also revealed that good planning led to most WEFs in Wales being placed away from tourist nodes, natural areas, visitor attractions and areas of extreme beauty.

There is however, very little research that has been undertaken on the effect of wind farms on the tourism industry in an African wildlife location. The previous international studies dealt with tourism in the context of their own countries which varies notably from a South Africa experience that attracts international tourists to experience a wildlife environment. One of the reasons international tourists visit a wildlife area is to experience a “Wild Africa” and to hunt/view game. Any outside disturbance that would affect this “Wild Africa” experience is therefore likely to negatively impact the level of satisfaction that these tourists experience. It was however indicated that one of the critical factors that international hunters consider when visiting local game farms is the quality of the trophy.

Domestic Tourists

Domestic leisure tourists are also expected to be sensitive to visual disturbance that affect their sense of places, as well as their experience of the game farms. Those domestic tourists such as Biltong hunters or historical and cultural tourists are however expected to be less sensitive than trophy hunters or even domestic visitors interested in eco-tourism. This is largely due to the fact that these groups are primarily unconcerned with the natural environment.

It is important to note that for both international and domestic tourists the visual experience of the area is but one factor that is considered when visiting a game farm.

Other factors include inter alia:

- Location and quality of the facilities
- Variety and abundance of wildlife
- Quality of the trophy (for hunting tourists)
- Relationship with the farm owner

High and low impact scenarios

Based on the outcomes of this survey as well as other qualitative and quantitative assessments the following assumptions were made:

- International tourists

For the purposes of quantifying the potential revenue losses to the immediate area due to the sensitivity of tourists, two scenarios were drawn for practical comparison purposes so as to compare the magnitude of the likely positive economic impacts quantified in the previous section of this report against potential tourism losses. As a worst case scenario, a high impact estimation of 50% loss in international tourist numbers was considered versus a more conservative estimation scenario of 15%. This range is provided purely for comparison purposes and to provide a perspective as to the potential magnitude of the negative business sales losses.

- Domestic tourists

Domestic tourists are also assumed to be sensitive towards the visual impact but to a slightly lesser degree than international tourists based on international research findings. As a worst case scenario, a high impact estimation of 40% loss in domestic tourist numbers was considered versus a more conservative estimation scenario of 10%. This range is provided purely for comparison purposes and to provide a perspective as to the potential magnitude of the negative business sales losses.

5.6.2 Estimation of potential revenue losses due to visual disturbances

Given the sensitivity of international and domestic tourists towards the various developments presented in the previous section and the exposure of these farms to a visual impact as indicated in Table 4.1, the potential losses to the game farming and tourism industries have been estimated. For this purpose, the following assumptions for ratings of the visual impact and percentage of tourists that would change their decision to visit the farm where used:

- High impact – 50% of international tourists and 40% of domestic tourists would change their decision to visit the farm
- Low impact – 15% of international tourists and 10% of domestic tourists would change their decision to visit the farm

These scenarios were then extrapolated to the broader study area. There are a total of 64 land portions in the immediate visually affected area (approximately 10km radius). One single portion in each instance does not necessarily correlate to one single owner. Based on the average number of farm portions that are owned by each respondent surveyed, an average of 2.35 title deeds are held per owner. Thus it is assumed that there are approximately 27 property owners in the 10km study area radius. The surveys revealed that half of the respondents who were interviewed have some form of eco-tourism or hunting based business on their land. It was thus assumed that of the 27 property owners, 13.5 of the property owners would operate some form of tourism based business. This was used to extrapolate the findings from the survey.

The results of the estimated potential losses for tourism and game farms that could occur are presented in Table 5.5.

TABLE 5.5: POTENTIAL ANNUAL ESTIMATED PRODUCTION LOSSES ASSOCIATED WITH VISUAL IMPACTS FOR LOW AND HIGH SCENARIOS¹ (2016 PRICES)

Sensitivity Receptor	Status Quo (Production/Business Sales)	Production/Business Sales as a result of Impacts	
		Low Impact Scenario	High Impact Scenario
Domestic Tourists	R 858 262.50	R 772 436.25	R 514 957.50
International Tourists	R 8 297 937.50	R 7 577 695.63	R 5 897 131.25
Total	R 9 156 200.00	R 8 350 131.88	R 6 412 088.75

¹ It must be noted that only tourism revenue is considered in this calculation as livestock and crop farming are unlikely to be affected by the WEF development.

Potential Losses	-	R 806 068.13	R 2 744 111.25
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As indicated in Table 5.5, the potential direct losses to the local game farming, tourism and associated industries due to the construction of the wind energy facility could range between R 0.8 million and R 2.7 million per annum in 2015 prices.

Indirect and Induced Impacts

It is also important to consider the negative indirect and induced impacts that the wind farm could have on the tourism industry. Indirect impacts as mentioned before, occur when the suppliers of goods and services to the new business experience changes in markets and potential to expand or. Indirect impacts result in an increase/decrease in job creation, GDP, and household income. Induced impacts represent further shifts in spending on food, clothing, shelter and other consumer goods and services as a consequence of the change in workers and payroll of directly and indirectly affected businesses. This could lead to further business growth/decline throughout the local economy. The indirect and induced negative impacts from the “low” scenario are R 0.6 million and R 0.35 million respectively. The indirect and induced impacts from the “high” scenario are R 2.04 million and R 1.18 million.

5.6.3 Impacts during construction and operation

During Construction: As indicated earlier the increased noise as well as the visual disturbance generated by the construction phase of the development will affect resident’s sense of place. This however will not only affect the people that live in the area but also alter the experience of any international and domestic tourists that visit the area. During the construction of the proposed wind farm there are likely to be noise impacts caused by the movement of vehicles as well as construction activities on site. These impacts are anticipated to occur primarily during the day with illumination from the site being experienced during the night. It is anticipated that households residing on the farms on which wind turbines are proposed to be established will experience the greatest disruption in their sense of place during the construction period.

It is anticipated that individuals living on the properties, as well as tourists to the area staying in hospitality facilities will over the course of the construction phase of the project, be subjected to either visual or noise disruptions that are currently not present in the area.

During Operation: The surveys with stakeholders revealed that there was a concern about how the noise level would affect their livestock, especially their game. A further concern raised was that the wind farm would be an eyesore for the region and that it would dissuade tourists from coming to the area. Some stated that the pristine mountain landscape would be ruined by the intrusion of wind turbines into the area.

TABLE 5.6: IMPACT ON TOURISM AND GAME FARMING

	Without Mitigation	With Mitigation
No-Go Option		
There will be no impact on tourism and game farming		
Construction Phase		
Extent	Local (1)	Local (1)
Intensity	High (3)	Medium (2)
Duration of Impact	Short Term (1)	Short Term (1)
Score and Rating	5 (Low)	4 (Very Low)
Probability	Definite	Probable
Significance	Low	Very Low
Status of Impact	Negative	Negative
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Mitigation proposed by the visual specialists should be implemented during the beginning of the construction period to screen off visual disturbances as soon into the development phase as feasible. Heavy vehicles travelling on secondary roads should adhere to low speed limits to minimise noise and dust pollution. If feasible, no construction activities should be carried out during weekends and outside day time working hours. 	
Cumulative impacts	<ul style="list-style-type: none"> Reduction in the number of tourists visiting the area due to the construction of other wind turbine developments in the surrounding area albeit temporarily. 	

Residual Impacts	<ul style="list-style-type: none"> Visual impacts cannot be eliminated due to the height of the turbines thus the local industry could still experience some losses. Perceptions of international tourists regarding the area's representation as "Wild Africa" would change due to the development. 	
Operational Phase		
Extent	Local (1)	Local (1)
Intensity	Medium (2)	Medium (2)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	6 (Medium)	6 (Medium)
Probability	Definite	Probable
Significance	Medium	Medium
Status of Impact	Negative	Negative
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> The mitigation measures proposed by the visual and noise specialists should be adhered to. Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction. In the case when employees of nearby farms are retrenched and a strong causal link can be established between the retrenchments and the project activities, the developer should assist the retrenched workers to find alternative employment by either recruiting them to work at the facility or assisting them through the enterprise development programme and/or social development funding allocations prescribed by government. In order to avoid exerting a negative impact on the families dependent on local game farms and any other household that could be effected by the project, the developer should seek to partner with the various game farms to support affect families and ensure that the aid given to them is retained. 	

Cumulative impacts	<ul style="list-style-type: none"> Change in perception of the area due to the operation of wind turbine developments in the surrounding area.
Residual Impacts	<ul style="list-style-type: none"> Altered characteristics of the environment Change in the perception of tourists of the local environment

5.7. Consistency with Development Planning

The proposed development is situated on rural land outside the urban edge. From the Policy Review in Section 3 above it is clear that the proposed development has positive impacts in terms of development planning (i.e. the policies and strategies reviewed in Section 3). Table 5.7.1 below indicates the impact of the proposed development on development planning.

TABLE 5.7: IMPACT ON DEVELOPMENT PLANNING

	Without Mitigation	With Mitigation
No-Go Option		
No impact on development planning.		
Construction Phase		
Extent	Regional (2)	
Intensity	High (3)	
Duration of Impact	Short Term (1)	
Score and Rating	6 (Medium)	
Probability	Definite	
Significance	Medium	
Status of Impact	Positive	
Confidence	High	
Mitigation	None suggested.	
Cumulative impacts	None envisaged.	
Residual Impacts	None envisaged.	
Operational Phase		
Spatial Extent	Regional (2)	
Intensity	High (3)	
Duration of Impact	Long Term (3)	

Score and Rating	8 (Very High)
Probability	Definite
Significance	Very High
Status of Impact	Positive
Confidence	High
Mitigation	None suggested.
Cumulative impacts	None envisaged.
Residual Impacts	None envisaged.

5.8. Impact on In-migration

The proposed development will create many employment opportunities during the construction phase; and a few during the operational phase. Construction companies make use of labourers from several areas and this would create an opportunity for unemployed workers to seek work and create an influx of workers to the proposed site. The negative impact will be due to an increased usage of services such as water and electricity and infrastructure by the new residents. Although it is difficult to ensure that contractors only employ labourers from the area (in order to minimise migration) it would be mandatory to manage this through a proposed labour desk.

The local economy of the SRVLM is not sufficiently diversified to supply the entire work force for the construction of the facility, specifically as far as skilled positions are concerned. Some of the unskilled and semi-skilled workers required in construction activities can be sourced locally. It is anticipated that some jobs will be filled by labourers coming from nearby communities or municipalities, such as Port Elizabeth, Kirkwood, Uitenhage, etc.

The migration of people to the area is likely to result in significant social conflicts between the local population and the migrant work force from the local population perceiving the migrant workers as “stealing” their employment opportunities. It is highly likely that most unskilled and some semi-skilled employment would come from the local community both during construction and during operation. Given the low reliance on non/semi-skilled labour sourced externally, the potential of an the influx of people into the area leading to a temporary increase in level of crime, illicit activity and possibly a deterioration of the health of the local community through the spread of infectious diseases is low. Semi-skilled and unskilled construction workers are unlikely to choose to remain in the area following the

completion of the construction phase given the rural nature of the project site (with limited human settlements in the surrounding area). In addition skilled labour will be sourced from outside the area but most of which will go home after the development is finished. Ultimately the in-migration of skilled workers could provide those without skills an opportunity to learn new skills.

The influx of job seekers and social conflicts associated with immigration of temporary workers is difficult to mitigate; however, appropriate awareness campaigns and strict adherence to the recruiting practices could potentially reduce the adverse effects. In any case, addressing the challenges related to potential social impacts is best to be done in partnership with the stakeholders, specifically the adjacent property owners, local communities, councils, and municipal authorities. This would promote transparency, information sharing, and build good relationships between the parties. In addition, all opportunities that would assist in engaging the community into the project should be investigated and if feasible, realise. This specifically refers to employing the community in providing ancillary services for the project that could eliminate the potential alienation of the local people towards the project as well as migrant workers. Farm workers may also leave their jobs for more lucrative construction work, which would have a negative impact for farmers.

TABLE 5.8: IMPACT ON IN-MIGRATION

	Without Mitigation	With Mitigation
No-Go Option		
No impact on in-migration.		
Construction Phase		
Extent	Regional (2)	Regional (2)
Intensity	Medium (2)	Low (1)
Duration of Impact	Short Term (1)	Short Term (1)
Score and Rating	5 (Low)	4 (Very Low)
Probability	Probable	Probable
Significance	Low	Very Low
Status of Impact	Negative	Negative
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Set up a recruitment office in the nearby towns (i.e. Jansenville and Kirkwood) and adhere to strict labour 	

	<p>recruitment practices that would reduce the desire of potential job seekers to loiter around the properties in hope to find temporary employment.</p> <ul style="list-style-type: none"> • Employ locals as far as feasible through the creation of the local skills database and recruitment of suitable candidates. • Control the movement of workers between the site and areas of residence to minimise loitering around the proposed facility by providing scheduled transportation services between the urban areas and the construction site and provision of on-site accommodation. • Engage communities with respect to their possible involvement during construction in providing supporting services such as catering, temporary housing of workers, transportation, etc. • Formalise trading and service provision on the site, by providing a dedicated area for such services and signing contracts with service providers. • Establish a proper fencing around the property to reduce the desire of workers to trespass between the construction site and adjacent properties. • Set up a gate and controlled access system to monitor the movement of people to and from the property, as well as to reduce the influx of job seekers to the site itself. • Ensure that any damages or losses to the nearby farms that can be linked to the conduct of the construction workers are adequately reimbursed. • Assign a person to deal with complaints and concerns of the affected parties.
Cumulative impacts	None foreseen.
Residual Impacts	Contribution towards crime and social conflicts in the area by construction workers and job seekers who decide to stay in the area after construction is complete and unable to find sustainable income.
Operational Phase	

Extent	Local (1)	Local (1)
Intensity	Low (1)	Low (1)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	5 (Low)	5 (Low)
Probability	Possible	Improbable
Significance	Very Low	Very Low
Status of Impact	Negative	Negative
Confidence	High	High
Mitigation	Adhere to strict labour recruitment practices that would increase the use of local labour.	
Cumulative impacts	None foreseen.	
Residual Impacts	Contribution towards crime and social conflicts in the area by construction workers and job seekers who decide to stay in the area after construction is complete and unable to find sustainable income.	

5.9. Increase in Household Earnings

During construction: The proposed wind farm will create a total of 1,817 employment positions during construction generating R567 million of revenue for the affected households in the country through direct, indirect and induced effects. Of this figure R205 million will be paid out in the form of salaries and wages to those individuals directly employed during the construction phase. The remaining R362 million in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Given the average household size in the Sarah Baartman District Municipality and South Africa is 3.6, a total of 6 541 people nationally are likely to benefit from the employment positions created and the income derived through these 1,817 employment positions. Although temporary, this increase in household earnings will have a positive effect on the standard of living these households.

During operation: The creation of approximately 71 employment positions throughout the country will generate between about R7.5 million of income (2013 prices), which will be sustained for the entire duration of the project's lifespan. Given the average household size in affected local municipalities and nationally, this increase in household earnings will

support up to 255 people. The sustainable income generated as a result of the project’s operation will positively affect the standard of living of all benefitting households.

TABLE 5.9: IMPACT ON HOUSEHOLD INCOME

	Without Mitigation	With Mitigation
No-Go Option		
No impact on household income.		
Construction Phase		
Extent	Regional (2)	Regional (2)
Intensity	High (3)	High (3)
Duration of Impact	Short Term (1)	Short Term (1)
Score and Rating	6 (Medium)	6 (Medium)
Probability	Probable	Probable
Significance	Medium	Medium
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Recruit local labour as far as feasible to increase the benefits to the local households. Employ labour intensive methods in construction where feasible. Sub-contract to local construction companies where possible. Use local suppliers where feasible and arrange with local SMMEs and BBBEE compliant enterprises to provide transport, catering and other services to the construction crews. 	
Cumulative impacts	Improved standard of living of the affected households.	
Residual Impacts	Possible increase of households’ saving accounts.	
Operational Phase		
Extent	Local (1)	Local (1)
Intensity	Medium (2)	Medium (2)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	6 (Medium)	6 (Medium)
Probability	Probable	Probable

Significance	Medium	Medium
Status of Impact	Positive	Positive
Confidence	High	High
Mitigation	<ul style="list-style-type: none"> Where possible, the local labour supply should be considered for employment opportunities to increase the positive impact on the area’s economy. As far as feasible, local small and medium enterprises should be approached to investigate the opportunities for supply inputs required for the maintenance and operation of the facility. 	
Cumulative impacts	<ul style="list-style-type: none"> Improved productivity of workers. Improved health and living conditions of the affected households. 	
Residual Impacts	None foreseen at this stage.	

5.10. Impact on Economic and Social Infrastructure

The migrant workers will be creating an additional demand for rental accommodation, social services, and access to water and electricity particularly during the construction phase of the project. The SRVLM has limited resources and funds to expand this infrastructure. The proposed developer is planning to establish a construction camp on site, which means that construction workers coming from outside the area will be accommodated on site instead of in neighbouring towns. These impacts can however be mitigated if the developer engages with the local municipality and plans accordingly.

The proposed WEF will make a notable contribution to poverty and social and community development in the area. Government prescribes that between 1% and 1.5% of the revenue derived by a project should be allocated towards the needs of the community (Eberhard &Leigland, 2015). This represents extensive funding to uplift rural communities and is to be coupled with a high degree of accountability from the Department of Energy.

TABLE 5.10: IMPACT ON ECONOMIC & SOCIAL INFRASTRUCTURE

	Without Mitigation	With Mitigation
No-Go Option		
No impact on economic and social infrastructure.		

Construction Phase		
Extent	Regional (2)	Regional (2)
Intensity	High (3)	High (3)
Duration of Impact	Short Term (1)	Short Term (1)
Score and Rating	6 (Medium)	6 (Medium)
Probability	Definite	Definite
Significance	Medium	Medium
Status of Impact	Negative	Negative
Confidence	Definite	Definite
Mitigation	<ul style="list-style-type: none"> • Provide adequate signage along the roads in the area to warn motorists of the construction activities taking place on the site. • A plan should be developed in consultation with local authorities and local communities to identify community projects that would result in the greatest social benefits. • Engage with local authorities and inform them of the development as well as discuss with them the ability of the municipality to meet the demands for social and basic services created by the migrant construction workers. • Where feasible, assist the municipality in ensuring that the quality of the local social and economic infrastructure does not deteriorate making use of the social responsibility allocations. 	
Cumulative impacts	None foreseen at this stage, however this is under assumption that no other similar facilities or industrial developments are proposed to be located in the local community.	
Residual Impacts	None foreseen at this stage.	
Operational Phase		
Extent	Regional (2)	Regional (2)
Intensity	High (3)	High (3)
Duration of Impact	Long-Term (3)	Long-Term (3)
Score and Rating	8 (Very High)	8 (Very High)
Probability	Definite	Definite
Significance	Very High	Very High

Status of Impact	Positive	Positive
Confidence	Certain	Certain
Mitigation	<ul style="list-style-type: none"> • A social development and economic development programme should be devised by the developer throughout the project's lifespan. • Engage with local authorities and inform them of the development as well as discuss with them their ability to meet the additional demands on social and basic services created by the in migration of workers. • Where feasible, assist the municipality in ensuring that the quality of the local social and economic infrastructure does not deteriorate through the use of social responsibility allocations. • The plan should be reviewed on an annual basis and where necessary updated. • When devising enterprise development initiatives, the focus should be on creating sustainable and self-sufficient enterprises. 	
Cumulative impacts	Possible improvements in access to services and status of local infrastructure.	
Residual Impacts	None foreseen at this stage.	

5.11. Decommissioning Phase Impacts

Upon the expiry of the WEF's lifespan (20 years), the facility would either be disbanded or be upgraded in order to maintain and prolong the lifespan of the facility. If the facility is decommissioned, the land will need to be rehabilitated in order to return it to pre-project conditions. This also means that all impacts whether positive or negative, which take place during the operational phase will cease to exist. At the same time spending on the disassembly of the components and rehabilitation of land will increase the demand for construction services and other industries, thus stimulating economic activity in the local area, albeit over a temporary period. If the wind farm is upgraded then there is likely to spending on upgrading the wind farm which is likely to have similar impacts on GDP, household income and employment as discussed in this report.

Socio-economic impacts stimulated during the decommissioning phase are expected to be similar to those that took place during the construction phase. They will also be temporary in nature, but most likely will take a much shorter time than the construction phase. They will also be associated with some expenditure, although it will be considerably less than the investment required during the development phase.

5.12. Need and Desirability

The concept of need and desirability can be explained in terms of the general meaning of its two components in which ‘need’ refers to time and ‘desirability’ to place, i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to the wise use of land and what is the most sustainable use of a specific land portion. Table 5.11 below presents the standard guideline questions, pertaining to the economic impacts of the proposed development.

TABLE 5.11: NEED AND DESIRABILITY

Question	Implications for Development
NEED	
<i>Is the land use (associated with activity being applied for) considered within the timeframe agreed to by the relevant environmental authority?</i>	The site is situated on private property and no municipal projects have been identified for this site. Planning policies from a local to national perspective advocate the development of renewable energy facilities and building the local economy both economically and socially (as outlined in detail in Section 3 above).
<i>Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?</i>	The site is currently open and in a mountainous area. It is unlikely to be used for any other purpose because of the extremely topography of the site. The site is also situated far from the urban edge or residential developments.
<i>Does the community/area need the activity and the associated land use concerned? (is it a societal priority)</i>	The proposed development is providing an important need (i.e. employment opportunities) and giving some community

	members the opportunity to gain skills (through procurement policies) that they would not have necessarily been able to obtain themselves.
<i>Are the necessary services with appropriate capacity currently available, or must additional capacity be created to cater for the development?</i>	Please refer to engineering studies. The proposed development will feed into the national Eskom grid.
<i>Is the development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement services)?</i>	Please refer to engineering studies produced by SRK. Although the project is not specifically mentioned in the municipal planning reports reference is made to wind energy facilities.
<i>Is this project part of a national programme to address an issue of national concern or importance?</i>	Economic growth and investment creation have been identified as some of the priority objectives for SA and the proposed development does cater for this. The proposed development also aligns with regional policy objectives in the fact that it will contribute to the renewable energy sector and create employment. This aligns well with the IDP of SRVLM which indicates a need to increase employment and decrease poverty in the area. Renewable energy has been earmarked as an important consideration in the SRVLM IDP 2016/2017. The facility fact that the facility will contribute to national energy security which is considered a national imperative. This facility will also align well with the proposed development of Agri-Parks in SBDM as there is a focus on developing renewable energy projects around the Agri-Parks model.

DESIRABILITY	
<i>Is the development Best Practicable Environmental Option (BPEO) for this land/site?</i>	Please refer to the environmental studies.
<i>Would the approval of this application compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities?</i>	As the Integrated Development Plan's and Spatial Development Framework's highlight no intended use of the land at the site the location of the development will not compromise strategies and initiatives of the local municipality's.
<i>Would the approval of this application compromise the integrity of the existing environment management priorities for the area, and if so, can it be justified in terms of sustainability considerations?</i>	Please refer to the environmental studies.
<i>Do location factors favour this land use (associated with the activity applied for) at this place? (relates to the contextualisation of the proposed land use on this site within its broader context)</i>	Most of the land within a 5km radius of the proposed development is undeveloped and consists of either natural vegetation or grazing. There are no residential areas located close to the site. Tourism is however, prominent in the area surrounding the wind farm and it is likely to impact this industry as it does not align with the 'Wild Africa' tourism that occurs in the area.
<i>How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas?</i>	Please refer to heritage and cultural specialist studies.
<i>How will the development impact on people's health and wellbeing (e.g. noise, odours, visual character and sense of place, etc.)?</i>	The impact on health and well-being will depend on the management option selected as well as the measures put in place to avoid, reduce or mitigate impacts. There are rules and regulations that need to be adhered to and provide a benchmark

	for the project. Refer to the Visual Impact Assessment.
<i>Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?</i>	No, the proposed development will bring more money into the local economy (see GDP, investment, and employment created above in Section 4).
<i>Will the proposed land use result in unacceptable cumulative impacts?</i>	Please refer to the environmental studies.

5.13. Conclusion

The proposed development is likely to stimulate a number of different socio-economic impacts as discussed in previous sections. The purpose of this section was to identify possible impacts that could occur as a result of activities which will take place during the construction and operational phase of the development. From this section it is evident that the proposed development will result in a medium-term growth in GDP of the regional economy and decrease the unemployment numbers of the local community. This will further result in the community being able to obtain employment and in return be able to earn an income, which would then place the community in a position to be able to provide for their basic needs.

6.1 Introduction

In order to ensure that the positive impacts of the proposed development are maximised and any negative impacts reduced, specific management strategies and mechanisms need to be incorporated into the overall development. The following objectives need to be considered as a way forward:

Construction Phase

- Stimulate and enhance production impacts, employment impacts and benefits to households in the country, specifically in the Sundays River Valley local economy during the construction phase
- Skills enhancement in the construction and manufacturing sectors in the local economy as well as in the country
- Reduce the visual and noise disturbances during both day time and night time
- Reduce the possibility of an increase in crime and social conflicts in the area as well as the negative impacts associated with property damages and the loss of assets
- Reduce the pressure on local social and economic infrastructure

Operational Phase

- Maximise production, employment and local community benefits
- Contribute to skills development in the area
- Reduce the visual and noise disturbances during both daytime and at night
- Minimise the negative impact on households dependent on the local tourism, game farming and associated industries

6.2 Construction Phase

OBJECTIVE 1: Stimulate and enhance production impacts, employment impacts and benefits to households in the country, specifically in the Sundays River Valley local economy during the construction phase

Project component/s	Construction of the wind energy facility and associated infrastructure	
Potential Impact	Limited local economic benefits	
Activity/risk source	<ul style="list-style-type: none"> • Construction procurement practices employed by EPC contractor • Developer’s investment plan 	
Target/Objective	Increase the procurement of local goods and services and create new employment opportunities within the local economy as well as nationally	
Action/control	Responsibility	Timeframes
Encourage the EPC contractor to increase the local procurement practices and employment of people from local communities (as far as feasible) to maximise the benefits to the local economies	NWD	Construction period
Where possible, engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers	NWD	Construction period

Organise local community meetings to advise the local labour on the planned project and what employment could potentially be applied for	NWD	Construction period
Establish a local skills desk (in Uitenhage or Kirkwood) to determine the potential skills that could be sourced in the area	NWD EPC contractor	Construction period
Recruit local labour as far as feasible, with a minimum of 20% of employment created for local communities	EPC contractor	Construction period
Employ labour-intensive methods in construction where feasible	EPC contractor	Construction period
Where possible, sub-contract to local construction companies	EPC contractor	Construction period
Use local suppliers where feasible and arrange with the local Small and Medium Enterprises to provide transport, catering services and other services to the construction crew	EPC contractor	Construction period
Performance Indicator	<ul style="list-style-type: none"> Developer has engaged with local authorities and business organisations (Yes/No) Percentage of expenditure on the project spent in the local communities versus nationally Percentage of person-years spent on construction by workers from the local community Number of contracts and contract values signed between the EPC contractor/Developer and local construction companies and SME's to supply goods and services directly used in construction or support the activities on site 	

Monitoring	Checklists, quarterly reports and post-construction report
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OBJECTIVE 2: Skills enhancement in the construction and manufacturing sectors in the local economy as well as in the country

Project component/s	Construction of the wind energy facility and localisation of the project's expenditure
Potential Impact	Limited or no local expertise development
Activity/risk source	<ul style="list-style-type: none"> Construction procurement practice employed by the EPC contractor Developer's investment plan Willingness of foreign experts to share knowledge and expertise
Target/Objective	Ensure knowledge transfer and skills development between foreign experts involved in the development and the local workforce involved directly or indirectly in the project

Action/control	Responsibility	Timeframes
Facilitate knowledge and skills transfer between foreign technical experts and South African professionals during the pre-establishment and construction phases focusing on turbine component assembly and tower manufacturing	NWD EPC contractor	Pre-Construction period & Construction period

Set up apprenticeship programmes for construction workers to build on existing skills or develop new skills, especially those coming from local communities	NWD EPC contractor	Construction period
Performance Indicator	<ul style="list-style-type: none"> Hours spent by foreign technical experts on skills and knowledge transfer to South African based workforce Number of apprenticeships offered 	
Monitoring	Quarterly reports and post-construction final report	

OBJECTIVE 3: Reduce the visual and noise disturbances during both day time and night time	
Project component/s	Construction activities associated with the wind energy facility and associated infrastructure
Potential Impact	Changes in the sense of place that also result in the negative impact on the local tourism, game farming and associated industries
Activity/risk source	<ul style="list-style-type: none"> Construction activities The wind turbines and associated infrastructure
Target/Objective	Reduce the visual and noise disturbances to minimise the losses in sense of place and potential decline in the business

	activity of the local tourism, game farming and associated industries	
Action/control	Responsibility	Timeframes
Natural areas that are not affected by the footprint should be retained as such and efforts should be made to avoid these areas during construction	NWD EPC contractor	Construction period
Mitigation proposed by the visual and noise specialists should be adhered to and if possible, implemented during the beginning of the construction period	NWD EPC contractor	Construction period
Heavy vehicles travelling on secondary roads should adhere to low speed limits to minimise noise and dust pollution and should follow the roads agreed with the property owners	NWD EPC contractor	Construction period
Night-time lighting should be kept to a minimal and should be designed and positioned in such a way as to minimise the light intrusion during the night experienced from nearby properties, but without jeopardising the security and safety of the people working at the facility	NWD EPC contractor	Construction period
Where possible construction activities limited to normal working hours	NWD EPC contractor	Construction period

Performance Indicator	<ul style="list-style-type: none"> Meeting with the affected parties, specially local residents to determine their concerns regarding visual and noise impacts and find plausible but feasible solutions for all Adhere to mitigation measures proposed by the visual specialist (checklist) Periodic speed measurements on secondary roads
Monitoring	Checklists, quarterly reports during construction and annual report inclusive of other performance assessments during operations

OBJECTIVE 4: Reduce the possibility of an increase in crime and social conflicts in the area as well as the negative impacts associated with property damages and the loss of assets

Project component/s	Construction of the wind energy facility and associated infrastructure	
Potential Impact	Spike in crime and social conflicts due to the influx of construction workers and employment seekers into the area; property damage and the loss of assets on nearby farms	
Activity/risk source	<ul style="list-style-type: none"> Construction of the wind energy facility 	
Target/Objective	Reduce the chances of an increase in crime and other social conflicts in the area as well as an increase in property damage and the loss of assets	
Action/control	Responsibility	Timeframes

Set up a recruitment office in the nearby town (i.e. Kirkwood or Uitenhage) and adhere to strict labour recruitment practices that would reduce the desire of potential employment seekers to loiter around properties in the hope of finding temporary employment	NWD EPC contractor	Pre-Construction period & Construction period
Employ locals as far as feasible through the creation of a local skills database and the recruitment of suitable candidates	NWD EPC contractor	Pre-Construction period & Construction period
Ensure that any damages or losses that nearby farms experience, and which can be linked to the conduct of the construction workers, are adequately reimbursed	NWD EPC contractor	Construction period
Assign a person(s) to deal with the complaints and concerns of affected parties	NWD EPC contractor	Construction period
Land owners should be adequately compensated for any unforeseen damage to property or loss of assets such as livestock	NWD EPC contractor	Construction period
Ensure that construction/maintenance workers do not damage property or inflict other losses to land owners and households residing on the farms	NWD EPC contractor	Construction period
Negotiate terms and conditions that would guide construction/maintenance activities on the properties as well as the behaviour and conduct of the construction/maintenance crew	NWD EPC contractor	Pre-Construction period & Construction period

A predefined access route to the servitude should be chosen in consultation with the land owner and should be strictly adhered to by all construction/maintenance vehicles and crews; the chosen route should follow existing roads as far as feasible	EPC contractor	Construction period
Site clearance activities should be limited to the minimum required area to minimise potential damage to the environment and property	EPC contractor	Construction period
Construction/maintenance vehicles are to follow safe speed limits and should avoid animals inhabiting the farms	EPC contractor	Construction period
If feasible, construction/maintenance activity should only be undertaken during working hours	EPC contractor	Construction period
Performance Indicator	<ul style="list-style-type: none"> • A recruitment office(s) is set up prior to the construction period • Percent of workers employed in construction that come from local communities • Assignment of a dedicated person to deal with any complaints by nearby farmers and resolve concerns including damages to property and the loss of assets • Number of complaints regarding property damage and asset losses received from the affected properties and the percentage thereof that have been resolved • Agreement between the EPC contractor and property owners regarding access to properties, access routes and compensation conditions if property is damaged or an assets lost that can be 	

	proven to be as a result of the activities of the construction crews
Monitoring	Checklists, quarterly reports as well as the post-construction report inclusive of other performance assessments

OBJECTIVE 5: Reduce the pressure on local social and economic infrastructure

Project component/s	Construction of the wind energy facility and associated infrastructure
Potential Impact	Dilapidation of local infrastructure and a decline in the quality of service offered
Activity/risk source	<ul style="list-style-type: none"> • Movement of vehicles • Influx of migrant workers and employment seekers
Target/Objective	Reduce the pressure on local social and economic infrastructure

Action/control	Responsibility	Timeframes
Provide adequate signage along the N2 to warn motorists of the construction activities taking place on the site	EPC contractor	Pre-Construction period
Engage with local authorities and inform them of the development as well as discuss with them the ability of the municipality to meet the demands for social and basic services created by the migrant construction workers	NWD	Pre-Construction period

Assist the municipality where feasible in ensuring that the quality of the local social and economic infrastructure does not deteriorate		NWD	Construction period
Performance Indicator	<ul style="list-style-type: none"> Adequate signage along the N2 provided Established relationship with the Sundays River Valley Local Municipality. Assistance provided to the Sundays River Valley Local Municipality with respect to the local infrastructure through the social responsibility programme 		
Monitoring	Checklists and annual report inclusive of performance assessments		

6.3 Operational Phase

OBJECTIVE 1: Maximise production, employment and local community benefits		
Project component/s	Operation and maintenance activities	
Potential Impact	Loss of opportunities to stimulate production and employment in the local economy	
Activity/risk source	<ul style="list-style-type: none"> Labour and procurement practices employed during operations 	
Target/Objective	Maximise the production and employment benefits in the local economy	
Action/control	Responsibility	Timeframes
As far as possible, the operator of the wind energy facility should be encourage to procure material, goods and products required for the operation of the facility from local suppliers to increase the positive impact in the local economy	NWD	Operational period
Where possible, local labour should be considered for employment to increase the positive impact on the local economy	NWD	Operational period
Local SME's should be approached to investigate the opportunities for supplying the inputs required for the maintenance and operation of the facility where possible	NWD	Operational period

A three-year social, and economic development programme should be devised by the developer throughout the project's lifespan	NWD	Operational period
The plan should be development in consultation with local authorities as well as the community in order to identify community projects that would result in the greatest social impact	NWD	Operational period
This plan should be reviewed on an annual basis and, where necessary, updated	NWD	Operational period
When devising enterprise development initiatives, the focus should be on creating sustainable and self-sufficient enterprises	NWD	Operational period
In devising the programmes to be implemented through the Enterprise Development Funds and Community Trust allocations, the developer should take into account the IDP for the Sundays River Valley Local Municipality.	NWD	Operational period
Performance Indicator	<ul style="list-style-type: none"> Percentage of contract values allocated to the local SME's and companies Percentage of workers that were employed from local communities A three-year social and economic development programme that takes into account local policies, priorities and needs Consultation with local authorities and communities on the social and economic needs and priorities 	
Monitoring	Checklists and annual reports inclusive of other performance assessments	

OBJECTIVE 2: Contribute to skills development in the area		
Project component/s	Operation and maintenance activities	
Potential Impact	Loss of opportunities to develop skills in operating a wind energy facility in the area	
Activity/risk source	<ul style="list-style-type: none"> Operations and maintenance 	
Target/Objective	Contribute to the development of skills required to operate and maintain a wind energy facility	
Action/control	Responsibility	Timeframes
The developer should establish vocational training programmes for the local labour force to promote the development of skills required by the wind energy industry and thereby provide opportunities for the local community to be employed in other similar facilities elsewhere around the province and the country	NWD	Operational period
Performance Indicator	<ul style="list-style-type: none"> Number of people attending vocational training on an annual basis 	
Monitoring	Annual reports inclusive of other performance assessments	

OBJECTIVE 3: Reduce the visual and noise disturbances during both daytime and at night		
Project component/s	Operation and maintenance of the facility and associated infrastructure	
Potential Impact	Changes in the sense of place that also leads to negative impacts on the local tourism, game farming and associated industries	
Activity/risk source	<ul style="list-style-type: none"> Wind turbines and associated infrastructure 	
Target/Objective	Reduce the visual and noise disturbance to minimise the losses to the sense of place and the potential decline in business activity of tourism establishments and game farms	
Action/control	Responsibility	Timeframes
Natural areas that are not affected by the facilities footprint should be retained as such and avoided during operations	NWD	Operational period
Mitigation proposed by the visual specialist should be adhered to	NWD	Operational period
Mitigation proposed by the noise specialist should be adhered to	NWD	Operational period
Performance Indicator	<ul style="list-style-type: none"> Adhere to mitigation measures proposed by the visual specialist (checklist) Routine inspection of the lighting conditions 	

	<ul style="list-style-type: none"> Annual meeting with the affected property owners
Monitoring	Checklists and annual reports inclusive of other performance assessments during operations

OBJECTIVE 4: Minimise the negative impact on households dependent on the local tourism, game farming and associated industries		
Project component/s	Operation and maintenance	
Potential Impact	Loss of employment and income leading to the deterioration of the standard of living of the affected households	
Activity/risk source	<ul style="list-style-type: none"> Wind turbines and associated infrastructure 	
Target/Objective	Reduce the potential losses of income and employment resulting from the visual disturbances associated with the proposed facility	
Action/control	Responsibility	Timeframes
Implement all measures suggested to mitigate the impact on the sense of place	NWD	Operational period
In the case when employees of the nearby farms are retrenched and that there is a strong causal link between these retrenchments and the project's activities, the developer should assist the retrenched workers to find alternative employment by either recruiting them to work	NWD	Operational period

at the facility, through the enterprise development programme or through social development funding allocations prescribed by government		
In order to avoid exerting the negative impact on the families dependent on the local tourism and game farming industry, the developer should seek to partner with these industries in order to support these families and ensure that the aid given to them is retained at the same level	NWD	Operational period
Performance Indicator		
	<ul style="list-style-type: none"> Partnership agreement with local tourism and game farming businesses or other proof that indicates the support of families dependent on these industries Number of retrenched workers assisted 	
Monitoring		
	Annual reports inclusive of other performance assessments	

6.4 Synthesis

The Socio-Economic Impact Assessment Report has found that the total positive economic impacts (direct, indirect and induced) resulting from the construction of the wind farm are expected to bring about significant local and national economic benefits in terms of new business sales, employment, government revenue and household income. Construction will however create some socio-economic dis-benefits to the local community through disruptions to the area’s sense of place and the local tourism sector.

Long term positive economic impacts resulting from operational expenditure are also expected to outweigh any negative economic impacts that could result from the operation of the wind farm development.

Table 6.1 provides a summary of the positive and negative direct impacts expected from the construction of the wind farm.

TABLE 6.1: SUMMARY TABLE OF POSITIVE AND NEGATIVE IMPACTS FROM THE POTENTIAL CONSTRUCTION OF THE INYANDA ROODEPLAAT WEF

Impact on:	Impacts	Impact Type
Production during construction (duration of construction)	R 1 616 050 000	Positive
Production during operation (per annum)	R 60 000 000	Positive
Potential losses to production in tourism (per annum)	R 806 068 - R 2 744 111	Negative

The operation of the project is associated with multiple positive impacts especially with regards to employment, skills development, and GDP. With regards to business sales and production, Table 6.1 provides perspective on the positive direct economic impacts that will result from the wind farm, in comparison to the negative production losses that could occur within the game farming industry. The sense of place of the area will also likely be somewhat negatively affected. In summary, income gains attributable to this investment will significantly outweigh any losses arising from potential risks posed to the local tourism industry.

CHAPTER 7

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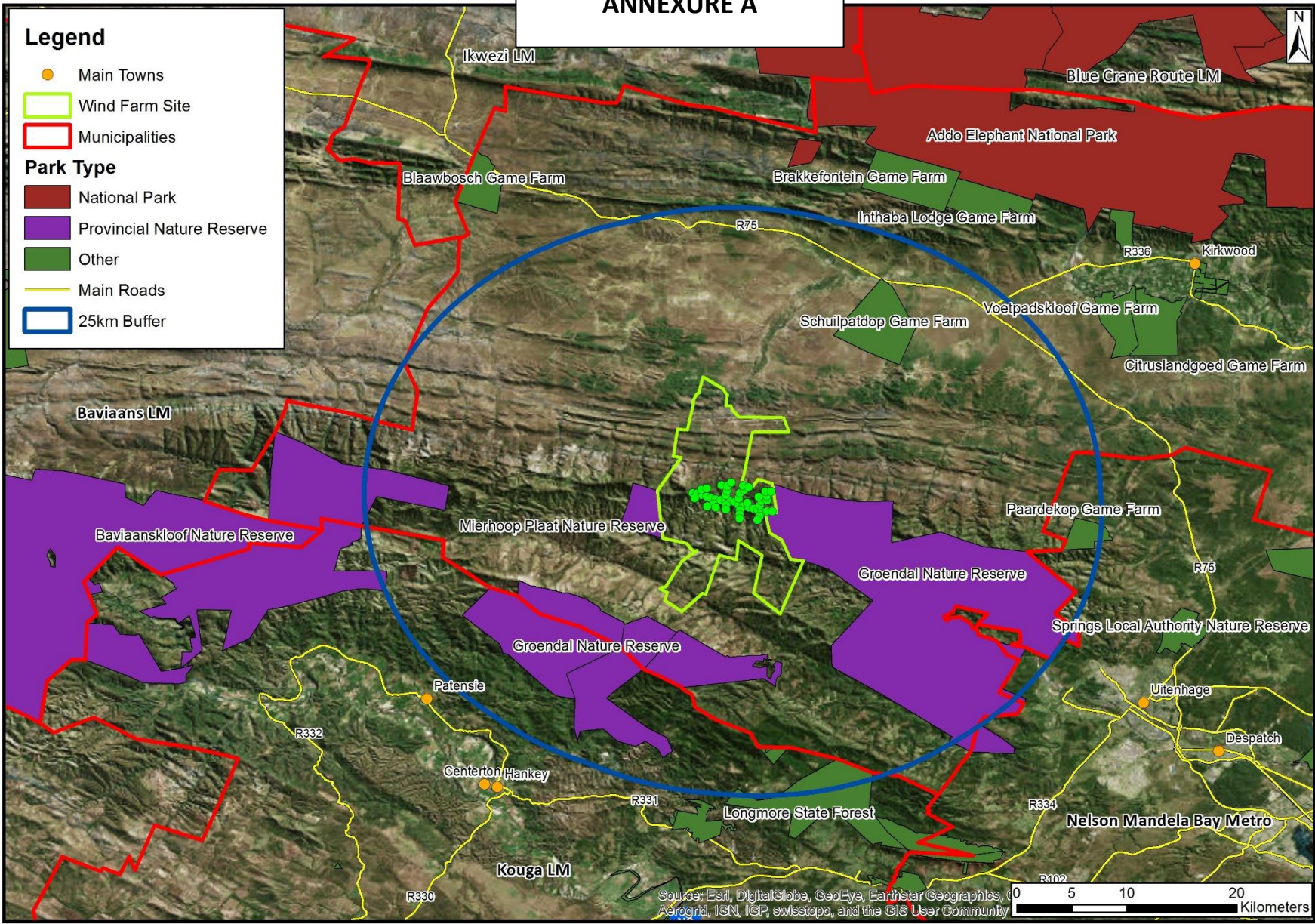
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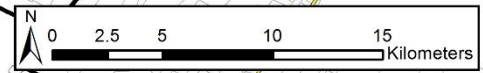
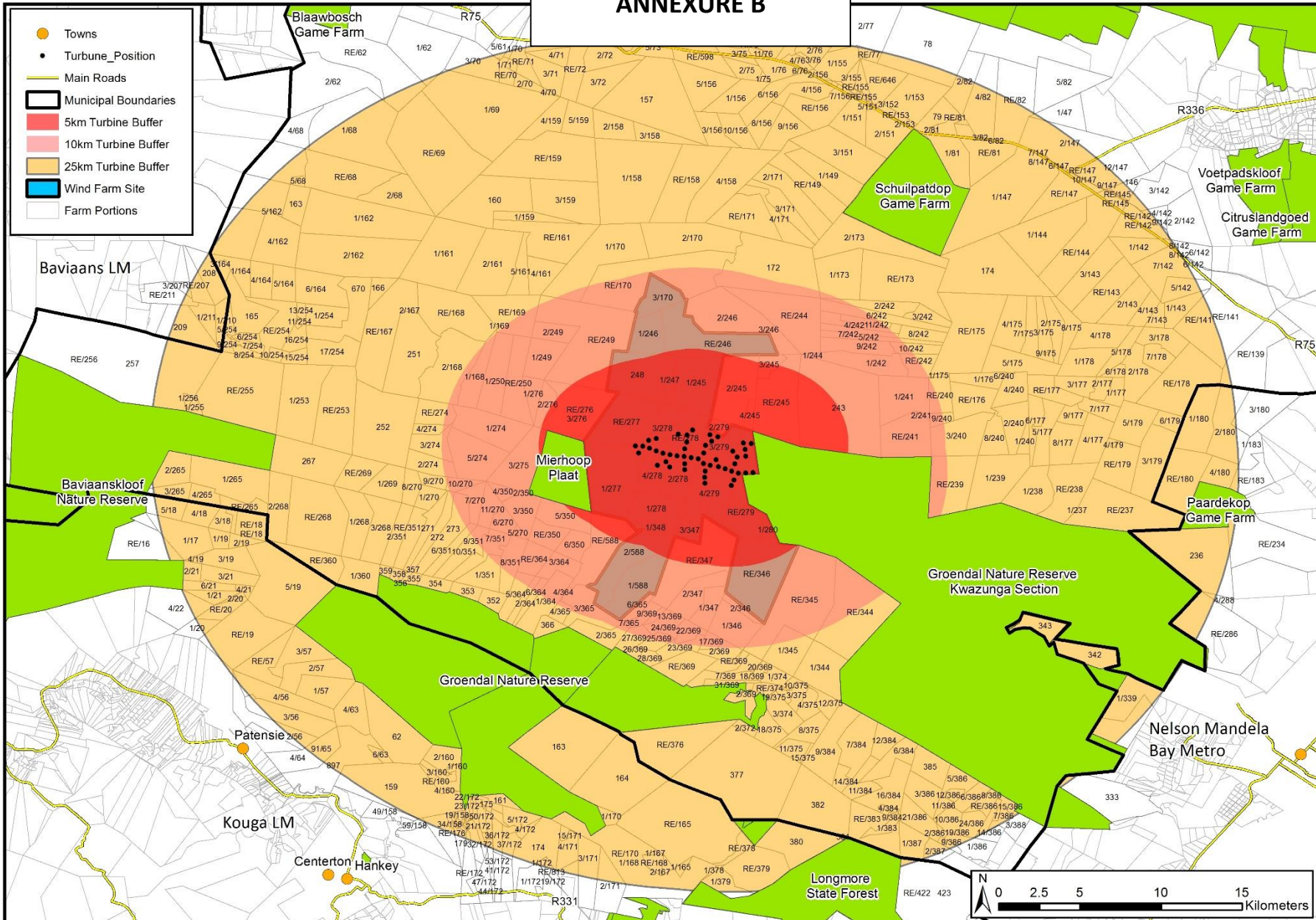
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ANNEXURE A



ANNEXURE B

- Towns
- Turbine_Position
- Main Roads
- ▭ Municipal Boundaries
- 5km Turbine Buffer
- 10km Turbine Buffer
- 25km Turbine Buffer
- Wind Farm Site
- ▭ Farm Portions



ANNEXURE C

