SOCIAL IMPACT ASSESSMENT

GRID CONNECTION-100 MW RONDAVEL PV SOLAR ENERGY FACILITY

FREE STATE PROVINCE

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Prepared

By

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

South Africa Mainstream Renewable Power Developments (Pty) Ltd appointed Savannah Environmental (Pty) Ltd to manage the Environmental Impact Assessment (EIA) for the construction and operation of the grid connection infrastructure for the proposed 100MW Rondawel Solar Energy Facility, Battery Energy Storage System (BESS) and associated infrastructure located in the Moqhaka Local Municipality (MLM), ~8km south-west of the town of Kroonstad, in the Free State Province. Three alternative 132 kV power line routes are assessed.

Tony Barbour Environmental Consulting was appointed by Savannah Environmental (Pty) Ltd to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process.

SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative Impacts.
- No-development option.

The social impacts associated with substations will be negligible. The focus of the SIA is therefore on the 132 kV power lines. The findings of the SIA also indicate that the negative social impacts associated with the construction and operation of each of the three overhead power line alternatives will be similar. The significance ratings therefore apply to all three alternatives.

POLICY AND PLANNING ISSUES

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents.

CONSTRUCTION PHASE

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase will extend over a period of approximately 3-6 months and create in the region of 20-30 employment opportunities. The total wage bill will be in the region of R 1 million (2021 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area, including Kroonstad. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in MM.

The capital expenditure associated with the construction of power line will be ~7 million (2021 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust and safety impacts of construction related activities and vehicles.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Medium (Negative)	Low (Negative)
Increased risk of grass fires	Medium (Negative)	Low (Negative)

OPERATIONAL PHASE

The benefits associated with the Rondavel SEF are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts
- Improve energy security and establishment of energy infrastructure.
- Creation of employment opportunities.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Risks posed to farming activities by maintenance workers.
- Impact on tourism.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Medium (Negative) [1]	Medium (Positive) [2]
Creation of employment and business opportunities during maintenance	Low (Positive)	Low (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Medium (Negative)	Low (Negative)
Impact on tourism	Low (Negative)	Low (Negative)

CUMULATIVE IMPACTS

There are a number of other power lines located in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does

[1] Assumes power line is not developed
[2] Assumes power line is developed

therefore exist. Based on the findings of the VIA the significance is rated as Moderate Negative. The VIA notes that this is acceptable.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

CONCLUSIONS AND RECOMMENDATIONS

The energy security benefits associated with the proposed Rondavel SEF are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV overhead power line are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. This applies to all three alternatives. However, based on the findings of the VIA, Alternative 3 is the marginally preferred alternative. This finding is supported by the SIA. The establishment of proposed 132 kV overhead power line (Alternative 3) is therefore supported by the findings of the SIA.

SOCIAL STATEMENT

Based on the findings of the SIA Alternative 3 is supported.

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CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a *curriculum vitae*;	Section 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, Annexure B
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3,
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Interviews in 2020 (Annexure A)
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4, Section 5,
(g) an identification of any areas to be avoided, including buffers;	Section 4
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Refer to Visual Impact Assessment (VIA)
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4,
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 4, Section 5
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 5.3
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A, lists key stakeholders interviewed
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A, lists key stakeholders interviewed
(q) any other information requested by the competent authority	N/A

Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.

ACRONYMS

DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DM	District Municipality
HD	Historically Disadvantaged
EIA	Environmental Impact Assessment
FDDM	Fezile Dabi District Municipality
MLM	Moqhaka Local Municipality
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
PGDS	Provincial Growth and Development Strategy
SDF	Spatial Development Framework
SEF	Solar Energy Facility
SIA	Social Impact Assessment

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd appointed Savannah Environmental (Pty) Ltd to manage the Environmental Impact Assessment (EIA) for the construction and operation of the grid connection infrastructure for the proposed 100MW Rondawel Solar Energy Facility, Battery Energy Storage System (BESS) and associated infrastructure located in the Moqhaka Local Municipality (MLM), ~8km south-west of the town of Kroonstad, in the Free State Province. Three alternative 132 kV power line routes have been identified, Alternative 1, 2 and 3 (Figure 1.1).

Tony Barbour Environmental Consulting was appointed by Savannah Environmental (Pty) Ltd to undertake a specialist Social Impact Assessment (SIA) as part of the EIA process.

1.2 APPROACH TO STUDY

The terms of reference for the SIA require:

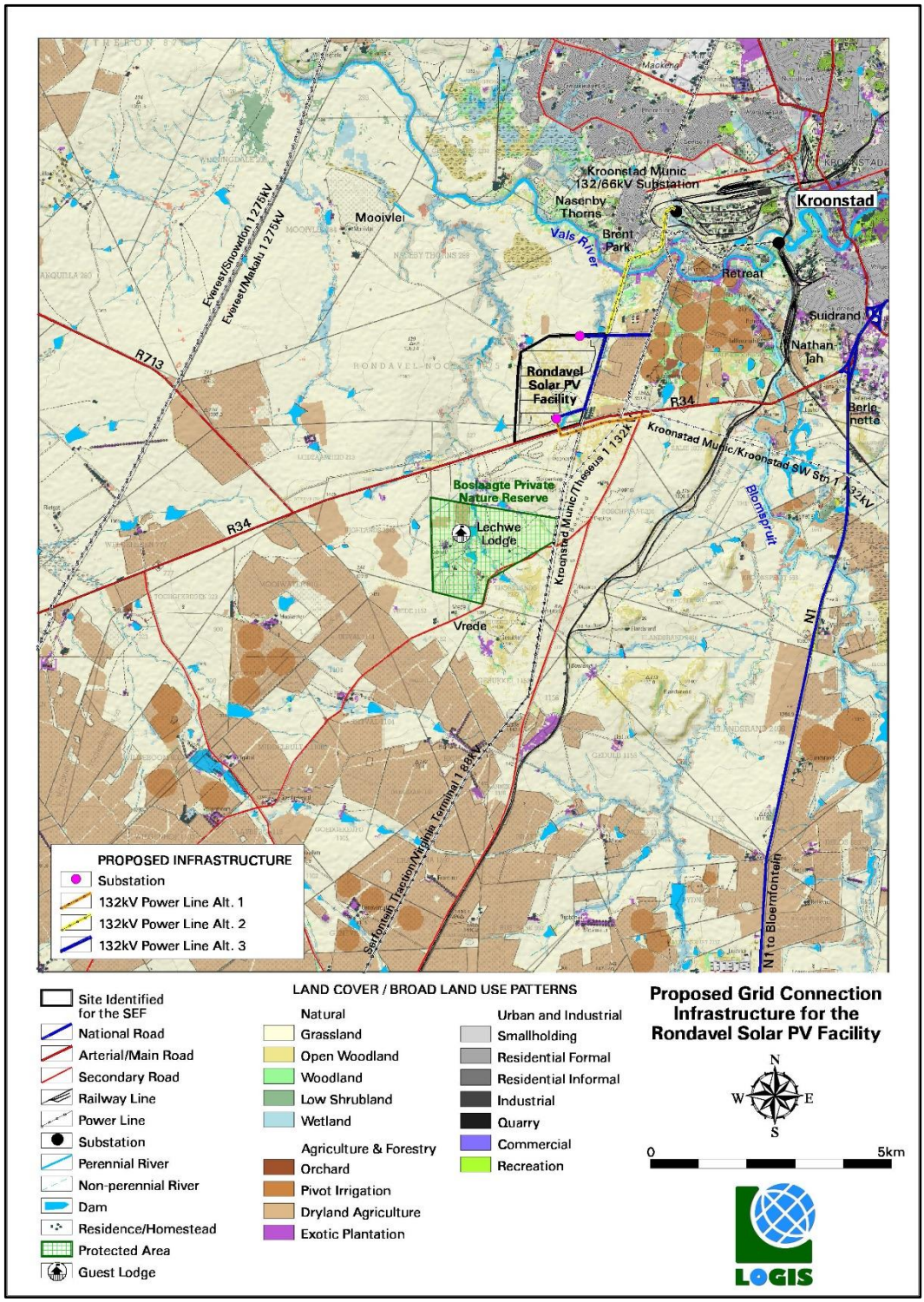
- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility.
- A description and assessment of the potential social issues associated with the proposed facility.
- Identification of enhancement and mitigation aimed at maximising opportunities and avoiding and or reducing negative impacts.

The approach to the SIA is based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (DEA&DP, 2007). The key activities in undertaken as part of the SIA process as embodied in the guidelines included:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project.
- Site visit.
- Semi-structured interviews with key stakeholders and affected individuals and communities.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Consideration of other renewable energy projects that may pose cumulative impacts; and
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

The identification of potential social issues associated with the proposed project is based on observations during the project site visit, review of relevant documentation, experience with similar projects and the general area. Annexure A contains a list of the

secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process. The SIA is informed by the Social Scoping Study undertaken by Lisa Opperman of Savannah Environmental (Pty) Ltd in 2020.



(Source: Logis, VIA, 2021)

Figure 1.1: Location of overhead 132 kV powerline alternatives

1.3 PROJECT DESCRIPTION

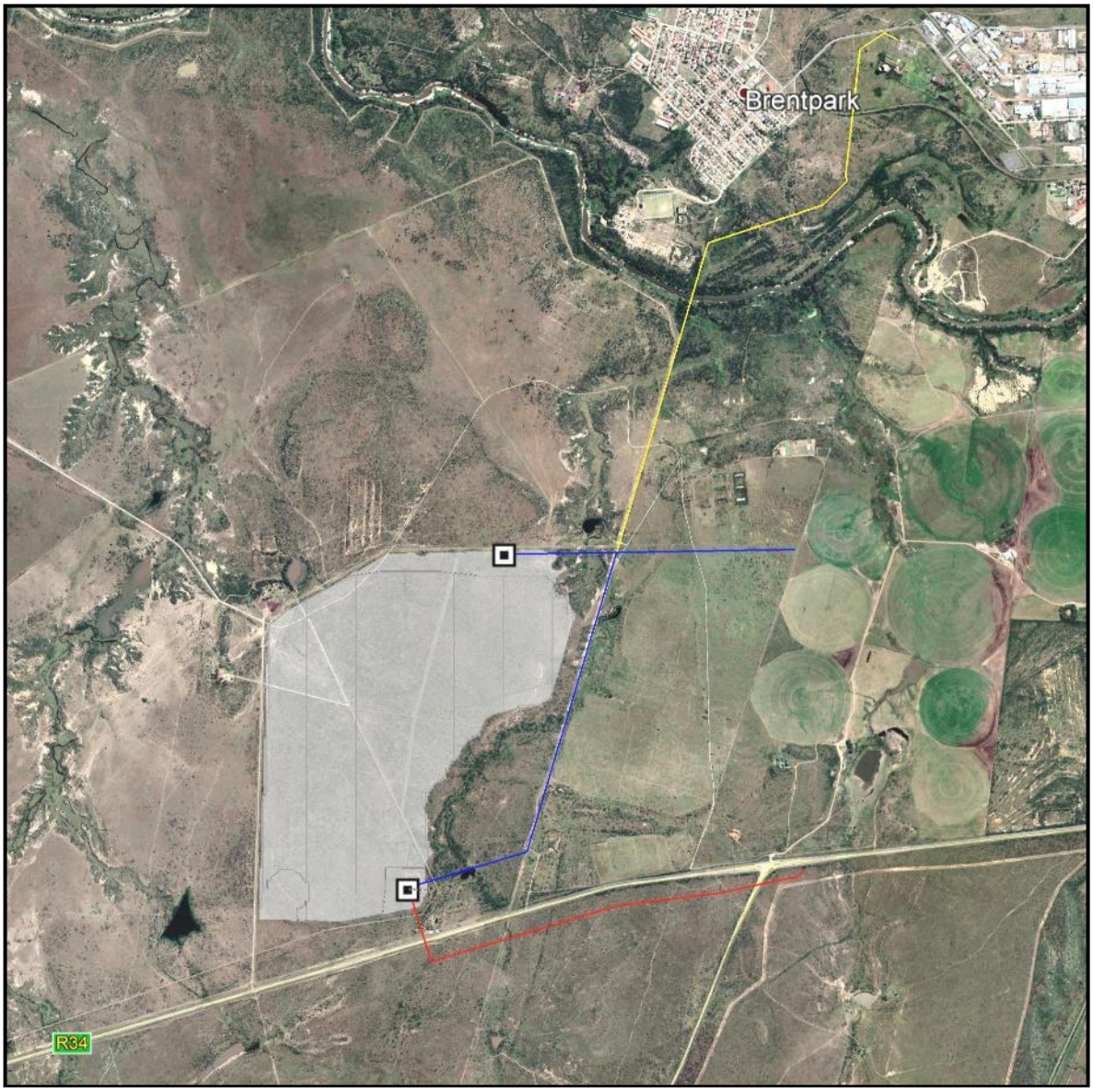
The proposed grid solutions comprise the following:

On-site substation consisting of 33/132 kV Eskom substation, associated equipment, infrastructure and buildings, access and maintenance raods, and temporary and permanent laydown areas.

Distribution lines consisting of 132kV distribution line from the onsite 33/132 kV Eskom substation via a loop in loop out into the Eskom 132 kV Kroonstad Municipal to Kroonstad 1 Switching Station (S/Stn) power line, or the 132kV Kroonstad Municipal to Theseus 1 power line, or direct connection with the destination Eskom substation (Kroonstad Municipality 132/66kV substation). Three alternatives have been identified:

- **Alternative 1:** 2.33 km power line traversing across the R34 arterial road south of the development site, continuing parallel to this road until it reaches the Kroonstad Municipal to Kroonstad Switching Station 132kV power line.
- **Alternative 2:** 6.11 km power line traversing north-wards alongside (west) the Serfontein Traction to Virginia Terminal 1 88kV power line. The power line cross over the Vals River before veering east and north into the Kroonstad Municipal 132/66kV Substation.
- **Alternative 3:** 3.68 km power line spanning from the development site to the Kroonstad Municipal to Theseus 1 132kV power line, east of the site.

Two substation options have been identified, namely Option 1 (Preferred) and Option 2. The location of the substations does not have a material bearing on the findings of the SIA.



(Source: Logis, VIA, 2021)

Figure 1.2: Route of three power line alternatives and substation locations (black dots in squares). Power line Alternative 1 (Red), Alternative 2 (Yellow), Alternative 3 (Blue).

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Baseline socio-economic data

The baseline socio-economic data contained in the SIA is based on the information contained in the Scoping Report prepared by Lisa Opperman of Savannah (December 2020). It is assumed that this information represents an accurate reflection of the local socio-economic conditions.

Technical suitability
It is assumed that the development site represents a technically suitable site for the establishment of a solar energy facility and associated grid infrastructure.

Strategic importance of the project
The strategic importance of promoting solar energy is supported by the national and provincial energy policies.

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

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

Social impacts associated with substations
The social impacts associated with substations will be negligible. The focus of the SIA is therefore on the 132 kV overhead power lines.

1.4.2 Limitations

Demographic data

Some of the provincial documents do not contain data from the 2011 Census. However, where required the relevant 2011 Census data has been provided.

1.5 SPECIALIST DETAILS

Tony Barbour, the lead author of this report is an independent specialist with 28 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 260 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Tony Barbour has also undertaken the specialist SIA studies for ~ 100 renewable energy projects, including SEFs. A Copy of Tony Barbour's CV is contained in Annexure C.

Schalk van der Merwe, the co-author of this report, has an MPhil in Environmental Management from the University of Cape Town and has worked closely with Tony Barbour on a number of SIAs over the fifteen years.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour and Schalk van der Merwe, the specialist consultants responsible for undertaking the study and preparing the SIA Report, are independent and do not have any vested or financial interests in the proposed grid infrastructure

being either approved or rejected. Annexure D contains a signed declaration of independence by the lead author, Tony Barbour.

1.7 REPORT STUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction
- Section 2: Summary of key policy and planning documents relating to solar energy and the area in question
- Section 3: Overview of the study area
- Section 4: Identification and assessment of key social issues
- Section 5: Summary of key findings and recommendations.

SECTION 2: POLICY AND PLANNING ENVIRONMENT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the "policy and planning fit[3]" of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of "planning fit" conforms to international best practice for conducting SIAs.

Section 2 provides an overview of the policy and planning environment affecting the proposed project. For the purposes of meeting the objectives of the BA the following policy and planning documents were reviewed, namely:

National
- Integrated Energy Plan for South Africa (2016).
- Integrated Resource Plan (2019).
- The National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).

Provincial and municipal
- Free State Provincial Spatial Development Framework (PSDF).
- Free State Green Economy Strategy (2014).
- Free State Investment Prospectus (2019).
- Fezile Dabi District Municipality Integrated Development Plan (2022-21).
- Moqhaka Local Municipality Integrated Development Plan (2017-2022).
- Moqhaka Local Municipality Spatial Development Framework (2019-2020).

2.2 NATIONAL DEVELOPMENT PLAN

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development.

Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental

[3] Planning fit" can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green, low-carbon economy, is one of these challenges.

In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place.

Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted.

The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.

2.3 NEW GROWTH PATH FRAMEWORK

Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: ***energy***, transport, communication, water, and housing.

2.4 NATIONAL INFRASTRUCTURE PLAN

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthen the delivery of basic services. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, ***electricity plants***, hospitals, schools and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 Strategic Integrated Projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and consist of:

- Five geographically-focussed SIPs.
- Three spatial SIPs.
- Three energy SIPs.
- Three social infrastructure SIPs.
- Two knowledge SIPs.
- One regional integration SIP.
- One water and sanitation SIP.

The three energy SIPS are SIP 8, 9 and 10.

SIP 8: Green energy in support of the South African economy

- Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the IRP 2010).

SIP 9: Electricity generation to support socio-economic development

- Accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances.

SIP 10: Electricity transmission and distribution for all

- Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.

2.5 INTEGRATED ENERGY PLAN

The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.

The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives are identified, namely:

- Objective 1: Ensure security of supply.
- Objective 2: Minimise the cost of energy.
- Objective 3: Promote the creation of jobs and localisation.
- Objective 4: Minimise negative environmental impacts from the energy sector.
- Objective 5: Promote the conservation of water.
- Objective 6: Diversify supply sources and primary sources of energy.
- Objective 7: Promote energy efficiency in the economy.
- Objective 8: Increase access to modern energy.

The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others.

Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The IEP is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives.

As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios:

- The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term.
- The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy.
- The Resource Constrained Scenario in which global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply.
- The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan (NDP), are met.

The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of existing electricity generation capacity, the IEP indicates that existing capacity starts to decline notably from 2025, with significant plant retirement occurring in 2031, 2041 and 2048. By 2050 only 20% of the current electricity generation capacity remains. As a result, large investments are required in the electricity sector in order to maintain an adequate supply in support of economic growth.

By 2020, various import options become available and some new coal capacity is added along with new wind, solar and gas capacity. The mix of generation capacity technologies by 2050 is considerably more diverse than the current energy mix, across all scenarios. The main differentiating factors between the scenarios are the level of demand, constraints on emission limits and the carbon dioxide externality costs.

In all scenarios the energy mix for electricity generation becomes more diverse over the period to 2050, with coal reducing its share from about 85% in 2015 to 15–20% in 2050 (depending on the scenario). Solar, wind, nuclear, gas and electricity imports increase their share. The Environmental Awareness and Green Shoots scenarios take on higher levels of renewable energy.

An assessment of each scenario against the eight objectives with reference to renewable energy notes while all scenarios seek to ensure that costs are minimised within the constraints and parameters of each scenario, the Base Case Scenario presents the least

cost followed by the Environmental Awareness, Resource Constrained and Green Shoots scenarios respectively when total energy system costs are considered.

In terms of promoting job creation and localisation potential the Base Case Scenario presents the greatest job creation potential, followed by the Resource Constrained, Environmental Awareness and Green Shoots scenarios respectively. In all scenarios, approximately 85% of total jobs are localisable. For electricity generation, most jobs result from solar technologies followed by nuclear and wind, with natural gas and coal making a smaller contribution.

The Environmental Awareness Scenario, due to its stringent emission constraints, shows the lowest level of total emissions over the planning horizon. This is followed by the Green Shoots, Resource Constrained and Base Case scenarios. These trends are similar when emissions are considered cumulatively and individually by type.

2.6 FREE STATE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK

The Executive Summary (Inception Report) notes that the Free State Provincial Spatial Development Framework (PSDF) is a provincial spatial and strategic planning policy that responds to and complies with, in particular, the National Development Plan Vision 2030 and the National Spatial Development Perspective (NSDP). The latter encourages all spheres of government to prepare spatial development plans and frameworks (such as the PSDF) that promote a developmental state in accordance with the principles of global sustainability as is advocated by, among others, the South African Constitution and the enabling legislation.

The Free State Provincial Growth and Development Strategy states that sustainable economic development is the only effective means by which the most significant challenge of the Free State, namely poverty, can be addressed. The PSDF gives practical effect to sustainable development, which is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

The PSDF is prepared in accordance with bioregional planning principles that were adapted to suit the site-specific requirements of the Free State. It incorporates and complies with the relevant protocols, conventions, agreements, legislation and policy at all applicable levels of planning, ranging from the international to the local. The Rondavel Solar PV Facility will contribute to sustainable and economic development goals of the Free State PSDF, once completed and formally adopted.

2.7 FREE STATE GREEN ECONOMY STRATEGY

The Green Economy Strategy for Free State Province (2014) was developed in alignment with the national green economy strategy elaborated in the National Green Economy Framework and Green Economy Accord, as well the Free State Provincial Growth and Development Strategy. The development process was spearheaded by the Department of Economic Development, Tourism and Environmental Affairs (DETEA).

The objective was to develop a green economy strategy to assist the province to, amongst others, improve environmental quality and economic growth, and to develop green industries and energy efficiency within the province. The Rondavel Solar PV Facility and associated grid infrastructure will contribute to the aim of energy efficiency and green industry whilst promoting economic growth and is therefore consistent with this strategy and Climate Change Response Plan.

2.8 FREE STATE INVESTMENT PROSPECTUS

The Free State Investment Prospectus (2019) identifies the development of renewable energy as a key sector. The prospectus states that opportunities are opening up in the Province for the energy sector, including renewable energy. Rezoning for the development of multiple solar energy facilities has already been undertaken in the province. The development of a Solar Park in the Xhariep region is seen as a driver of growth along the banks of the Orange River.

Considering the future opportunities available for the development of renewable energy facilities (including solar PV facilities), the development of the Rondavel Solar PV Facility and associated grid infrastructure is considered to be in-line with the Investment Prospectus of the Province.

2.9 FEZILE DABI DISTRICT MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The Vision of the Municipality as set out in the Integrated Development Plan (IDP, 2020-21) is "Improving the lives of citizens and progressively meeting their basic, social and economic needs, thereby restoring the community confidence and trust in government". The Mission of the Municipality is to "…strive to be a more responsive and accountable municipality towards sustainable development."

The IDP identifies Local Economic Development as a Key Performance Area (KPA4). Based on the fact that the proposed development is considered to be sustainable with little resource use required and that the development will encourage local economic development it is considered that the Rondavel Solar Facility and associated grid infrastructure is in-line with the objectives of the IDP.

2.10 MOQHAKA LOCAL MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The Moqhaka Local Municipality IDP (2017-22) has, under the local economic development goal, the following aims:

- Create an environment that promotes the development of the local economy and facilitate job creation.

- To expand the electrification programme to any remaining areas and roll out solar energy in any identified areas at prescribes standards.

In addition, the IDP also indicates that an Energy Master Plan is currently being developed, with the primary aim of ensuring enough energy is available to support existing and developmental needs. The Rondavel Solar PV Facility development and associated grid infrastructure thus directly addresses various aims of the Moqhaka Local Municipality IDP.

2.11 MOQHAKA LOCAL MUNICIPALITY SPATIAL DEVELOPMENT FRAMEWORK

The Spatial Development Framework (SDF, 2019-20) identifies ten spatial related directives and objectives. Directive number 8 refers to Surface Infrastructure. The objectives of this directive specifically refer to the promotion of development of renewable energy supply schemes. The SDF also identifies the need for new bulk transmission lines based on the envisaged new development in the area. Considering the above, the development of the Rondavel Solar Facility and associated infrastructure is in line with the SDF.

SECTION 3: OVERVIEW OF STUDY AREA

3.1 INTRODUCTION

Section 3 provides a baseline description of the study area with regard to:

- The administrative context.
- Overview of the Provincial, District and Local context.
- Demographic overview of the local municipality.
- Overview of the site and adjacent land uses.

3.2 ADMINISTRATIVE CONTEXT

The proposed Rondavel SEF site and associated grid infrastructure are located within the Mpqhaka Local Municipality (MLM), which forms part of the Fezile Dabi District Municipality (Figure 3.1). The Free State Province comprises four (4) Districts, namely Fezile Dabi, Lejweleputswa, Thabo Mofutsanyana and Xhariep (Figure 3.1). The town of Kroonstad serves as the administrative centre for the MLM.

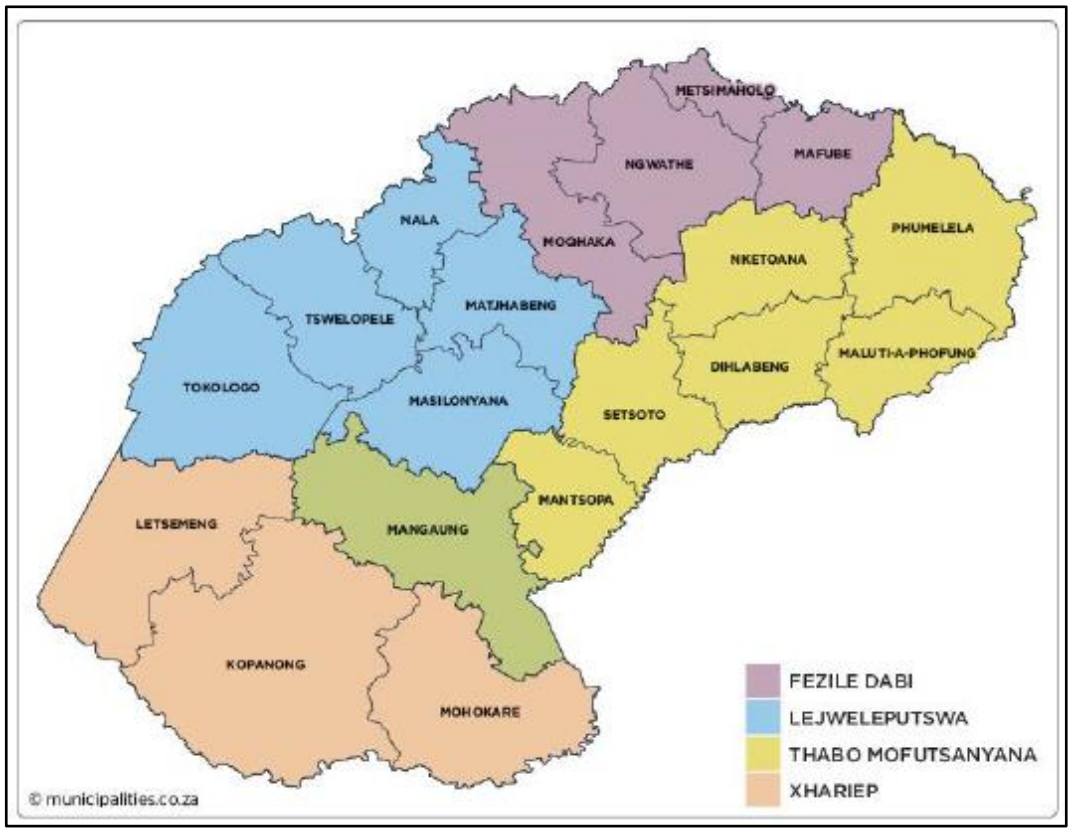


Figure 3.1: Districts of the Free State Province (Source: Municipalities of South Africa).

3.3 FREE STATE PROVINCE

The Free State Province lies in the centre of South Africa, located between the Vaal River in the north and the Orange River in the south. The region is one of flat, rolling grassland and fields of crops, rising to mountains in the north-east.
The province is the granary of South Africa, with agriculture central to its economy, while mining in the goldfield reefs is its largest employer.

Economic towns include Welkom, Kroonstad, Parys, QwaQwa, and Bethlehem. The Free State is the third-largest Province in South Africa, but it has the second-smallest population and the second-lowest population density. The culture is centred on traditional cultures but built on the influences of the early European settlers. Close to 2.8-million people live in the Free State, with two-thirds speaking Sesotho, followed by Afrikaans, Zulu, Tswana, Xhosa and English.

The Free State is strategically placed to take advantage of the national transport infrastructure. Two corridors are of particular importance: the Harrismith node on the N3 corridor between Gauteng and KwaZulu-Natal, and the N8. The N1 connects Gauteng to the Western Cape. Bram Fischer International Airport in Bloemfontein handles about 250 000 passengers and 221 000 tons of cargo a year. Manufacturing also features in the provincial economic profile. This sector makes up 14% of the provincial output, with petrochemicals (via Sasol) accounting for more than 85% of the output.

3.4 FEZILE DABI DISTRICT

The Fezile Dabi District Municipality (FDDM) is a Category C municipality, formerly known as the Northern Free State District Municipality, situated in the north of the Free State. It is bordered by the North West, Gauteng and Mpumalanga Provinces to the north, Thabo Mofutsanyana District to the south, and Lejweleputswa District to the west. The municipality is the smallest district in the province, making up 16% of its geographical area. The main attraction site, the Vredefort Dome, being the third-largest meteorite site in the world, is located within the district.

Various towns are situated within the municipal area which includes Cornelia, Deneysville, Edenville, Frankfort, Heilbron, Koppies, Kragbron, Kroonstad, Oranjeville, Parys, Renovaal, Sasolburg, Steynsrus, Tweeling, Vierfontein, Viljoenskroon, Villiers and Vredefort.

The main economic sectors of the area include trade (22%), community services (20%), manufacturing (13%), households (13%), agriculture (12%), finance (7%), construction (6%) and transport (5%). Fezile Dabi District comprises four Local Municipalities (LMs) namely, Moqhaka, Metsimaholo, Ngwathe and Mafube LMs (Figure 3.2).

Figure 3.2: Local Municipalities of Fezile Dabi District (Source: Municipalities of South Africa).

3.5 MOQHAKA LOCAL MUNICIPALITY

The Moqhaka Local Municipality (MLM) is a Category B municipality situated within the southern part of the Fezile Dabi District Municipality (FDDM) in the Free State Province. It is the largest of four municipalities in the district, making up over a third of its geographical area. The former Kroonstad, Steynsrus and Viljoenskroon Transitional Local Councils and sections of the Riemland, Kroonkop and Koepel Transitional Rural Councils are included in the municipality. The seat of local government is Kroonstad.

The Greater Kroonstad area is the centre of a large agricultural community that plays an important role in the economy of the district. Subsequently, industrial activities contribute significantly to the district's economy. The Department of Correctional Services and the School of Engineers military bases are situated in the town. Kroonstad has recently become a distinguished holiday destination due to the ultra-modern and popular holiday resort of Kroonpark, adjacent to the Vals River. The urban area is situated adjacent to the N1 National Road and located adjacent to one of the largest and most important four-way railway junctions in South Africa.

The Viljoenskroon/Rammulotsi urban area is located within an area of extreme agricultural significance. The urban area plays a significant role in providing residential opportunities to the adjacent goldfields and mining activities in the North West province. The Provincial Roads P15/1 and P15/2 from Kroonstad to Klerksdorp in the North West province extend through the area from north to south and plays a significant role.

The Steynsrus/Matlwangtlwang urban area is situated approximately 45km east of Kroonstad and 92km west of Bethlehem. The major link road between Bethlehem and Kroonstad stretches adjacent to the urban area. The main economic sectors in the area include Agriculture, commercial transport, business services and mining.

3.6 LOCAL MUNICIPAL DEMOGRAPHIC OVERVIEW

Population

The population of the MLM in 2016 was 154 731. Of this total, 32% were under the age of 18, 60.3% were between 18 and 64, and the remaining 7.7% were 65 and older. The MLM therefore has a relatively large young population. This creates challenges in terms of creating employment opportunities.

In terms of race groups, Black Africans made up 87.9% of the population on the MLM, followed by Whites, 9.2% and Coloureds, 2.6%. The main first language spoken in the MLM was Sesotho (87.9%), followed by Afrikaans (11.1%) and IsiXhosa (2.2%).

The high percentage of young people also means that a large percentage of the population is dependent on a smaller productive sector. The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services. The national dependency ratio in 2011 was 52.7%, similar to that of the e Free State Province (52.9%). The dependency ratio for the MLM 2011 was 51%. The traditional approach is based people younger than 15 or older than 64. The 2016 information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e. they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratio for the MLM (2016) was 65.8%. This figure is significantly higher than the national, provincial, and municipal levels in 2011. The higher dependency ratio reflects the limited employment opportunities in the area and represent a significant risk to the district and local municipality.

Households and house types

Based on the information from the 2011 Census most of the households in the MLM reside in formal houses (77.1%). This figure is similar to the District (76.8%) and Provincial (74.4%) figures. Approximately 13.1% of the households in the MLM reside in informal structures.

Based on the information from the 2016 Community Household Survey and 2011 Census 40.9% of the households in the MLM are headed by females. The high number of female headed households at the local municipal and ward level reflects the lack on formal employment and economic opportunities in the MLM. As a result, job seekers from the MLM need to seek work in the larger centres, specifically Gauteng. The majority of the job seekers are likely to be males. This is due to traditional rural patriarchal societies where the role of the women is usually linked to maintaining the house and raising the children, while the men tend to be the ones that migrate to other areas in search of employment.

Household income
Based on the data from the 2011 Census, 8.6% of the population of the MLM had no formal income, 5% earned less than R 4 800, 7.4% earned between R 5 000 and R 10 000 per annum, 22.6% between R 10 000 and R 20 000 per annum and 23.8% between R 20 000 and R 40 000 per annum (2016).

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 67.4% of the households in the MLM live close to or below the poverty line. The low-income levels reflect the limited employment opportunities and dependence on the agricultural sector. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the MLM. This in turn impacts on the ability of the MLM to maintain and provide services.

Employment
The official unemployment figures for the MLM were 18.3%. The figures also indicate that the majority of the population are not economically active, namely 44.2%. These figures are similar to the official unemployment rate for the Free State Province (17.5%) and FDDM (18.8%). This reflects the limited employment opportunities in the area, which in turn are reflected in the low income and high poverty levels.

Education
In terms of education levels, the percentage of the population over 20 years of age in the MLM with no schooling was 5.4% in 2011, compared to 3% for the Free State Province. The percentage of the population over the age of 20 with matric was 27.8%, compared to 30.5% for the Province.

3.7 OVERVIEW OF MUNICIPAL SERVICES

Access to water
Based on the information from the 2016 Community Survey 90.6% of households were supplied by a regional or local service provider. However, only 50% of the households had piped water inside their houses, while 44.9% relied on piped water inside the yard. The figures for the FDDM were 48.3% and 45.7% respectively. Only 37.6% of households in the Free State Province have piped water inside their homes.

Sanitation
Based on the information from the 2016 Community Survey, 92.6% of households have access to flush or chemical toilets. 4.9% rely on pit latrine, while 1.5% have no access to toilet facilities. The figures in terms of access to flush or chemical toilets are higher than the FDDM (82.5%).

Refuse collection
Based on the information from the 2016 Community Survey, 89.9% of households have their refuse collected by a local authority of private company. 3.4% rely on communal dumps, while 5.7% have their own dump.

3.8 OVERVIEW OF SITE AND LAND USES

The overhead 132 kV power lines are associated with the Rondavel Solar PV Facility which is located within the Remaining Extent of the Farm Rondavel Noord No. 1475, and the Remaining Extent of the Farm Rondavel No. 627 which is located ~8km south-west of Kroonstad in Ward 7 of the Mpqhaka Local Municipality and the Fezile Dabi District Municipality (Table 3.1). The properties on which the proposed SEF is located are owned by Mr Manie van Niekerk, who also owns a number of other properties in the area. In this regard a number of the properties that are located in close proximity to the actual site are also owned by Mr van Niekerk. Three additional land owners are also potentially affected (Table 3.1).

Table 3.1: Overview of potentially affected land owners

OWNER	PROPERTY	FARM	LOCATION
Van Niekerk, Mr Manie	Rondavel-Noord 1475/RE	Rondawel	Site
	Rondavel 627/E	Rondawel	Site
	Leidzaamheid 213/RE	Leidaamheid	Adjacent to W
	Boschplaat 330	Bosplaat	Adjacent to SE
Moqhaka Municpality	Brent Park 2519/RE	Brent Park	Adjacent to N
Algarra, Dr Nahed	Waterloo 183/RE	Waterloo	Adjacent to E
Wessels, Mr Sarel	Oshoek 47/RE, 47/1	Lechwe Lodge	Adjacent to S

Two dwellings are located on Rondawel Noord, both inhabited by farm managers. The van Niekerk properties are exclusively used for extensive cattle farming (Photograph 3.1). Table 3.2 provides a summary of the land uses on the properties in the area.

Table 3.2: Overview of potentially affected land uses

OWNER	FARM	LAND USE	INHABITED	DWELLING TO SEF SITE
Van Niekerk, Mr Manie	Rondawel Noord	Cattle farming	Y	160 m
	Rondawel	Cattle farming	N	N/A
	Leidaamheid	Cattle farming	N	N/A
	Bosplaat	Cattle farming	N	N/A
Moqhaka Municpality	Brent Park	Vacant	N	N/A
Algarra, Dr Nahed	Waterloo	Weekend farming	Y	1 km NE
Wessels, Mr Sarel	Lechwe Lodge	Commercial hunting	Y	1.7 km S

The remainder of the municipally owned Brent Park 2519/RE is located to the north of Rondavel 1475/RE, approximately 1.6 km to the north of the SEF site. The property is

currently vacant. The municipality could not be reached for comment with regard to future plans for the property. Dr Algarra lives in Welkom and uses the Waterloo property for weekend farming. The 300ha property was used for cattle farming, but operations have ceased. The owner is currently considering introducing game on the property. Two workers and a farm manager currently reside on the property (Algarra, pers. comm). The Algarra property is the only adjacent property located relatively close to the SEF site.

Photograph 3.1: Livestock grazing in study area

The study area has a rural and predominantly natural character, and the main land use activity is maize farming and grazing for livestock and game. The site is located to the north of the R34 on a gentle, north-west facing slope (Photograph 3.2). Access to the site is of the R34 (Photograph 3.4).

Photograph 3.2: View over site looking west from R34

Photograph 3.3: Access to site from R34

The Boslaagte Private Nature Reserve and associated Lechwe Lodge is located approximately 2 km to the south of the SEF site. This is the only tourist facility within the study area (excluding Kroonstad itself) (Figure 3.3). Access is off the R 34 (Photograph 3.4). The lodge was established around a decade ago as a safari/ conference/ wedding facility. The infrastructure includes Lechwe Lodge camp (28 chalets), a 'Boskamp' (15 chalets), conferencing facilities for up to 250 people, a wedding chapel, and a banqueting hall (300 people). The property was also stocked with a large variety of game, including lion. The facility closed down around 2015 and was placed under liquidation. The property was under curatorship until 2020, during which time (according to the current owner) it was systematically stripped of game and infrastructure. The property is currently owned by Mr Sarel Wessels, one of the original owners. The property is now primarily used for commercial hunting, including a large overseas hunter component. Five workers permanently live on the property. The operation has been seriously affected by Covid-19 restrictions. The owner is currently undecided whether he wants to continue farming on the property, and is so, whether the tourism facilities would be revived (Wessels, pers. comm). The nearest chalets are located approximately 1.7 km to the south of the SEF site.

Photograph 3.4: Entrance to Lechwe Lodge from R34

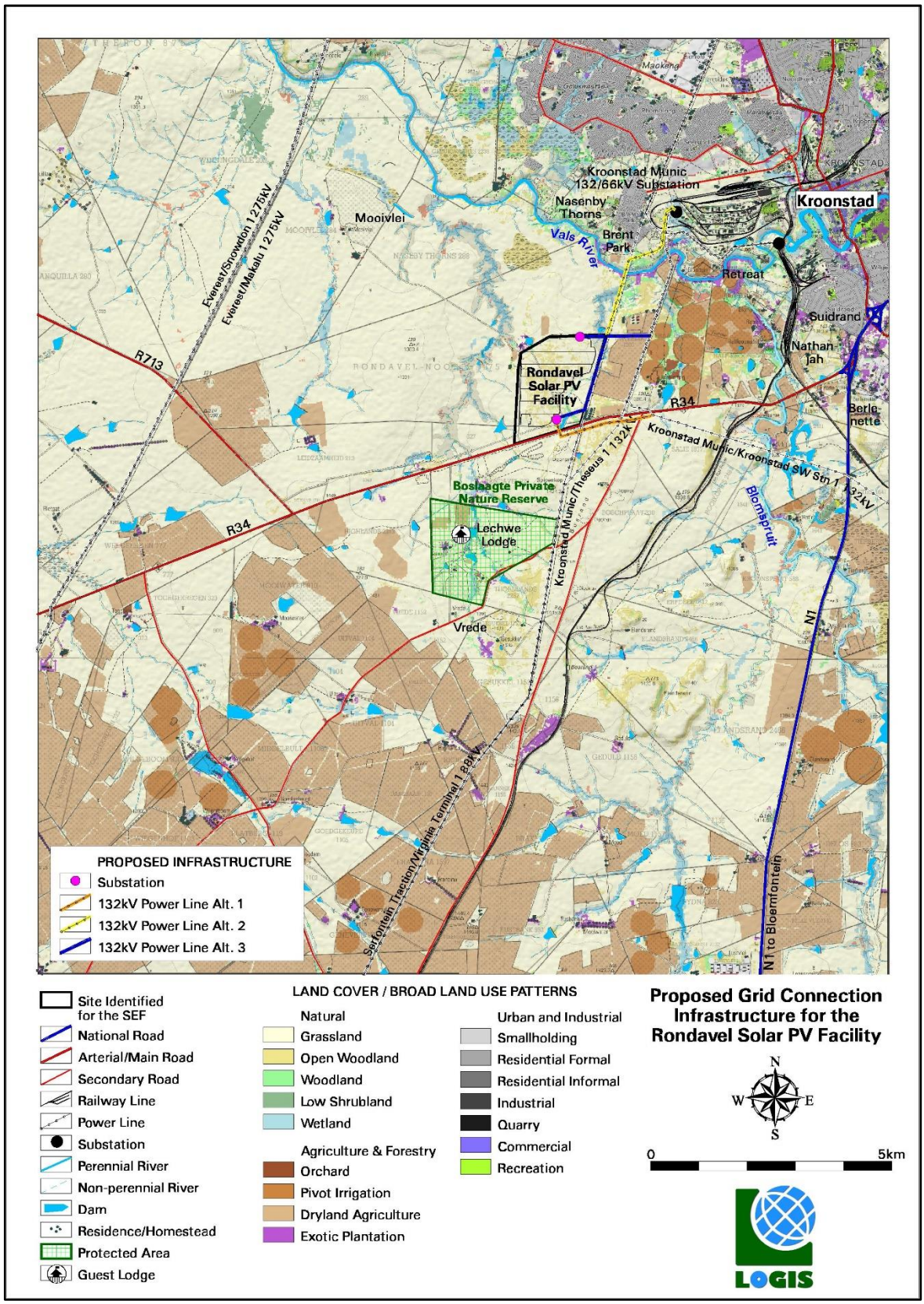
Kroonstad is the closest town to the project site. Kroonstad with its strong service character and prominent commercial and industrial components is considered to be the main town in the municipal area and growth point of the region. The town provides various services to the surrounding smaller towns and rural areas.

A number of overhead power lines associated with the Kroonstad Municipal Substation in the study area. These include:

- Kroonstad Municipal/Theseus 1 132kV.
- Serfontein Traction/Virginia Terminal 1 88kV.
- Kroonstad Municipal/Kroonstad SW Station 1 132kV.

The Serfontein Traction/Virginia Terminal 1 88kV power line is located along the eastern boundary of the proposed PV (Photograph 3.5).

Photograph 3.5: Power line to east of site



(Source: Logis, VIA)

Figure 3.3: Land uses in study area

SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information, including other specialist studies.
- Site visit and interviews with key interested and affected parties.
- Experience with similar projects.

The assessment section is divided into the following sections:

- Assessment of compatibility with relevant policy and planning context ("planning fit").
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operational phase.
- Assessment of social issues associated with the decommissioning phase.
- Assessment of the "no development" alternative.
- Assessment of cumulative impacts.

The social impacts associated with substations will be negligible. The focus of the SIA is therefore on the 132 kV power lines.

4.2 ASSESMENT OF POLICY AND PLANNING FIT

The findings of the review of key policy and planning documents indicates that renewable energy is supported at a national, provincial, and local level. At a national level, the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, highlight the importance of renewable energy. The proposed project also supports a number of objectives contained in the Free State Province Provincial Growth and Development Strategy and Free State Green Economy Strategy. At a district and local level, the Moqhaka Local Municipality IDP and SDF support the development of renewable energy.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

The findings of the SIA indicate that the negative social impacts associated with the construction of each of the three overhead power line alternatives will be similar. The significance ratings therefore apply to all three alternatives.

Potential positive impacts

- Creation of employment and business opportunities.

Potential negative impacts

- Impact on local farmers and farming operations associated with the presence of construction workers.
- Noise, dust and safety impacts of construction related activities and vehicles.
- Increased risk of grass fires associated with construction related activities.

4.3.1 Creation of local employment, training, and business opportunities

Based on similar projects the construction phase of for the grid connection will extend over a period of approximately 3-6 months and create in the region of 20-30 employment opportunities. Approximately 80% of the jobs will be low-skilled, 15% semi-skilled and 5% skilled. Most of the low and semi-skilled employment opportunities would benefit community members from local towns in the area, specifically Kroonstad. A percentage of the high skilled positions may also benefit the local community. Most of the employment opportunities are also likely to accrue to Historically Disadvantaged (HD) members from these local communities.

Given high local unemployment levels and limited job opportunities in the area, this will represent a localised, social benefit. The remainder of the skilled employment opportunities are likely to be associated with the contactors appointed to construct the grid infrastructure. However, in the absence of specific commitments from the developer to maximise local employment targets the potential opportunities for local employment will be limited. The proponent should therefore commit to employing as many local community members as possible.

The total wage bill will be in the region of R 1 million (2021 Rand values). This is based on assumption of R 8 000 per month for low skilled workers, R 12 000 per month for semi-skilled workers and R 25 000 per month for high skilled workers over 4 months. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in MM.

The capital expenditure associated with the construction of grid infrastructure will be ~ R 7 million and will create opportunities for local companies and the regional and local economy. Implementing the enhancement measures listed below can enhance these opportunities. The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the project and short duration of the construction phase these benefits will be limited.

Table 4.1: Impact assessment of employment and business creation opportunities during the construction phase

Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	**With Enhancement**
Extent	Local – Regional (1)	Local – Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Probability	Highly probable (4)	Highly probable (4)
Significance	Low (20)	Low (28)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Improved pool of skills and experience in the local area.		

Assessment of No Go option

There is no impact, as the current status quo will be maintained.

Recommended enhancement measures

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

Employment

- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the MLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the MLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work.
- Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.
- The MLM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

4.3.2 Risk to safety, livestock, and farm infrastructure

The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open. The presence of construction workers on the site also increases the exposure to local farming operations to the outside world, which, in turn, increases the potential risk of stock theft. The area of impact is also limited to a narrow corridor and the area is largely used for grazing.

The local farmers interviewed did, however, indicate that the potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction workers on the site during the construction phase. Mitigation measures to address these risks are outlined below.

Table 4.2: Assessment of risk to safety, livestock, and damage to farm infrastructure

Nature: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Extent	Local (3)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.	Yes, compensation paid for stock losses and damage to farm infrastructure etc.
Irreplaceable loss of resources?	No	No

Can impact be mitigated?	Yes
Mitigation: See below	
Residual impacts: No**,** provided losses are compensated for.	

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Key mitigation measures include:

- The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Traffic and activities should be strictly contained within designated areas.
- Strict traffic speed limits must be enforced on the farm.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties.
- The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.
- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors' and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below).
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could, in turn pose, a threat to livestock, crops, wildlife and farm infrastructure. Grass fires were identified aa a concern and pose a threat to livestock and game farming operations. The potential risk of grass fires is heightened by the windy conditions in the area, specifically during the dry, windy winter months from May to October. In terms of potential mitigation measures the option of constructing a firebreak around the perimeter of the site prior to the commencement of the construction phase should be investigated. In addition, a fire-fighting vehicle should be present at all times on the site during the construction phase.

Table 4.3: Assessment of impact of increased risk of grass fires

Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Extent	Local (4)	Local (2)
Duration	Short term (2)	short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock and crop losses etc.	Yes, compensation paid for stock and crop losses etc.
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No**,** provided losses are compensated for.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The mitigation measures include:

- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.

- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are effectively managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor to provide fire-fighting training to selected construction staff.
- No construction staff, with the exception of security staff, to be accommodated on site overnight.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

4.3.4 Impacts associated with construction related activities and traffic

The movement of heavy construction vehicles during the construction phase has the potential to damage local roads and create noise, dust, and safety impacts for other road users and local communities in the area. Based on the findings of the SIA the potential dust and noise impacts associated with the construction of the power line are likely to be negligible.

Table 4.4: **Assessment of the impacts associated with construction activities**

Nature: Potential noise, dust and safety impacts associated with construction related activities and traffic		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (15)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were not responsible for the damage.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The movement of heavy vehicles associated with the construction phase should be timed to avoid times of the week, such as weekends, when the volume of traffic travelling along the R34 may be higher.
- Construction operations should be planned to minimise the total area cleared at any given time.
- Cleared areas should be rehabilitated once the construction phase has been completed.
- Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- All vehicles must be road-worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The findings of the SIA indicate that the negative social impacts associated with the operation of each of the three overhead power line alternatives will be similar. The significance ratings therefore apply to all three alternatives.

The following key social issues are of relevance to the operational phase:

Potential positive impacts
- Improved energy security and establishment of energy infrastructure.
- Creation of employment opportunities.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Impact of maintenance activities on farming activities and operations.

4.4.1 Improved energy security and establishment of energy infrastructure

The establishment of renewable energy infrastructure, such as the proposed SEF, should be viewed, firstly within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs, and secondly, within the context of the success of the REIPPPP.

The proposed power line is essential to enable the development and operation of Rondavel SEF. The primary goal of the proposed Rondavel SEF is to improve energy security in South Africa by generating renewable energy. The proposed power line should therefore be viewed within the context of the South Africa's current power supply constraints and the reliance on coal powered energy to meet most of its energy needs.

South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. Load shedding in the first six months of 2015 was estimated to have cost South African businesses R13.72 billion in lost revenue with an additional R716 million was spent by

businesses on backup generators[4]. A survey of 3 984 small business owners found that 44% said that they had been severely affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more or revenue during due to load shedding period[5].

Table 4.5: Development of energy infrastructure

Nature: Development of infrastructure to improve energy security and reduce reliance on coal		
	Without Mitigation	**With Mitigation**
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (56)	High (70)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	Reduced CO_2 emissions and impact on climate change
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Improved energy security and benefit for economic development and investment, reduction in CO_2 emission and reduction in water consumption for energy generation.		

Assessment of No-Go option
The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy.

Recommended mitigation measures
Should the project be approved the proponent should:

- Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members.
- Maximise opportunities for local content, procurement, and community shareholding.

[4] Goldberg, Ariel (9 November 2015). "The economic impact of load shedding: The case of South African retailers" (PDF). Gordon Institute of Business Science. p. 109
[5] "How does load shedding affect small business in SA?". *The Yoco Small Business Pulse (3: Q1 2019): 3*

4.4.2 Creation of employment and business opportunities and support for local economic development

The potential employment opportunities associated with the power line will be limited and largely confined to periodic maintenance and repairs. The potential socio-economic benefits will therefore be limited.

Table 4.6: Impact assessment of employment and business creation opportunities

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Mitigation	**With Enhancement**
Extent	Local and Regional (1)	Local and Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Very Low (1)	Very Low (1)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (18)	Low (28)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Creation of employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended enhancement measures
The enhancement measures listed in Section 4.4.1, i.e. to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.

4.4.3 Impact on farming operations during maintenance

The presence on and movement of maintenance workers on and off the site poses a potential risk to farming operations. Farm fence and gates may be damaged and stock losses may also result from gates being left open. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime. Based on experience from other power line projects line this is an issue that will need to be addressed. The local farmers did, however, indicate that the potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by ensuring the

maintenance teams take care to ensure that gates are kept closed and affected property owners are kept informed about timing of maintenance operations. Mitigation measures to address these risks are outlined below.

Table 4.7: Assessment of risk to farming operations and damage to farm infrastructure

Nature: Potential risk to safety to farming operations and livestock associated with the presence of maintenance workers on the site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Medium (3)	Low (2)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Low (28)	Low (20)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No Go option
There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Affected property owners should be notified in advance of the timing and duration of maintenance activities.
- Maintenance teams must ensure that all farm gates must be closed after passing through.
- Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities.
- Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.
- Strict traffic speed limits must be enforced on the farm.
- No maintenance workers should be allowed to stay over-night on the affected properties.

4.4.4 Visual impact and impact on sense of place

The findings of the Visual Impact Assessment (VIA) (Logis, August 2021) indicate that the study area has a rural and predominantly natural character and the main land use activity, outside of the Kroonstad city limits, is maize farming. Farm residences, or homesteads, dot the landscape at an irregular interval. These homesteads are generally located at great distances from each other (i.e., more than 2.5km apart).

The VIA also notes that in spite of the rural and natural character of the study area, there is a large number of overhead power lines associated with the Kroonstad Municipal Substation. These include:

- Kroonstad Municipal/Theseus 1 132kV.
- Serfontein Traction/Virginia Terminal 1 88kV.
- Kroonstad Municipal/Kroonstad SW Station 1 132kV.

The Serfontein Traction/Virginia Terminal 1 88kV power line traverses along the eastern boundary of the Rondavel SEF site. In terms of potential visual exposure, the VIA notes:

Power Line Alternative 1: The power line may be exposed to observers travelling along the R34 arterial road and the Hennenman secondary road, as it will cross these roads, as well as traverse adjacent to the R34 for almost 2km. The visual exposure will not be in isolation but will occur in conjunction with the existing Kroonstad-Theseus 1 132kV, the Serfontein Traction-Virginia Terminal 1 88kV and Kroonstad Municipal-Kroonstad Switching Station 1 132kV power lines. The power line may be exposed to observers (residents or visitors) at the Fraaiuitsig homestead (500 m away) as well as potentially from the northern section of the Boslaagte Nature Reserve. This will be at distances of respectively 500m and 1.5km and once again in combination with the existing power lines mentioned above.

Power Line Alternative 2: This alternative may be visible from the R34 and southern outlying areas of the Brent Park residential area, as well as from the Nasenby Thorns, Blomtuin and Retreat homesteads. The visibility of this alternative is also in conjunction with the visibility of the Serfontein Traction-Virginia Terminal 1 88kV, Kroonstad Municipal-Kroonstad Switching Station 1 132kV and Kroonstad Municipal-Theseus 1 132kV power lines, as it will traverse adjacent to each of these lines at varying sections.

Power Line Alternative 3: This alternative may be visible from the R34 and from the Fraaiuitsig homestead from 970m at the closest. Once again, the visual exposure will be in conjunction with the exposure of the existing power lines mentioned previously.

The findings of the assessment undertaken as part of the VIA are summarised below:

Potential visual impact on sensitive visual receptors located within a 0.5km radius of the Grid Connection Infrastructure during the operation phase: Power Line Alternatives 2 and 3 are expected to have a **low** visual impact (significance rating: 28 and 24) on observers within a 0.5km radius of the power line structures. Power Line Alternative 1 (including the substation) may have a visual impact of **moderate** significance (rating:42) as this alternative will be located adjacent to the R34 arterial road. No mitigation of this impact is possible (i.e. the structures will be visible regardless), but general mitigation and management measures are recommended as best practice.

Potential visual impact on sensitive visual receptors within the region (0.5 – 3km radius) during the operation of the grid infrastructure: The 132kV power lines (including substation) will have a **low** visual impact for all three alternatives (significance rating: 22) on observers traveling along the roads and residents of homesteads within a 0.5 - 3km radius of the Grid Connection Infrastructure. No

mitigation of this impact is possible (i.e. the structures will be visible regardless), but general mitigation and management measures are recommended as best practice.

The potential visual impact of the proposed Grid Connection Infrastructure on the sense of place of the region: An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light. The anticipated visual impact of the proposed Grid Connection Infrastructure on the regional visual quality, and by implication, on the sense of place, is difficult to quantify, but is generally expected to be of **low** significance.

The VIA notes that all three of the accessed alternatives are considered acceptable from a visual impact perspective. However, of the three alternatives the **Power Line Alternative 3** is marginally preferred as its impact significance ratings were consistently lower than those of Alternatives 1 and 2.

Table 4.8: Visual impact and impact on sense of place[6]

Nature: Visual impact associated with the proposed solar facility and the potential impact on the area's rural sense of place.		
	Without Mitigation	**With Mitigation**
Extent	Local-Regional (3)	Local-Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (22)	Low (22)
Status	Negative	Negative
Reversibility	Yes, lines can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: The visual impact will be removed after decommissioning, provided the Grid Connection Infrastructure is removed. Failing this, the visual impact will remain		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The recommendations contained in the Final VIA should also be implemented.

[6] Significance ratings are based on the ratings contained in the VIA (Logis, April 2021)

4.4.5 Potential impact on local tourism operations

As indicated above, the Boslaagte Private Nature Reserve, which includes the Lechwe Lodge, is the only tourist facility or destination located within close proximity of the site. This lodge functions as a venue that can accommodate up to 300 people and provides overnight lodging. As indicated above, the Boslaagte Private Nature Reserve and associated Lechwe Lodge has been closed for approximately 5 years. The potential impact is likely to be associated with the visibility of the proposed lines from the Boslaagte Private Nature Reserve and associated Lechwe Lodge. The findings of the VIA indicate that the impact of the transmission lines on receptors located 0.5-3km from the alternatives will be low. None of the relevant land owners interviewed raised any significant issues or concerns.

Table 4.9: Potential impact on tourism[7]

Nature: Potential impact of the power lines on local tourism operations, specifically the Boslaagte Private Nature Reserve and Lechwe Lodge. The impact will be linked to the potential visual impacts and the perception of people visiting the reserve and lodge.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (2)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (24)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Potential impact on current rural sense of place.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The recommendations contained in the Final VIA should be implemented.

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues raised in these guidelines as to what defines a cumulative impact are also regarded as pertinent

[7] Significance ratings are informed by the ratings contained in the Scoping VIA (Logis, April 2021)

to transmission lines. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more transmission lines) will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more two or more transmission lines) along a single journey, e.g. road or walking trail).
- The visual compatibility of different two or more transmission lines in the same vicinity.
- Perceived or actual change in land use across a character type or region.
- Loss of a characteristic element (e.g. viewing type or feature) across a character type caused by developments across that character type.

There are a number of existing power line is located in the study area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does therefore exist. The findings of the VIA (Logis, April 2021) indicate that the anticipated cumulative visual impact of the Power Line Alternatives 2 and 3 is expected to be of M**oderate** significance (significance rating = 39). This is considered to be acceptable from a visual impact perspective.The anticipated cumulative visual impact of the Power Line Alternative 1 is expected to be of **Moderate** significance (significance rating = 45). This is also considered to be acceptable from a visual impact perspective. Given the lower significance ratings, Alternative 2 and 3 and preferred over Alternative 1. However, the overall significance for all Alternatives is **Moderate**.

Table 4.10: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of more than one SEF and the potential impact on the area's rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (2)	Local and regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Medium (6)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Moderate (39)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. Grid components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: See below		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures

The recommendations of the VIA should be implemented.

4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION

The proposed power line is essential to enable the proposed Rondavel SEF to connect to the national electricity grid to address the current energy supply constraints and reduce South Africa's reliance on coal generated energy. As indicated above, energy supply constraints and associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer of carbon emissions.

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producer of carbon emissions in the world, this would represent a negative social cost.

Table 4.11: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to supplement is current energy needs with clean, renewable energy		
	Without Mitigation[8]	**With Mitigation[9]**
Extent	Local-National (3)	Local-National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (52)	Moderate (52)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Improved energy security and benefit for economic development and investment, reduction in CO_2 emission and reduction in water consumption for energy generation.		

Recommended enhancement measures
The proposed grid connection should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.

[8] Assumes power line is not developed
[9] Assumes power line is developed

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

Section 5 lists the key findings of the study and recommendations. These findings are based on:

- A review of the issues identified during the Scoping Process.
- A review of key planning and policy documents pertaining to the area.
- Site visit and semi-structured interviews with interested and affected parties.
- A review of social and economic issues associated with similar developments.
- The experience of the authors with other solar energy projects in South Africa.

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative Impacts.
- No-development option.

The social impacts associated with substations will be negligible. The focus of the SIA is therefore on the 132 kV power lines. The findings of the SIA also indicate that the negative social impacts associated with the construction and operation of each of the three overhead power line alternatives will be similar. The significance ratings therefore apply to all three alternatives.

5.2.1 Policy and planning issues

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents.

5.2.2 Construction phase impacts

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase will extend over a period of approximately 3-6 months and create in the region of 20-30 employment opportunities. The total wage bill will be in the region of R 1 million (2021 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area, including Kroonstad. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in MM.

The capital expenditure associated with the construction of power line will be ~7 million (2021 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust and safety impacts of construction related activities and vehicles.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Medium (Negative)	Low (Negative)
Increased risk of grass fires	Medium (Negative)	Low (Negative)

5.2.3 Operational phase impacts

The benefits associated with the Rondavel SEF are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts

- Improve energy security and establishment of energy infrastructure.

- Creation of employment opportunities.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Risks posed to farming activities by maintenance workers.
- Impact on tourism.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Medium (Negative) [10]	Medium (Positive) [11]
Creation of employment and business opportunities during maintenance	Low (Positive)	Low (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Medium (Negative)	Low (Negative)
Impact on tourism	Low (Negative)	Low (Negative)

5.2.4 Cumulative impact on sense of place

There are a number of other power lines located in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking trail) does therefore exist. Based on the findings of the VIA the significance is rated as Moderate Negative. The VIA notes that this is acceptable.

5.2.5 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the

[10] Assumes power line is not developed
[11] Assumes power line is developed

highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

5.3 CONCLUSION

The energy security benefits associated with the proposed Rondavel SEF are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV overhead power line are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. This applies to all three alternatives. However, based on the findings of the VIA, Alternative 3 is the marginally preferred alternative. This finding is supported by the SIA. The establishment of proposed 132 kV overhead power line (Alternative 3) is therefore supported by the findings of the SIA.

5.4 SOCIAL STATEMENT

Based on the findings of the SIA Alternative 3 is supported.

ANNEXURE A

INTERVIEWS

- Algarra, Dr Nahed (telephonic 2021-03-30). Waterloo 183/RE.
- Khoury, Mr Spiro (telephonic 2021-03-30). Chairperson: Maqhaka for the People.
- Van Niekerk, Mr Kasie (telephonic 2021-03-30). Vrede 1152/RE, Uitval 1104/1.
- Wessels, Mr Sarel (telephonic 2021-03-30). Lechwe Lodge.

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- Free State Investment Prospectus (2019).
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- Moqhaka Local Municipality Integrated Development Plan (2017-2022).
- Moqhaka Local Municipality Spatial Development Framework (2019-2020).
- Independent Power Producers Procurement Programme (IPPPP): An Overview (2017), Department of Energy, National Treasury and DBSA;
- Powering the Future: Renewable Energy Roll-out in South Africa (2013), Greenpeace South Africa.
- Visual Impact Assessment for Scoping, Logis (August 2021).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

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

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

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

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

S = Significance weighting
E = Extent
D = Duration
M = Magnitude

P = Probability

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

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

ANNEXURE C

Tony Barbour
ENVIRONMENTAL CONSULTING AND RESEARCH

10 Firs Avenue, Claremont, 7708, South Africa
(Cell) 082 600 8266
(E-Mail) tony@tonybarbour.co.za

Tony Barbour's has 28 years' experience as an environmental consultant, including ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984);
- B Economics (Honours) Rhodes (1985);
- MSc (Environmental Science), University of Cape Town (1992)

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current;
- University of Cape Town: August 1996-October 2004**:** Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher;
- Private sector: 1991-August 2000: 1991-1996**:** Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004);
- University of Cape Town: Social Impact Assessment (2004-current);
- Cape Technikon: Resource Economics and Waste Management (1994-1998);
- Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIA's for infrastructure projects, dams, pipelines, and roads. All of the SIAs include interacting with and liaising with affected communities. In addition he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Senegal, Sudan and Armenia.

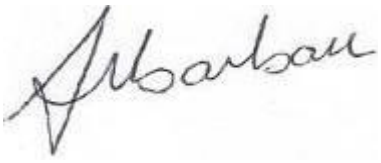
ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct;
and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

6 July 2021

Date: