

RHODES 2 SOLAR PARK

SOCIO-ECONOMIC CONSIDERATIONS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT



COMPILED BY



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Table of Contents

1. Purpose	2
2. Project Description.....	2
3. Socio-Economic Context	6
3.1 Population	6
3.2 Housing.....	6
3.4 Economic Production Structure	7
3.5 Employment Profile.....	8
3.6 Household Income Distribution	9
3.7 Household Sources of Energy	9
4. Development Planning Context	10
4.1 National Planning Context	10
4.2 Northern Cape Provincial Planning Context	12
4.3 Joe Morolong Municipal Planning Context	13
5. Economic Assessment	13
6. Additional Social Benefit for the Municipality	15
7. Other Considerations	15
8. Potential Impacts Associated With the Proposed Project	16
8.1 Construction Phase.....	16
8.2 Operational Phase	17
9. Summary and Conclusion	17
10. References.....	20
ANNEXURE ONE: MINERALS LOCALITY MAP.....	21





1. Purpose

The purpose of this report is to document socio-economic issues at the conceptual level that should be considered as part of the environmental impact assessment of the proposed Rhodes 2 Solar Park, under the jurisdiction of Joe Morolong Local Municipality in John Taolo Gaetsewe District Municipality and Northern Cape Province.

This report is one of several documents that consider the environmental impact of the proposed project from different perspectives, with specific consideration of the IPP procurement programme requests. Relevant development planning documents were used and reference was made to recent environmental impact assessments of similar projects at other locations in the country. Experts working on other elements of the Rhodes 2 Solar Park Environmental Impact Assessments were also consulted.

2. Project Description

A photovoltaic solar plant with a generation capacity up to 120 MW are being proposed by Miko Energy (Pty) Ltd. The PV power plant will have a footprint (fenced area) up to 250 ha. The site will be used for solar plant activities, comprising photovoltaic panels and buildings required for office and storage space.

The aerial photograph below illustrates the proposed location relative to Hotazel, which is the nearest town. It is approximately 10 km from the project site. The larger town of Kuruman, with a population of approximately 13,000 people, is 70 km from the proposed project site. It is located in a neighbouring municipality.

The solar plant will comprise several long rows of photovoltaic panels that convert sunlight into electricity. There are three alternatives to connect with the primary grid. Alternative 1 is a connection to the Eskom "Hotazel - Heuningvlei" 132 kV power line, running through the project site. The Eskom 132 kV power line will loop in and out of the 132 kV busbar of the new on-site substation via two new sections of 132 kV line approximately 100 m long.

The second alternative is a connection to the Eskom Hotazel substation, 7 km south of the project site, via a new 132 kV power line approximately 7.1 km long and running parallel to the existing Eskom "Hotazel - Heuningvlei" 132 kV power line. Farm portions that will be crossed by the power line are the Remainder Portion and Portion 2 of the Farm Est 270, Remainder Portion of the Farm Kipling 271, and Remainder Portion of the Farm Hotazel 280.





Figure 1: Proposed Location of the Rhodes 1 & Rhodes 2 Solar Park

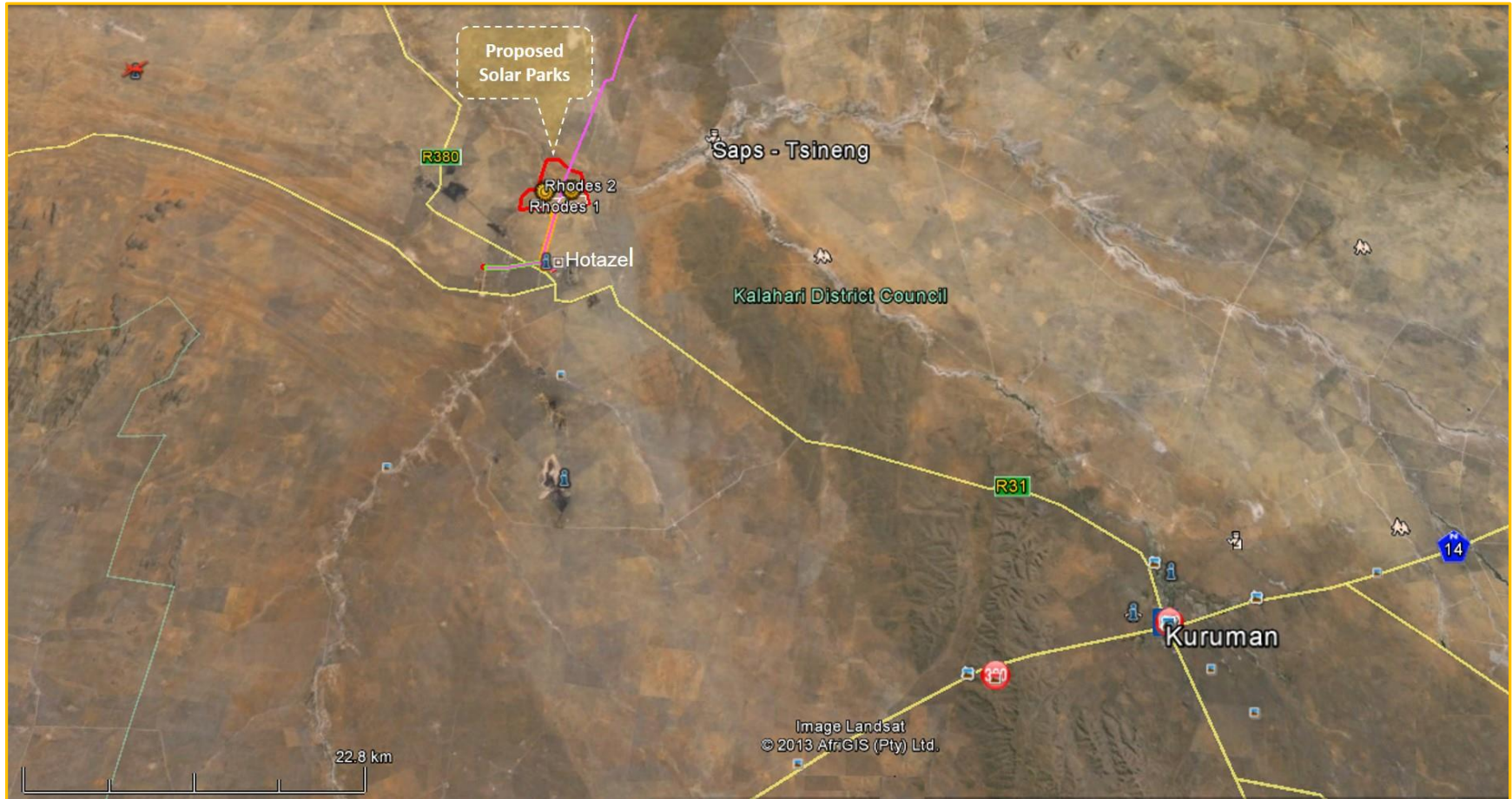
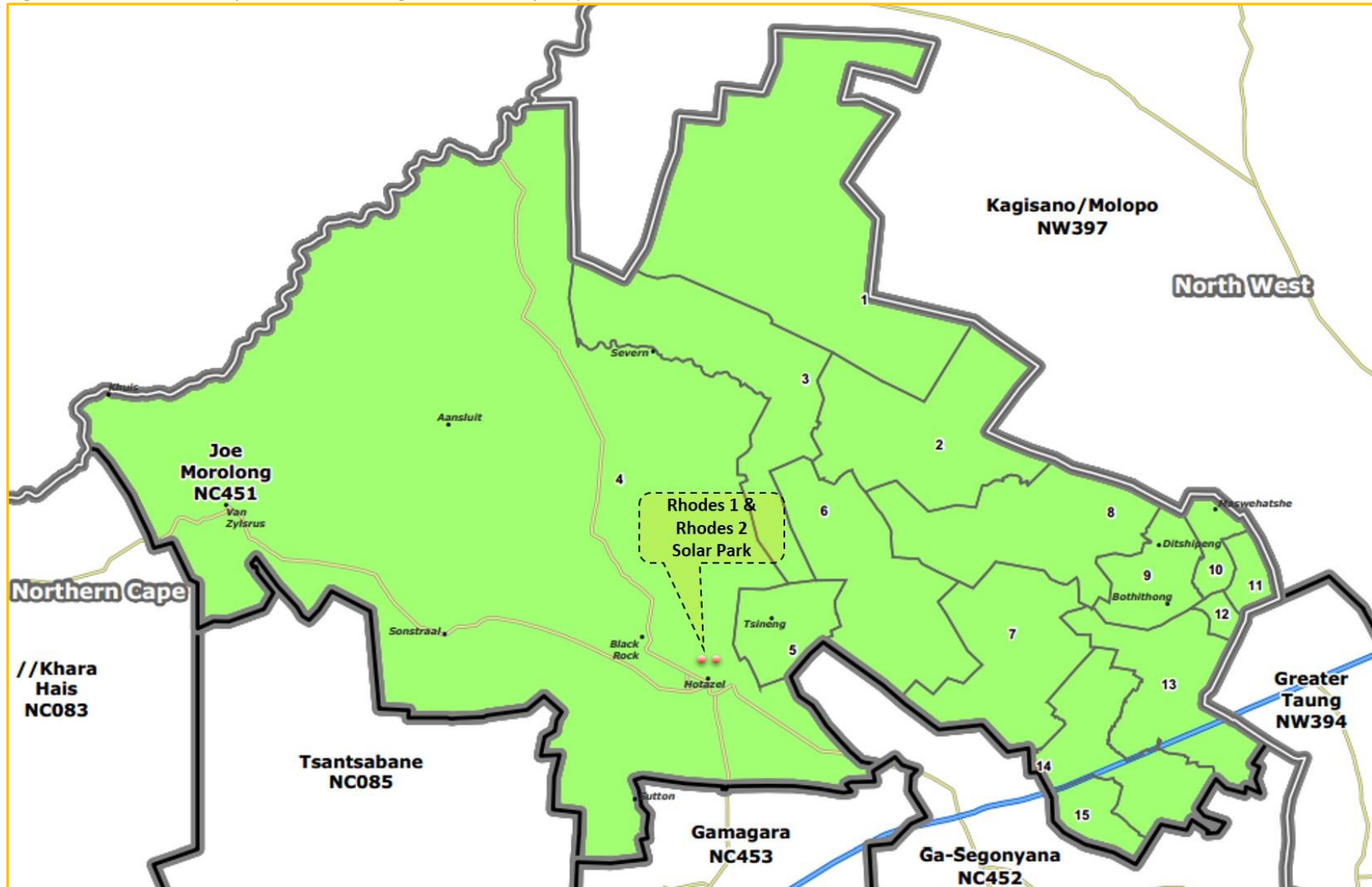




Figure 2: Contextual Map of Joe Morolong Local Municipality





The third alternative is a connection to the new Eskom Umtu substation, 8 km south-west of the project site, via a new 132 kV power line approximately 10.1 km long and running parallel to the existing Eskom “Hotazel - Heuningvlei” 132 kV power line (for 5.6 km) and to the Eskom “Hotazel - Umptu” 132 kV power line (for 4.5 km). Farm portions that will be crossed by the power line are the Remainder Portion and Portion 2 of the Farm Est 270, Remainder Portion of the Farm Kipling 271, Remainder Portion of the Farm Hotazel 280; and Farm Umtu 281.

After approval, the project will take approximately 15 months to be built and will have a lifetime of 25-30 years.

Considerable attention has been given to socio-economic development and local economic growth. This includes emphasis on job creation, local community participation, promoting local manufacturing; as well as support for education and the development of skills.

The project will employ approximately 100 people during the construction period, which means 200 people for most of the time on both projects, in the case they are built at the same time. This number can increase up to 150 for short spaces of time during peak periods. During the operational phase, the power plant will require a permanent staff of approximately 35/40 people with an employment profile as reflected in the table below.

Table 1: Anticipated Employment Profile for the Two Solar Parks

Category	Number	Monthly Salary R'	Total Monthly Salary R'	Recruitment
Plant Manager	2	50,000	100,000	National
Plant Operators	8	35,000	280,000	Provincial
Administrator	2	20,000	40,000	Local
Security	42	7,000	294,000	Local
Maintenance	22	5,000	110,000	Local
Total	76	117,000	824,000	

Staff remuneration, maintenance equipment and consumables are likely to be the primary operational expenses. Most of the expenditure on operational items is expected to flow to Kuruman (population of 13,000 people in 2011) and Kimberley, which is the capital city of the Northern Cape Province. It is likely that the bulk of the disposable income of employees will be spent in these places as well, although a portion of this may flow to Hotazel in the form of expenditure by employees. The population of Hotazel was less than 1,800 people according to the Census of 2011.

Rates and taxes will accrue to the local municipality (Joe Morolong) and company tax will accrue to the national government.





3. Socio-Economic Context

3.1 Population

Joe Morolong Local Municipality is a relatively large municipality in terms of land size (5,800 km²), but it is very sparsely populated. The municipal population was 89,487 people according to the official census of 2011, with a high incidence (53.9%) of females. This is normally an indication of out-migration, mostly in search of job opportunities. Females comprise 51.3% of the national population and 50.7% of the Northern Cape provincial population. More than 96% of the population is Black.

Table 2: Population by Gender in Joe Morolong LM, 2011

Gender	2011	%
Male	41 236	46.1
Female	48 252	53.9
Total	89 487	100

Source: Statistics SA Census, 2011

Available statistics do not lend themselves to a normal analysis of population growth rates because of recent boundary changes in the local municipality. However, the 2012 IDP indicates that the municipal population could have decreased by approximately 1,000 people per year for the last ten years.

3.2 Housing

Table 3: Households by type of main dwelling, Joe Morolong LM

Type of main dwelling	2011	%
House or brick/concrete block structure on a separate stand or yard or on a farm	16 804	71.0
Traditional dwelling/hut/structure made of traditional materials	5 295	22.4
Flat or apartment in a block of flats	134	0.6
Cluster house in complex	105	0.4
Townhouse (semi-detached house in a complex)	4	0.0
Semi-detached house	7	0.0
House/flat/room in backyard	88	0.4
Informal dwelling (shack; in backyard)	551	2.3
Informal dwelling (shack; not in backyard; e.g. in an informal/squatter settlement or on a farm)	442	1.9
Room/flatlet on a property or larger dwelling/servants quarters/granny flat	34	0.1
Caravan/tent	40	0.2
Other	178	0.8
Total	23 683	100

Source: Statistics SA; Census 2011

Most families (71%) live in brick houses on a separate stand, but this proportion is lower than the provincial average of 76.2%. The remaining households live mostly in traditional dwellings or huts, which reflects a lower socio-economic status than the average for Northern Cape Province.





3.4 Economic Production Structure

Table 4: Production Structure of the Joe Morolong Local Economy (R'm at Current prices)

Sector	2009	2010	2011	2011%
Agriculture, forestry and fishing	23	21	22	2.4
Mining and quarrying	258	276	315	34.7
Manufacturing	37	35	37	4.1
Electricity, gas and water	48	55	60	6.6
Construction	8	10	12	1.3
Wholesale and retail trade, catering and accommodation	114	128	148	16.4
Transport, storage and communication	45	46	49	5.5
Finance, insurance, real estate and business services	58	66	70	7.7
Community, social and personal services	83	106	115	12.6
General government	72	77	79	8.7
Total	745	819	907	100

Source: Quantec, 2014

Joe Morolong Local Municipality has a very small local economy with a net value of production of R907 million at current 2011 prices. This represented less than 1.4% of provincial¹ economic output. Incorporation of Hotazel and Vanzylsrus into this municipal area in May 2011 will have resulted in a moderate increase in the value of production.

Mining is by far the dominant sector in the local economy. Most of the direct mining value is derived from manganese, with six operating mines in close proximity on the manganese belt between Hotazel and Black Rock. The concentration of mining activity at Hotazel is evident from the mineral locality map that is attached as Annexure One.

Trading is important, but will be limited to local demand due to the isolated geography of the local municipality. Agriculture, including game farming, is widely practiced, but the value of production is relatively low in comparison to the value of mining production. General government is small in comparison to this function in other municipalities. It is a reflection of the relatively small population and the low level of government services. This sector contributed 12.8% to Northern Cape provincial GDP in 2011.

It is evident from the IDP document (2012-2016) that the local economy is unable to meet the aspirations of the local population for employment and sustainable livelihoods.

¹ R65.8 billion at current prices in 2011





3.5 Employment Profile

The strict unemployment rate in Joe Morolong Local Municipality was 39% according to the 2011 Census. Total employment amounted to 7,806 persons and 4,911 persons were recorded as unemployed. This compares with a strict unemployment rate of for the entire Northern Cape Province according to the Census.

When the 2,041 discouraged work seekers are added, the unemployment rate rises to 58.7%, which is a critical level. This is the expanded definition of unemployment, but a more accurate reflection of the local unemployment situation. High unemployment is due to the fact that the local resource base is unable to create sufficient jobs for the labour force and because many unemployed persons do not have the skills required by the labour market.

Table 5: Employment Indicators in Joe Morolong LM, 2011

Official employment status	2011
Employed	7 806
Unemployed	4 911
Strict Labour Force	12 717
Strict Unemployment Rate %	39
Discouraged work-seekers	6 199
Expanded Labour Force	18 916
Expanded Unemployment Rate %	58.7

Source: Statistics SA; Census 2011

Almost 23% of people older than 20 years in this Municipality have had no schooling. Less than 14% have completed school and only 4% have a post school qualification, mostly diplomas. This reflects a much lower skills profile than for the rest of the Province and indicates the urgent need for elementary job creation.





3.6 Household Income Distribution

There has been some progression out of the lowest income categories during the past ten years, mainly due to government social grants. However, 38% of all households still live on less than R800 per month.

Table 6: Household Income Distribution, Joe Morolong LM, 2011

Income group	2011	%
No income	4 323	18.3
R 1 - R 4800	1 605	6.8
R 4801 - R 9600	3 075	13.0
R 9601 - R 19 600	5 656	23.9
R 19 601 - R 38 200	4 868	20.6
R 38 201 - R 76 400	1 857	7.8
R 76 401 - R 153 800	1 153	4.9
R 153 801 - R 307 600	747	3.2
R 307 601 - R 614 400	291	1.2
R 614 001 - R 1 228 800	66	0.3
R 1 228 801 - R 2 457 600	32	0.1
R 2 457 601 or more	19	0.1
Total	23 683	100

Source: Stats SA, Census 2011

The no income group comprises 18.3% of all households in the Municipality, compared to the provincial average of 12% for Northern Cape. This further supports the contention of lower living standards in Joe Morolong Municipality compared to the rest of the Northern Cape Province. Only 9.8% of all households earn more than R6,400 per month.

3.7 Household Sources of Energy

Electricity predominates as a source of energy for cooking purposes (53% of households), although wood is still extensively used (more than 39% of households). However, for heating purposes, wood is still the primary energy source. This correlates with lower comparative living standards.

Table 7: Household Energy Sources for Cooking and Heating, Joe Morolong LM, 2011

Source	Cooking	%	Source	Heating	%
Electricity	12 606	53.2	Electricity	8 473	35.8
Gas	673	2.8	Gas	212	0.9
Paraffin	610	2.6	Paraffin	203	0.9
Wood	9 291	39.2	Wood	12 107	51.1
Coal	20	0.1	Coal	70	0.3
Animal dung	307	1.3	Animal dung	498	2.1
Solar	40	0.2	Solar	29	0.1
Other	8	0.0	Other	2	0.0
None	128	0.5	None	2 089	8.8
Total	23 683	100	Total	23 683	100

Source: Statistics SA, Census 2011





4. Development Planning Context

The proposed project is consistent with national, provincial and municipal development policy as reflected in the extracts of policy documents that are provided below. Northern Cape Province is explicit about its proposed intervention to promote the use of alternative energy in the Northern Cape through the establishment of a Solar Energy Hub. The important issue emerging from the local Integrated Development Plan is the imperative of local job creation.

4.1 National Planning Context²

Historically, South Africa has relied heavily on non-renewable fossil fuels (primarily coal) for energy generation purposes. This reliance remains a key feature of the current energy mix with just over 90% of national electricity generation needs being met from non-renewable sources. Given South Africa's abundance of coal reserves relative to most other countries, it is not particularly surprising that the energy mix favours coal and it is to be expected that coal will remain dominant. However, relatively recent imperatives with regard to global warming, other environmental impacts associated with 'dirty' fuels; and energy security, have elevated renewable energy solutions to a far more prominent position both within energy policy and in the economic development arena in general. This has happened at a rapid pace particularly in response to the threats associated with global warming. Most governments in the global community now recognise that the roll-out of renewable energy at an unprecedented scale will be needed among a number of other actions to curb global warming. Targets for the promotion of renewable energy now exist in more than 58 countries, of which 13 are developing countries. In addition, the renewable energy industry is now a major economic player, with the industry employing over 2.5 million people worldwide. Renewable energy companies have grown significantly in size in recent years, with the market capitalisation of publicly traded renewables companies doubling from \$50 billion to \$100 billion in just two years from 2005 to 2007 (NERSA, 2009).

There may still be disagreement on the equitable sharing of responsibilities for curbing global warming among nations. However, proposals tabled at the 2009 UN climate change conference in Copenhagen by a group consisting of the United States, China, Brazil, South Africa and India indicate that key developing nations including South Africa recognise that they will not be able to avoid significant responsibilities. When one looks at the developing nations as a wider group, South Africa stands out as a country that is going to have to introduce particularly significant measures as it is characterised by high levels of greenhouse Gas (GHG) emissions relative to other countries at similar stages of development. Du Plooy (2009) points out the following in this regard:

- South African CO₂ production doubled between 1980 and 2004 and is higher than that of Brazil, which has more than four times the population, and only slightly lower than the UK.
- South Africa's economy is 5-10 times less carbon efficient (or its carbon intensity is 5-10 times higher) than the US, UK or Japan. Regarding total emissions, South Africa is not nearly as significant a contributor to climate change as China.

² This section has been extracted from a specialist economic assessment that was conducted by Dr Hugo Van Zyl (Independent Economic Researchers) for a similar photo-voltaic solar panel project in October 2010





However, South Africa is a far greater contributor to the world's CO₂ emissions than to the world's GDP and on this score just about exactly equalled China in 2003 at 2.8 tonnes of CO₂ for every \$1000 of GDP generated, compared to the US at 0.55.

- South African emissions per capita are still half that of the US and slightly lower than Russia's, but three times higher than China's and nine times higher than India's.

South African energy policy has started to change from one that did very little to encourage renewable energy to one that actively encourages it. The Government's 2003 White Paper on Renewable Energy has set a target of 4% of electricity demand (equivalent to 10,000 Giga-watt hours (GWh)) from renewable energy sources in 2013 (DME, 2003)³. This target has been further refined to differentiate among different forms of renewable energy.

The first Integrated Resource Plan (IRP1) was released in late 2009. Subsequently, the the Department of Energy of South Africa (DoE) decided to undertake a detailed process to determine South Africa's 20-year electricity plan, called **Integrated Resources Plan 2010-2030 (IRP 2010)**. The IRP1 and the IRP 2010 outline the Government's vision, policy and strategy for the use of energy resources. **It specifically highlights the necessity of commissioning 1200 MW with solar PV technology by the end of 2015.**

In order to achieve this goal, the DoE recently announced a **Renewable Energy IPP (Independent Power Producers) Procurement Programme (REIPPPP)**.

The IPP Procurement Programme, issued on 3rd August 2011, envisages the commissioning of **3725 MW** of renewable projects (**1450 MW with Solar photovoltaic technology**) **capable of beginning commercial operation before the end of 2016.**

The specific objectives and key principles of the IPP Procurement Programme are to achieve positive socio-economic outcomes through:

- 1. Job creation, to counteract the national unemployment crisis;**
- 2. Increased local content *inter alia* by way of local manufacturing;**
- 3. Fostering rural development and involving communities;**
- 4. Education and the development of skills;**
- 5. Enterprise development through the promotion of emerging businesses;**
- 6. Socio-economic development; and**
- 7. Participation by historically disadvantaged citizens and marginalized regions in the mainstream of the industrial economy.**

Solar energy does show substantial promise despite a lack of facilities currently in operation and South Africa is blessed with large areas where solar radiation levels are high and well distributed (Holm et al., 2008). In addition, the solar sector seems to show evidence of further technological advances. On a global scale, growth in the use of solar PV robust-installed capacity has quadrupled from 2 GW in 2004 to roughly 8 GW at the end of 2007 (NERSA, 2009).

³ To put this into context, Europe as a whole has renewable energy target of 20% by 2020.





The updated Integrated Resource Plan for Electricity (Nov 2013) identifies suitable PV generation areas in the Northern Cape and assumes that 1,350 MW of generation capacity will be available from this source by 2020.

In summary, the policy case for the urgent roll-out of renewable energy in South Africa has been made at a national government level using compelling arguments that are in line with international policy trends. Targets that include solar energy have been set (which may be revised) and significant financial and other incentives have been offered to renewable energy developers in order to encourage projects and move decisively towards full-cost pricing of energy (i.e. prices which reflect global warming and other environmental impacts).

4.2 Northern Cape Provincial Planning Context⁴

The growth and development vision of the Northern Cape Province is to build a prosperous, sustainable and growing provincial economy to eradicate poverty and improve social development for a caring society.

The top provincial priority is to ensure the availability of affordable energy. This is followed by local economic and sustainable development and then by the development of a knowledge-based society.

The provincial Growth and Development Strategy states that the development of large-scale renewable energy supply schemes is strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports, while minimizing environmental impacts. The major energy challenges are securing energy supply to meet growing demand, providing everybody with access to energy services and tackling the causes and impacts of climate change. Renewable energy, which is produced from sustainable natural sources, will contribute to sustainable development. As most of the sources are indigenous and naturally available, energy supply is more secure and is not subject to disruption by international crises or limited supplies.

The strategic intervention is to promote the use of alternative energy in the Northern Cape through the establishment of a Solar Energy Hub. Green industry job creation will specifically be targeted, with particular reference to jobs in the solar industry, such as the manufacturing of solar water heaters and the manufacturing of PV plates.

Under the auspices of the Provincial Growth and Development Strategy, district and local municipalities are obliged to facilitate the implementation of the strategic intervention to establish a solar energy hub.

⁴ Northern Cape Provincial Growth and Development Strategy, 2011





4.3 Joe Morolong Municipal Planning Context

One important element of the Integrated Development Plan⁵ of Joe Morolong Local Municipality is the desperate need to promote social and economic development. The Municipality is among the worst in the Northern Cape Province in terms of unemployment, service delivery levels, household income distribution and labour force skills. The LED strategy is to encourage the establishment of income-generating projects and to provide business development support to emerging entrepreneurs. Current projects are mostly small and community-based, such as food gardens and community poultry projects. The Spatial Development Framework of the Municipality (September 2012: page 158) stresses that the development potential is low and that replacement economic activities need to be found before the manganese mineral resource is depleted.

Solar parks are not specifically mentioned in the IDP document, but the Rhodes 2 project proposal is consistent with the national and provincial development policy context, as well as with the broad outline of municipal development policy.

5. Economic Assessment

The national and local economies will benefit from civil contractor work, labour and building materials that will be required on site if the proposed project goes ahead. On the whole, a share of approximately 40% of total CAPEX (investment costs) will be sourced within the country. This share is likely to increase once there is a specific and competitive industry in the Republic of South Africa and in the Northern Cape that is able to supply PV modules and other technological components.

Raising of the capital to finance the installation of solar electricity generation capacity by Miko Energy (Pty) Ltd represents a significant benefit for the South African economy, especially in the event that a portion of the funds can be raised from outside the country.

After approval, the project will take approximately 15 months to be built and will have a lifetime of 25-30 years. For the project, approximately 100 people are expected to be employed during the construction period (200 people, for the two projects, in the event that they are built at the same time). This number can increase to 150 per project for short spaces of time during peak periods. The number can be even higher (250-300) in case the construction works have to be completed within 6 months.

During the operational phase, the power plant will require a permanent staff of approximately 35/40 people (or 70/80 people for the two projects). That impact will be very beneficial for Joe Morolong LM, especially in view of the high current unemployment rate and the need to development an economic alternative for the mining sector.

Approximately 50% of the operational costs will have a local economic return (mostly for maintenance works by local sub-contractors), which will sustain the positive development impact of the proposed project during the operational phase over a period of 25 to 30 years.

⁵ Dikgatlong IDP; 2012-13





The most important economic benefit is likely to be the experience that will be gained with regard to solar electricity generation in Northern Cape Province and in South Africa, considering that this forms part of a national strategic plan, but from an emerging base. This experience will be essential for the roll-out of the strategy, for efficiency improvements and for the establishment of a local manufacturing supply chain for equipment requirements. Establishment of a solar energy hub or cluster is a strategic objective that is contained in the Northern Cape Provincial Growth and Development Strategy.

The project will also make a contribution towards reducing the carbon emissions per unit of electricity generated in South Africa, albeit very small to start with.

The subsidy that will be paid by the Government in the form of a tariff for the solar-generated electricity that will be supplied into the national grid represents an initial cost associated with the project. Under the next bid submission (Window 3) of the IPP Procurement Programme - planned by the Department of Energy on the 19 August 2013 - the tariff amounts will not exceed the cap of **1400 R/MWh** (1.40 R/kWh) in the case of photovoltaic projects, which is almost equivalent to the current domestic retail price⁶ of electricity. The subsidy is therefore likely to be less than the local retail price of electricity by the time that the proposed project becomes operational.

Furthermore, this cost should not be directly associated with the Rhodes 1 & Rhodes 2 Solar Park proposal, because it is made available by the National Treasury on a quota system for all approved renewable energy generation projects.

The proposal is unlikely to have any negative implications for the agricultural sector in Joe Morolong Local Municipality because of the small size and the low grazing potential of the site. It is classified as non-arable and the carrying capacity requires more than 25 hectares for one large stock unit. It means that the grazing area intended for use by the proposed solar project cannot sustain more than 14 large livestock units.

The proposed project is also unlikely to impact negatively on tourism, because it is located within a larger area that has been disturbed by mining and with no tourism projects in the vicinity. Previous asbestos mining has caused contamination, which severely constrains alternative land uses in the area.

A specific risk to be avoided is the negative impact than recruitment from outside the municipal area for construction and project operations can have on social relationships within the Municipality. The approach should be to maximise local recruitment, especially for unskilled and semi-skilled jobs.

In summary, the proposed project will enable the national and provincial governments to launch the implementation of their strategic objectives for renewable energy. The tariff amount will not exceed the cap of 1400 R/MWh (1.40 R/kWh) in the case of photovoltaic projects, which is almost equivalent to the current domestic retail price of electricity.

⁶ R1.14c/kWh in Hotazel from July 2013 and likely to increase to an estimated R1.28c/kWh from 1 July 2014





6. Additional Social Benefit for the Municipality

Miko Energy (Pty) Ltd both intend to make a corporate social investment in the proposed project area in addition to the investment in the solar plant, according to the IPP Procurement Programme requirements. Joe Morolong Local Municipality and the local community will be consulted about the configuration of the corporate social investment initiative. Furthermore, Miko Energy (Pty) Ltd will identify a local community for the purpose of entering into a partnership for the Project.

7. Other Considerations

There are several reasons why the site that has been identified for the proposed project is well suited for a development of this nature.

Firstly, the available radiation allows electric energy production of approximately 2,100 full net equivalent hours per year. This is internationally very competitive, due to the latitude and the climatic conditions that are found in Northern Cape Province.

Secondly, the site falls in a low potential area for agriculture. It is currently used for low intensity cattle farming, but in an area that is dominated by manganese mining. The size of the site is very small relative to the extent of farming land in Joe Morolong Local Municipality. Actual carrying capacity is more than 25 hectares per livestock unit, which means that the proposed site of 340 hectares can only sustain only 14 large livestock units. Therefore the project is unlikely to contribute significantly to any negative impacts on the agricultural potential of Joe Morolong Local Municipality. The proposed site is also unlikely to have any negative impact on the tourism industry of the local municipality because it is located in a larger area that is disturbed by mining. There is significant contamination from asbestos mining that was previously undertaken in the vicinity.

Thirdly, the site is in proximity to Kuruman and Kimberley, from where most of the equipment and consumable requirements for the proposed project can be obtained. The close proximity to Hotazel contributes to the range of integrated human settlement needs of prospective employees that can be provided, such as housing, shopping, education, health and recreation. The Spatial Development Plan of the Municipality (2012) indicates that a large number of vacant residential stands are available in Hotazel.

Finally, the site will allow a convenient uplink from the solar park to an Eskom transmission line that crosses the property.





Figure 3: Perspective of the Proposed Rhodes 1 and 2 Solar Energy Project Sites

8. Potential Impacts Associated With the Proposed Project

8.1 Construction Phase

The following socio-economic impacts may arise during the construction phase of the proposed project:

- The national and local economies will benefit from civil contractor work, labour and building materials that will be required on site. On the whole, a share of approximately 40% of total CAPEX (investment costs) will be sourced from within the country. This share is likely to increase once there will be an established and competitive industry in South Africa and in the Northern Cape Province able to supply PV modules and other technological components.
- Socio-economic benefits for residents due to job creation (especially in the lower skilled levels).
- Training and capacity building with enhancement of the skills of individual workers.
- Local procurement for general materials, goods and services (catering and security).
- Disruptions to social relationships within the Municipality will be avoided by way of a local recruitment policy.





8.2 Operational Phase

During the operational phase the following impacts and issues are anticipated:

- Contribution to the generation of “green energy” which could reduce South Africa’s dependency on coal generated energy and the impact of such energy sources on the bio-physical environment;
- Positive marketing of the municipality, district and province as a development hub or cluster for renewable energy sources;
- Employment opportunities with benefit for unemployed individuals within local communities, also in compliance with the Government’s new “green economy” growth path;
- Skills development and capacity building during the life of the facility;
- Local procurement for general materials, goods and services (catering and security) and for maintenance work by local sub-contractors;
- The presence of permanent security personnel may be beneficial to the overall safety and security of the area.

9. Summary and Conclusion

The purpose of this report was to document socio-economic issues at the conceptual level that should be considered as part of the environmental impact assessment of the proposed photo-voltaic solar park, located in Northern Cape Province. This report is one of several documents that consider the environmental impact of the proposed project from different perspectives.

Relevant development planning documents were used and reference was made to recent environmental impact assessments of similar projects at other locations in the country. Experts working on other elements of the Miko Energy (Pty) Ltd Solar Park Environmental Impact Assessment were also consulted.

The photovoltaic solar plant with a generation capacity up to 120 MW is being proposed by Miko Energy (Pty) Ltd (Rhodes 2). The PV power plant will have a footprint (fenced area) up to 250 ha. The project site will be used for solar plant activities, comprising photovoltaic panels and buildings required for office and storage space.

The plant will comprise of several long rows of photovoltaic panels that convert sunlight into electricity, which will deliver energy into either the Eskom “Hotazel - Heuningvlei” 132 kV power line, Eskom Hotazel substation located 7 km south of the project site; or the new Eskom Umtu substation, 8 km south-west of the project site. The project will take approximately 15 months to be built and will have a lifetime of 25-30 years. For the project, approximately 100 people are expected to be employed during the construction period (200 people on the whole, for the two projects, in case they are built at the same time), although this number can increase to 150 per project for short spaces of time during peak periods.





The national and local economies will benefit from civil contractor work, labour and building materials, which will be required on site. On the whole, a share of approximately 40% of total CAPEX (investment costs) will be sourced from within the country. This share is likely to increase once there is an established and competitive industry in South Africa and in the Northern Cape that is able to supply PV modules and other technological components.

Raising of the capital to finance the installation of solar electricity generation capacity by both Miko Energy (Pty) Ltd represents a significant benefit for the South African economy.

Approximately 50% of the operational costs will have a local economic return (mostly for staff remuneration and maintenance work by local sub-contractors), creating a positive economic impact for 25-30 years.

During operational phase, the power plant will require a permanent staff approximately 35/40 people (70/80 people for both projects). That impact will be very beneficial for Joe Morolong LM, especially in view of the high current unemployment rate and the need to development an economic alternative for the mining sector.

Staff remuneration, maintenance equipment and consumables are likely to be the primary operational expenses. Rates and taxes will accrue to the local municipality and company tax will accrue to the national government.

Joe Morolong Local Municipality had a population of 89,487 people according to the official census of 2011. The local municipal economy is very small, with a net value of production of R907 million at current 2011 prices. Mining is the main driver of the local economy, followed by trading. The Municipal (strict) unemployment rate at 39% (according to the Census of 2011) has reached critical levels.

The proposed project is consistent with national, provincial, district and local development policy as reflected in the extracts of policy documents that are provided in this report. It provides an opportunity to launch the implementation of the national renewable energy generation programme, with particular reference to solar energy.

The most important economic benefit is likely to be the experience that will be gained with regard to solar electricity generation in Northern Cape Province and in South Africa, considering that this forms part of a national strategic plan, but from an emerging base. This experience will be essential for the roll-out of the strategy, for efficiency improvements and for the establishment of a local manufacturing supply chain for equipment requirements. The project will also make a contribution towards reducing the carbon emissions per unit of electricity generated in South Africa, albeit very small to start with.





According to the IPP Procurement Programme rules, Miko Energy (Pty) Ltd will meet the socio economic requirements through:

1. job creation;
2. local content, increasing local manufacturing;
3. helping rural development and involving communities;
4. education and the development of skills for local people;
5. enterprise development through the promotion of and packages for new entrants; and
6. socio-economic development.

The following socio-economic impacts may arise during the construction phase of the proposed project:

- The national and local economies will benefit from civil contractor work, labour and building materials that will be required on site. On the whole, a share of approximately 40% of total CAPEX (investment costs) will be sourced within the country. This share is likely to increase once there will be a specific and competitive industry in the Republic of South Africa able to supply PV modules and other technological components.
- Socio-economic benefits for local population due to job creation (especially in the lower skilled levels).
- Association of employment to training and capacity building with enhancement of the skill of individual workers.
- Local procurement for general materials, goods and services (catering and security).

During the operational phase the following impacts and issues have been anticipated:

- Contribution to the generation of “green energy” which could reduce South Africa’s dependency on coal generated energy and the impact of such energy sources on the bio-physical environment;
- Positive marketing of the Joe Morolong Local Municipality as a development area for renewable energy sources;
- Employment opportunities with benefit for unemployed individuals within local communities, also in compliance with the Government’s new “green economy” growth path;
- Skills development and capacity building during the life of the facility;
- Local procurement for general materials, goods and services (catering and security) and for maintenance works by local sub-contractors;;
- The presence of permanent security personnel may be beneficial to the overall safety and security situation in the area.

Furthermore, Miko Energy (Pty) Ltd intend to make a corporate social investment in the proposed project area in addition to the investment in the solar plant, according to the IPP Procurement Programme rules. Joe Morolong Local Municipality will be consulted about the configuration of the corporate social investment initiative. In particular, Miko Energy (Pty) Ltd will identify a Local Community for the purpose of entering into a partnership for the Project.

In summary, the site that has been selected is very well suited for the proposed project, which will enable the national and provincial governments to launch the implementation of their strategic objectives for renewable energy and the development of a hub for this purpose in the Northern Cape.





10. References

Ages; Draft Scoping Report for Rhodes 1 and 2 Solar Plants, March 2014

Department of Mineral Resources; Draft Integrated Resource Plan Rev2, 2010

Joe Morolong Local Municipality Integrated Development Plan, 2012/13

Joe Morolong Local Municipality Spatial Development Plan, 2012

Northern Cape Provincial Growth and Development Strategy, 2011

Quantec Regional Economic Indicators

Statistics South Africa, Census 2001 and 2011





ANNEXURE ONE: MINERALS LOCALITY MAP

