

SOCIAL IMPACT ASSESSMENT

CAMDEN RENEWABLE ENERGY FACILITIES- UP TO 400 kV GRID CONNECTION

MPUMALANGA PROVINCE

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Prepared for

WSP

by

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

WSP was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed up to up to 400 kV overhead powerline grid connection and associated collector substation for the Camden Renewable Energy Facilities (REFs) located approximately 12 km south of the town of Ermelo in the Msukaligwa Municipality in the Mpumalanga Province.

Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process. This report contains the findings of the Scoping Level SIA for the proposed project.

SUMMARY OF KEY FINDINGS

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.
- Decommissioning phase impacts.
- No-development option.

POLICY AND PLANNING ISSUES

The development of renewable energy is strongly supported at a national, provincial, and local 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, which all refer to and support renewable energy. The development of renewable energy is also supported by the MMSDF. In this regard the SDF acknowledges the importance of the mining sector and notes that it will need to be accommodated over the short to medium term. However, of relevance to the proposed development the SDF refers to green industries and indicates that the existing site of the Camden Power Station and surrounds should be made available for new industrial development in the long term, to manage the long-term impact of the Power Station being decommissioned. The proposed grid infrastructure power is essential to enable the energy from the renewable energy facilities to be fed into the national grid.

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 6-12 months and create in the region of 50-80 employment opportunities. The total wage bill will be in the region of R 10 million (2022 Rand values). The capital expenditure associated with the construction of power line and collector substations will be ~350 million (2022 Rand values) and will create opportunities for the local and regional and local economy.

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.
- Risk of veld fires.
- 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)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

OPERATIONAL PHASE

The benefits associated with the Camden REFs 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, skills development, and local procurement opportunities.
- Use of existing ESKOM grid infrastructure planned for decommissioning.

Potential negative impacts

- The visual impacts and associated impact on sense of place.

- Risks posed to farming activities by maintenance workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be **Low Negative** if the required mitigation measures are effectively 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	Moderate (Negative) ¹	Moderate (Positive) ²
Creation of employment, skills development, and procurement opportunities during maintenance	Low (Positive)	Moderate (Positive)
Use of existing Eskom grid infrastructure planned for decommissioning	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with the presence of maintenance workers	Moderate (Negative)	Low (Negative)

IDENTIFICATION OF PREFERRED ALTERNATIVES

Collector Substation (CS) Alternative 2 (Welgelegen 322/1) is the preferred option. This was confirmed by the landowner, Ms Reyneke. The up to up to 400 kV line or Loop-in-Loop-out link options associated with CS 2 are considerably shorter than the options associated with CS 1 (the southern option). The impact in terms of land loss and farming activities would therefore be less. The Loop-in-Loop-out Option linking into the Eskom Camden I – Incandu 400kV line associated with CS 2 is also preferred over the establishment of a new 400 kV overhead line. The Loop-in-Loop-out Option is shorter than the up to 400 kV line option and avoids the impact on Mr de Jager's property (290/14/RE Mooiplaats Farm). The Loop-in-Loop-Out option associated with CS 2 therefore minimises the impact on the two landowners that will be impacted by the proposed up to up to 400 kV grid connection.

¹ Assumes power line is not developed

² Assumes power line is developed

CUMULATIVE IMPACTS

There are a number of existing power lines in the area associated with the Camden Power Station. The potential for cumulative impacts therefore exists. However, at the same time the areas sense of place has been altered by the existing power lines and the Camden Power station. The sense of place has also been impacted by coal mining operations. The the potential impact of the proposed power lines on the areas sense of place is likely to be limited. The cumulative impacts are also likely to be limited. In addition, none of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with clean, 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 significant negative social cost. The No-Development option would also represent the loss of beneficial and future use of existing ESKOM grid infrastructure planned for decommissioning

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The energy security benefits associated with the proposed Camden REFs are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure. The construction of the proposed Camden up to 400 kV power line and associated collector substation is therefore an essential component of the overall project.

The findings of the SIA indicate that the construction and maintenance of the up to 400 kV powerline and associated collector substation will create employment and business opportunities. However, these opportunities will be limited. The findings of the SIA also indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed Camden up to 400 kV overhead power line and the associated collector substation are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed Camden up to 400 kV overhead power line and associated substation is therefore supported by the findings of the SIA.

Recommendation

Collector Substation (CS) Alternative 2 (Northern option located on 322/1 Welgelegen) is the preferred option from a social perspective. The Loop-in-Loop-out Option linking into the Eskom Camden I – Incandu 400kV line associated with CS Alternative 2 is the preferred grid connection option. However, the findings of the SIA also indicate that the remainder of the grid connection options are suitable and acceptable from a social perspective.

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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 <i>curriculum vitae</i> ;	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 2021 (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	Comply with the Assessment

<p>specialist report, the requirements as indicated in such notice will apply.</p>	<p>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.</p>
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ACRONYMS

BESS	Battery Energy Storage System
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DM	District Municipality
GSDM	Gert Sibanye District Municipality
HD	Historically Disadvantaged
EIA	Environmental Impact Assessment
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
MM	Msukaligwa Municipality
MW	Megawatt
SDF	Spatial Development Framework
SEF	Solar Energy Facility
SIA	Social Impact Assessment
WEF	Wind Energy Facility

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

WSP was appointed to manage the Environmental Impact Assessment (EIA) process for the proposed up to 400 kV overhead powerline grid connection and associated collector substations for the Camden Renewable Energy Facilities (REFs) located approximately 12 km south of the town of Ermelo in the Msukaligwa Municipality in the Mpumalanga Province. Figure 1.1 provides an overview of the general area. Figure 1.2 illustrates the alternatives identified.

Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an EIA process.

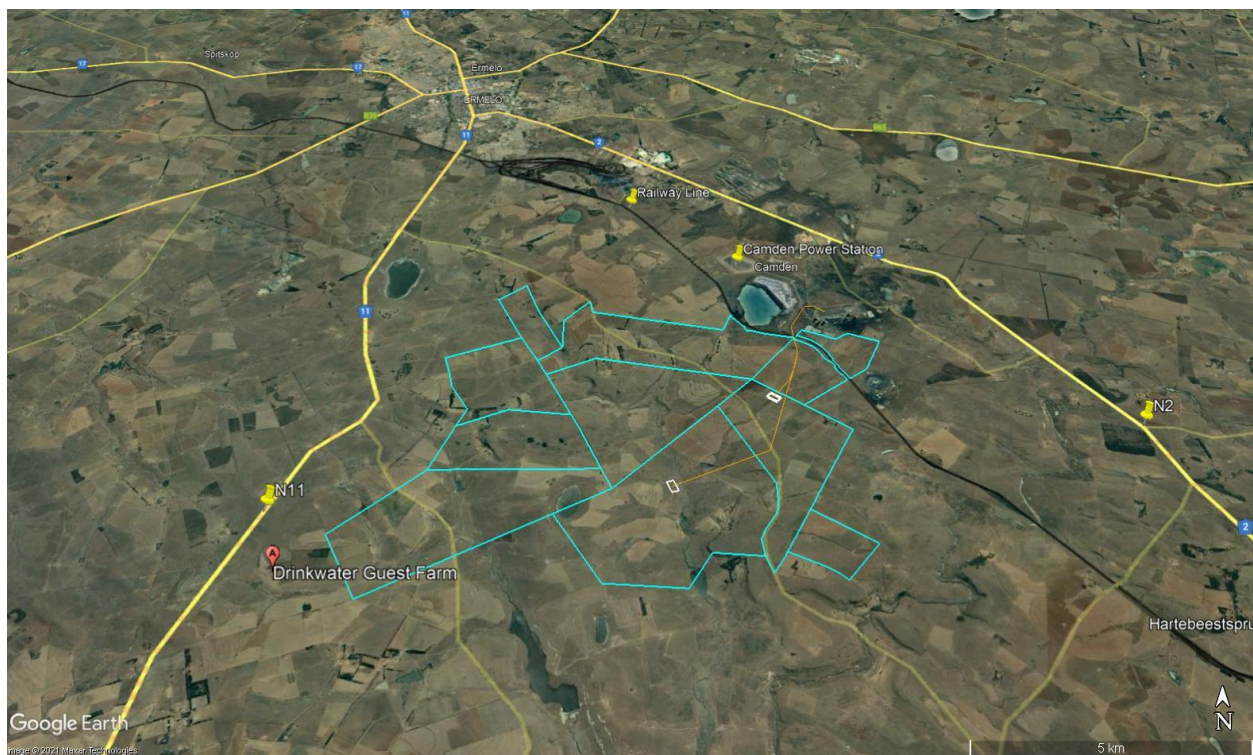


Figure 1.1: Location of up to 400 kV grid connection for Camden I SEF (light brown line linking collector substations, white blocks)

1.2 TERMS OF REFERENCE AND APPROACH

The approach to the SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (DEADP, 2007). The key activities 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), and the community, land uses and activities that may be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Review of key policy and planning documents that have a bearing on the project.
- Site visit and interviews with key stakeholders.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

1.3 PROJECT DESCRIPTION

The broader Camden renewable energy facilities (REFs) will connect to the nearby Camden Power Station substation (Camden substation) via an up to 400kV powerline (either single or double circuit) either directly (alternate option), or via a Loop-In-Loop-Out (LILO)(preferred option) option into the existing Eskom Camden I – Incandu 400kV line traversing the Camden I project site (preferred option). Where direct connection is envisaged, the powerline will be approximately 8km in length. Depending on location, the LILO into the Camden I – Incandu 400kV line will require a 400kV line of approximately 2km in length.

Two on-site Collector Substation (CS) site alternatives have been identified, CS Alternative 1 and CS Alternative 2. The onsite CS will consist of a high voltage substation yard to allow for multiple (up to) 400kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The area for the onsite CS will be up to 7ha and up to 1ha for the Camden Power Station substation expansion (if and as required).

Two alternative new powerline routes associated with the CS have been identified for direct connection into the Camden Power Station. In addition, two alternate routes are envisaged from the respective on-site Collector Substation for the Loop-In-Loop-Out option connection. Each of these will have a 250m assessment corridor to allow for micro-siting.

Figure 1.2 illustrates the location of the proposed CS and associated direct and Loop-in-Loop Out options. A description of the CS alternatives and associated power line route option is provided below. Table 1.1 lists the affected properties.

Collector Substation Alternative 1 (Dark Blue)

As indicated in Figure 1.2, CS Alternative 1 is located ~7.5 km to the south west of the Camden Power Station. The up to 400 kV line associated with CS Alternative 1 (dark blue) runs in a north easterly direction for ~2.8km before following the alignment of the existing Eskom Eskom Camden I – Incandu 400kV line (orange) and onto the Camden substation.

The Loop-In-Loop-Out (LILO) option (light pink) associated with CS 1 runs in an easterly direction for ~2.5 km before linking up with the Eskom Eskom Camden I – Incandu 400kV line (orange) (Figure 1.2).

Collector Substation Alternative 2 (Dark Pink)

As indicated in Figure 1.2, CS Alternative 2 is located to the north-east of CS Alternative 1, 5 km to the south west of the Camden Power Station. The up to 400 kV line associated with CS Alternative 2 (dark pink) runs in a north easterly direction for ~800 m before following

the alignment of the existing Eskom Eskom Camden I – Incandu 400kV line (orange) and linking up with the Camden substation.

The Loop-In-Loop-Out (LILO) option (light blue) associated with CS 2 runs in an easterly direction for ~300m before linking up with the Eskom Eskom Camden I – Incandu 400kV line (orange) (Figure 1.2).

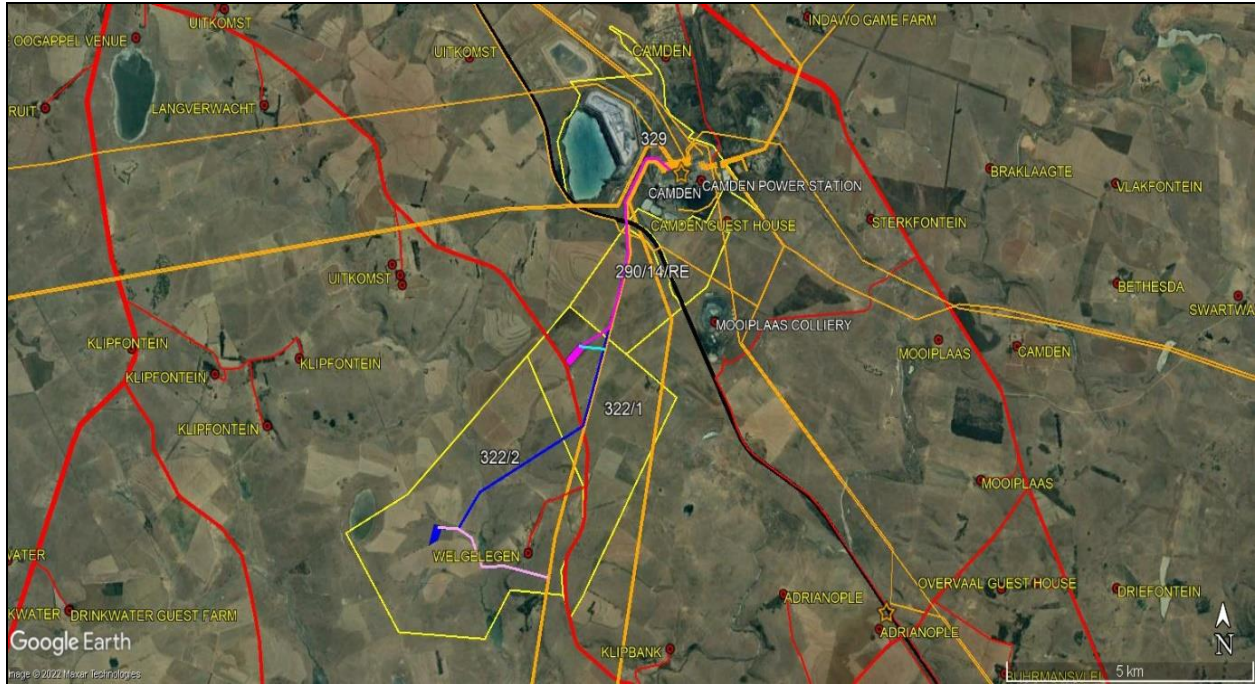


Figure 1.2: Proposed Camden I up to 400 kV line and Collector Substation alternatives and subject properties (yellow) indicated in relation to existing Eskom lines (orange lines), railway line (black) and local gravel roads (red). Also indicated are the proposed Collector substation Alt 1 (dark blue fill) and Alt 2 (pink fill); proposed up to 400 kV line Alt 1 (dark blue line) and Alt 2 (pink); and link-in/ link-out Alt 1 (light pink) and Alt 2 (light blue line)

Table 1.1 Affected Properties and associated surface rights ownership- Camden up to 400kV grid connection and Collector Substation

Parent Farm	Farm No	Portion No	Owner
Indicative Option 1			
Mooiplaasts	290	14	Lood De Jager Trust
Welgelegen	322	1	Reyneke Hendrik Jackobus Willem
Indicative Option 2			
Mooiplaats	290	14	Lood De Jager Trust
Welgelegen	322	1	Reyneke Hendrik Jackobus Willem
Welgelegen	322	2	Reyneke Hendrik Jackobus Willem

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Technical suitability

It is assumed that the development site represents a technically suitable site for the establishment of the proposed development.

Strategic importance of the project

The strategic importance of promoting renewable and other forms of 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.

1.4.2 Limitations

Demographic data

Some of the provincial documents do not contain data from the 2011 Census and or 2016 Household Community Survey. However, where required the relevant 2011 and 2016 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 300 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. Annexure C contains a copy of Tony Barbour's CV.

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 over the last seventeen 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 power line being either approved or rejected. Annexure D contains a signed declaration of independence.

1.7 REPORT STUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key issues.
- Section 5: Summary of key findings.

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 fit³” 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 SIA the following policy and planning documents were reviewed:

- The National Development Plan (2011).
- The New Growth Framework (2010).
- The National Infrastructure Plan (November 2012).
- Integrated Energy Plan.
- Mpumalanga Spatial Development Framework (2019).
- Msukaligwa Municipality Integrated Development Plan (2019-2020).
- Msukaligwa Spatial Development Framework (2019).

2.2 NATIONAL POLICY ENVIRONMENT

2.2.1 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 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

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.

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.

2.2.2 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.

2.2.3 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.

2.2.4 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.

2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

2.3.1 Mpumalanga Spatial Development Framework (2019)

The spatial vision for Mpumalanga Province is “A sustainable, vibrant and inclusive economy, Mpumalanga”. The SDF identifies a number of opportunities and challenges facing the province. The opportunities are linked to the province’s natural resources, well developed economy, and established economies.

Natural Environment: The natural environment is diversified and is associated with the Highveld and the Lowveld areas in the province. Five major rivers systems in the flow through Mpumalanga and it is an important catchment area.

Connectivity and Infrastructure: The province is well connected in terms of infrastructure and is connected to Maputo and Richards Bay ports by both rail and road.

Economy: The province’s rich biodiversity and scenic beauty support the tourism industry, while at the same time mining, specifically coal mining, plays a key role in the province’s economy. The availability of high potential soil and diverse climatic condition also support a range of crops.

Urban settlements: The key urban centres are well established economic centres and offer the opportunity for further economic development by leveraging on the towns’ economic bases.

In terms of challenges, climate change is identified as a key challenge. In this regard the activities in the province, specifically the generation of coal powered energy, account for 90% of South Africa’s scheduled emissions. The province is also home to 50% of the most polluted towns in the country. The predicted impacts associated with climate change include decreased rainfall in the province and increase temperatures. This will increase the risk of natural disasters, including droughts, flooding and fires.

The SDF identifies five spatial objectives, namely:

Connectivity and corridor functionality: The aim is to ensure connectivity between nodes, secondary towns, marginalised areas, the surrounding area, and to green open space systems.

Sustainable concentration and agglomeration: The aim is to promote the creation of an agglomeration economy that will encourage people and economic activities to locate near one another in urban centres and industrial clusters.

Conservation and resource utilisation: The aim is to promote the maximisation, protection and maintenance of ecosystems, scarce natural resources, high-potential agricultural land, and integrated open space systems.

Liveability and sense of place: The aim is to create settlements that contribute to people's sense of personal and collective wellbeing and to their sense of satisfaction in being residents of a settlements.

Rural diversity and transformation: The aim is to create Urban-Rural anchors and choices for residents within the rural economy linked to access to markets, food security and security of land tenure.

Connectivity and corridor functionality, Sustainable concentration and agglomeration, and Conservation and resource utilisation are of specific relevance the proposed development.

Connectivity and corridor functionality

The strategic objectives (SOs) that are relevant the study area and the proposed development include:

- Strategic Objective 2: Development of the existing corridors and building new linkages to increase capacity and economic opportunities and ensure connectivity to the surrounding areas
- Strategic Objective 5: Decongestion of the coal haul roads and Improvement of Freight Network

In terms of SO 2, the spatial linkages identified for development and upgrading include the upgrade of N17, N17/N2 Corridor and the N12 and N11 corridor. The site is flanked by the N2 to the north east and N11 to the south west.

Sustainable concentration and agglomeration

Of specific relevance, Strategic Objective 4, Diversify Economy, focusses on the need to diversify the economy. The SDF notes that mining sector contributes 25% to Mpumalanga's GVA. In addition, there are a number of other sectors directly or indirectly dependent on mining such as manufacturing (specifically metal processing) and utilities (specifically power generation). The combined GVA of these three sectors makes up more than 40% of the provincial GVA.

However, the SDF recognises that mining is not a sustainable industry and resources are finite. There is therefore a need for a gradual shift from mining-oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy. Mpumalanga's Coal Mining and Coal Fired Power Plant region (located mainly in the Highveld area) will be come under increasing pressure due to environmental considerations. As a result, the region is likely to experience a decline in demand for coal and with it a decline in the associated employment it creates. There is therefore a need to diversify the regional economy and facilitate the gradual transition of economic activities in the region. The proposed development supports the objective of diversifying the provinces economy.

Conservation and resource utilisation

The strategic objectives (SOs) that are relevant the study area and the proposed development include:

- Strategic Objective 2: Ensure conservation of all water resources and catchment Areas.
- Strategic Objective 4: Promote a low carbon and climate resilient economy.
- Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment.

Strategic Objective 2: Ensure Conservation of all Water Resources and Catchment Areas

Achieving Strategic Objective 2, Ensure Conservation of all Water Resources and Catchment Areas is closely linked to diversifying the economy. The SDF notes that the provinces water resources are under pressure from high demand activities, including Eskom's power stations, mining, and industrial uses. The proposed development represents a low consumer of water.

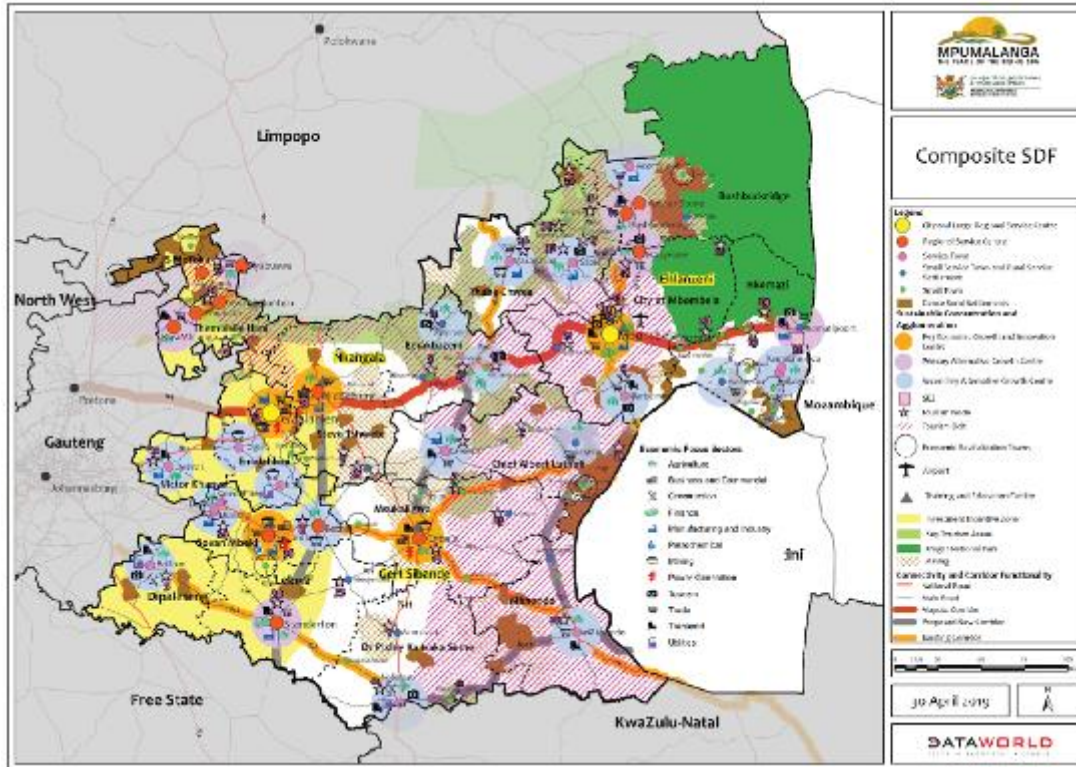
Strategic Objective 4: Promote a Low Carbon and Climate Resilient Economy

Mpumalanga is home to 12 of Eskom's 15 coal-fired power stations; petrochemical plants including Sasol's refinery in Secunda; metal smelters; coal and other mines; brick and stone works; fertiliser and chemical producers; explosives producers; and other smaller industrial operations, making the Highveld one of South Africa's industrial heartlands (CER, 2017). As a result, the air quality within the Mpumalanga Province, especially within the Highveld area, is the poorest in South Africa. The Highveld region accounts for approximately 90 % of South Africa's scheduled emissions of industrial dust, sulphur dioxide and nitrogen oxides (Wells et al. 1996, as cited in Josipovic et al. 2009). Achieving Strategic 4, Promote a low carbon and climate resilient economy, is closely linked to diversifying the economy. The proposed development supports the development of a low carbon, climate resistant economy.

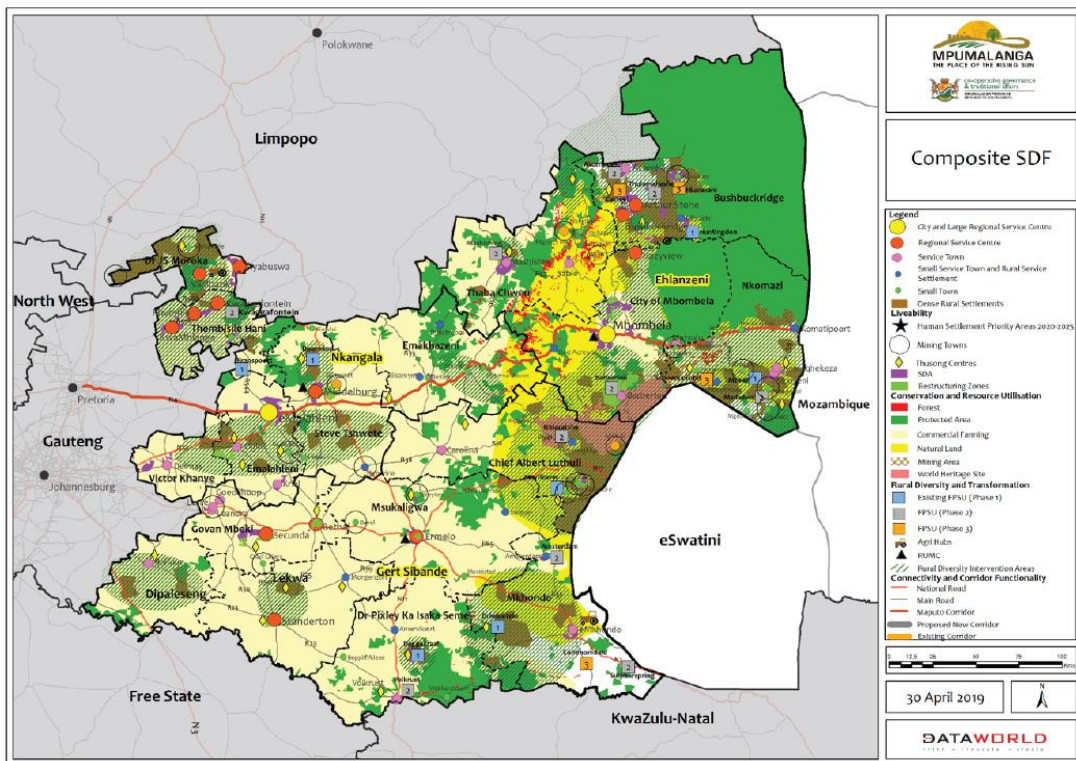
Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment

Mining contributes R 49.6 billion (approximately 25%) to the provincial economy. The key mining sector is coal, which represents 83% of South Africa's coal production. The mining sector, specifically coal mining, creates employment opportunities and supports the manufacturing and power generation sector. However, mining is also associated with many issues including water and soil contamination, air pollution and environmental degradation.

Achieving Strategic 6, To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment is closely linked to diversifying and developing a low carbon climate resistant economy. The proposed development supports the objective of diversifying and developing a low carbon, climate resistant economy. In terms of the high-level composite spatial development framework, Ermelo is identified as a Regional Service Centre (red dot) and the development area located to the south east of the town falls within a mining area (brown hatched) (Figure 2.2). The economic sectors in the area include mining and power generation. The dominant land use in the area is commercial agriculture (yellow, Figure 2.3).



Source: Mpumalanga SDF
Figure 2.2: Mpumalanga Composite SDF-Economic Activities



Source: Mpumalanga SDF
Figure 2.3: Mpumalanga Composite SDF-Land Uses

2.3.2 Msukaligwa Integrated Development Plan

The Vision of Msukaligwa Municipality is to be “A Beacon of Service Excellence”. The associated mission to meet the vision is:

- Enhancing community participation to steer development initiatives towards community needs.
- Advocating and stimulating local economy to promote economic growth and development.
- Improving good governance and measurable service delivery techniques.
- Enhancing effectiveness and efficiency in the utilization of available resources.
- Empowering our communities and the vulnerable groups in particular.
- Working in partnership with all its stakeholders.
- Continuously mobilizing resources to achieve high standards in service.

A SWOT analysis undertaken as part of the IDP process identified and number of opportunities and threats that are relevant to the development, namely.

Opportunities

- Power utility, government services, mining, tourism, agriculture, and forestry.
- National corridor developments (N2, N11 and N17).
- Strategic location of the municipality.

Threats

- Ageing infrastructure.
- High unemployment rate.
- Mines that are not rehabilitated.

Based on the outcome of the SWOT analysis a number of key focus areas were identified for attention over the 5-year IDP planning period of which the following are relevant.

- Unemployment and poor economic development.
- Insufficient access to basic services.
- Poor maintenance and upgrading of services infrastructure.
- Poor roads and storm water drainage system.

Besides Ermelo to the north west of the study area, the only other settlement located within relatively close proximity to the site is the rural settlement of Sheepmore, located to the east of the N2 and the study area.

The community engagement process undertaken as part of the IDP process indicated that a number of key issues in the rural areas that are relevant to the development. These include:

Basic services

A number of the rural areas in the MM that do not have access to basic services, including potable water, electricity, and toilets. Some of these challenges can be addressed through the SED initiatives associated with the development.

Skills development and job opportunities

There is a need to support skills development and create employment opportunities. The initiatives listed in the IDP include building of skills development centres or multipurpose centres, employing local contractors on projects implemented within municipality, creating

opportunities for skills transfers by contractors and the provision of bursaries and learnerships. The proposed development will create opportunities for skills development and employment.

Sports and recreation

There is a shortage of sports and recreation facilities and opportunities in many of the rural areas within the MM. The initiatives identified in the IDP to address this include the refurbishment of existing sports facilities, including the provision of ablution facilities, the construction of new sport facilities in remote areas and upgrading of security to prevent vandalism. Some of these challenges can be addressed through the SED initiatives associated with the development.

Section E of the IDP lists the developmental goals, objectives, strategies, and performance indicators. The strategic goals that are relevant to the development include:

- Sustainable and reliable delivery of basic services.
- Reduced unemployment and poverty.
- Social cohesion and spatial transformation.

The key priorities in terms of basic services with specific reference to rural areas includes the establishment of new and or up-grading of existing clinics, and the provision of mobile clinic services for more remote rural areas. The need for clinics outside Ermelo to operate 24 hours and seven days a week due to the absence of hospitals nearby was also raised as a key issue. reach the areas.

In terms of community facilities, the needs identified included, community halls and more Thusong Centres. Centres also need to be established for disabled members of the community.

The key priority in terms of unemployment and poverty is to support economic development and create employment opportunities.

The strategic objectives that are relevant to the development include:

- To provide sustainable and reliable services to communities.
- To coordinate efforts to address unemployment and poverty.

2.2.3 Msukaligwa Municipality Spatial Development Framework

The spatial vision for the MM is *"a diversified, vibrant rural economy that make optimal use of natural resources, supported by a well-connected network of sustainable rural service and economic nodes, where people have access to services and economic opportunity"*.

The SDF is informed by a number of spatial objectives, namely:

- Provide a spatial structure that facilitates access to services for all communities.
- Protect strategic water sources and sensitive eco-systems.
- Provide space for the diversification of the local economy.
- Eliminate past spatial settlement patterns.

The provision of space of the diversification of the local economy is of specific relevance to the proposed development.

A SWOT analysis was undertaken as part of the preparation of the SDF. The key outcomes of the analysis are summarised below.

Strengths

- Rich natural resource base – minerals, high potential agricultural land, water resources, natural environment (lakes region).

Weakness

- Typical rural population distribution making it difficult to reach people with services.
- Remaining service backlogs (water, sanitation, refuse removal).
- Increasing poverty levels.
- Relatively low skills levels; declining functional literacy.

Opportunities

- National projects to enhance regional links may strengthen the locational advantage of Ermelo / Wesselton.
- Potential for tourism linked to natural assets.
- Potential for larger scale beneficiation supported by current nodal structure and transport links.
- Legislative investment by mines (social and labour plans) and the associated opportunity for service provision and socio-economic development⁴.

Threats

- Declining coal reserves threatens mining economy and employment. Impact on mining sector also impacts on other related industries, such as manufacturing and transport.
- Global and national move away from carbon-based economy will lead to decline in mining, coal power generation economy and employment. This will also impact on mining related industries.
- Competing land uses – mining, agriculture, urban expansion, conservation
- Climate change – decreased rainfall and increased temperatures will have impact on agriculture, forestry, and settlements.
- Population growth exceeding expected and current economic growth.

The results of the SWOT analysis informed the identification of a set of priority issues centred around natural resource management and human development. The issues that are relevant to the proposed development include:

Strategic water source areas

Msukaligwa is part of a catchment area which is classified as strategic water source area at a national scale. The preservation and sustainable use of these water sources is becoming increasingly important in view of climate change. Decisions about the future development of the area should take cognisance of this issue, and not sacrifice long term water security in favour of meeting short term economic or development targets.

Conflicting land uses

Msukaligwa is richly endowed with natural resources including water, high potential land, minerals, and sensitive ecosystems that occur in attractive natural landscapes. However, these natural resources and the demand to exploit them spatially overlap and often conflict. The SDF highlights the need to address and manage potential land use conflicts.

⁴ Opportunities associated with SLPs would also apply to Community Trusts associated with renewable energy projects.

Reliance on Carbon Economy

The area's economy is currently strongly dependent on coal mining. In addition to coal mining, the area also hosts the Camden Power Station. The SDF notes that the eventual decline of the mining sector and coal-based power generation, based on declining coal deposits and a move away from a carbon-based economy, is a long-term certainty for the area. Emphasis in spatial planning should be on the creation of opportunities to diversify the economy to lessen the impact of the decline.

The SDF highlights the risks posed by climate change, specifically given that large section of the economy is reliant on agriculture and forestry. The area is also the source area of some of the main strategic waterways of the country.

The SDF identifies a number of structuring elements that inform the spatial concept for the MM. These include urban development nodes, transportation corridors, mining areas and commercial agriculture and conservation areas.

The main town of Ermelo is designated as a Primary Node. The function of a Primary Node is to:

- Provide higher order services to the growing urban population, as well as the rural catchment area surrounding the node.
- Provide space for economic diversification and higher intensity economic development, with a focus on agriculture and related activities, mining, utilities, and **power generation**, as well as transport and logistics. Support should also be provided too industrial and commercial uses, as well as business incubation centres and innovation centres, training facilities and educational institutes

Sheepmore, located to the east of the development area, is designated as Rural Node and has been identified as a site for the establishment of a Farmer Production Support Unit in terms of the Department of Rural Development and Land Reform's Agri-Park Programme. The economic focus on Sheepmoor is on forestry and agriculture (livestock, grains (maize and beans) and vegetables). Economic initiatives such as the establishment of grain silo, training in tree farming and provision of connecting infrastructure should be prioritised. The development of small agri-villages in consultation with Mondi/ Sappi is also identified as an initiative. The Socio-Economic Development (SED) spend linked to the proposed development could support for these initiatives

The N2 and N17 are identified as Primary Transportation Corridors, while the N11 is identified as a Secondary Corridor. The SDF notes that development of nodes along these corridors are proposed, in order to intensify development at specific points and achieve economies of scale.

The SDF highlights the key role and spatial extent of mining in the MM, including reference to the Camden coal-fired power station south of Ermelo. Over the longer term the rehabilitation of mining areas and a range of alternative peri-urban uses should be considered for the impacted areas in view of the decrease reliance on coal. Commercial Agriculture also represents a key economic activity in the MM. However, the SDF notes that climate change will pose a risk to the agricultural sector.

The structuring elements have been used to identify spatial focus areas. The areas of relevance to the development include:

- Agriculture and Forestry Focus Areas.

- Conservation and Tourism Focus Area.
- Mining and Peri-Urban Focus Areas.

Agriculture and Forestry Focus Areas

In terms of agricultural development, the SDF notes that the recommendations of the District Rural Development Plan for Gert Sibande District Municipality be implemented. The Plan identifies a number of rural intervention areas (RIAs). As indicated in Figure 2.4, the study area is not located in an RIA. The main land use is commercial farming.

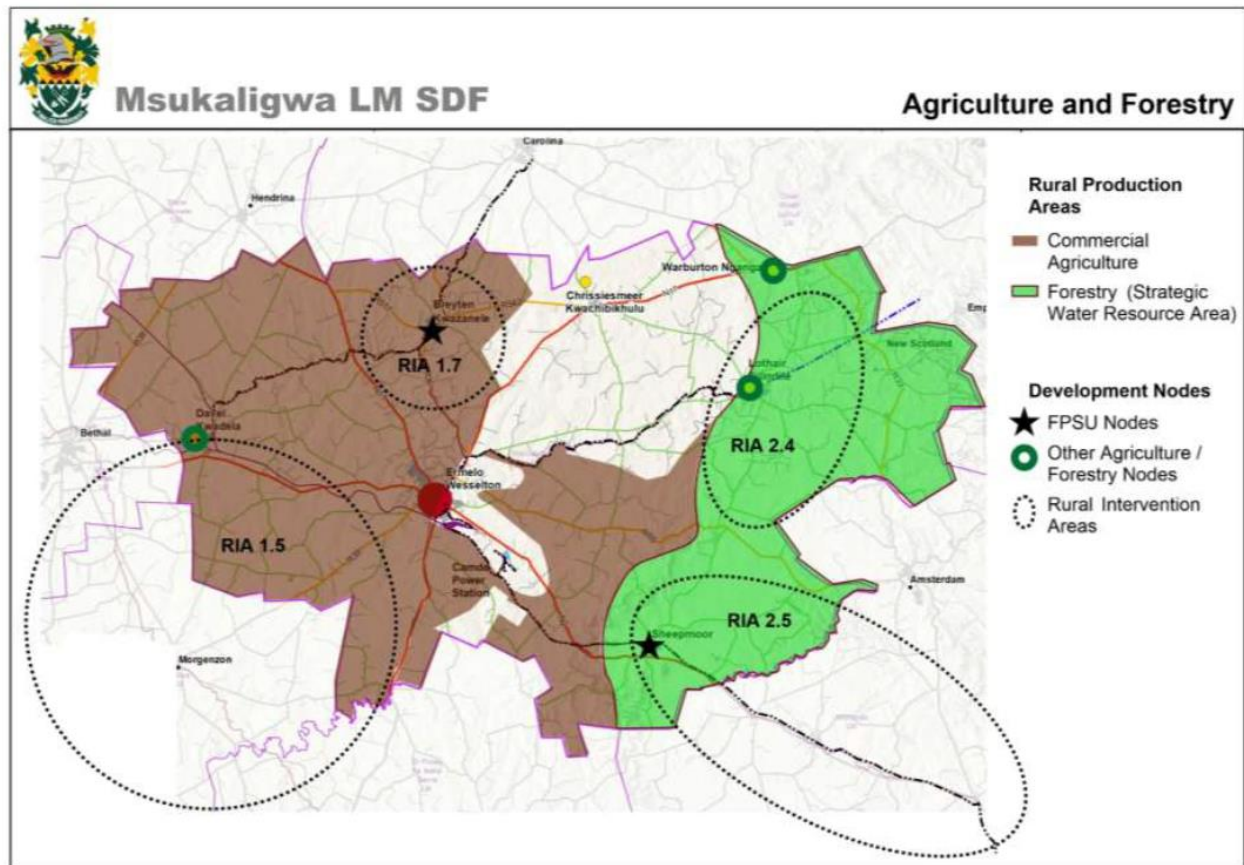


Figure 2.4: Msukaligwa SDF-Agriculture and Forestry

Conservation and Tourism Focus Areas

The SDF notes that the entire Msukaligwa area is environmentally sensitive, and all human activity should be conducted in such a way as to minimise impact. The key areas of significance identified include:

- The lakes region – this natural asset is not only an economic asset for tourism, but also an important ecosystem and an important mechanism to mitigate the impacts of climate change.
- Strategic water source areas and river headwaters – the area makes an important contribution to national water security, and also requires clean water for human development and economic activities such as agriculture.
- Protected areas – a number of small, protected areas exist outside the lake’s region. These areas are not only important ecologically, but also from a tourism perspective.

The natural and cultural assets of Msukaligwa, notable the lakes region, has the potential to serve as a major attraction. In addition, the area’s proximity to the large markets of Gauteng and good regional connectivity should be harnessed in attracting more local tourists.

As indicated in Figure 2.5, the majority of the proposed development area is not located in a protected and or tourism area. There is however a protected area to the south of the development area. This will need to be assessed as part of the relevant specialist studies.

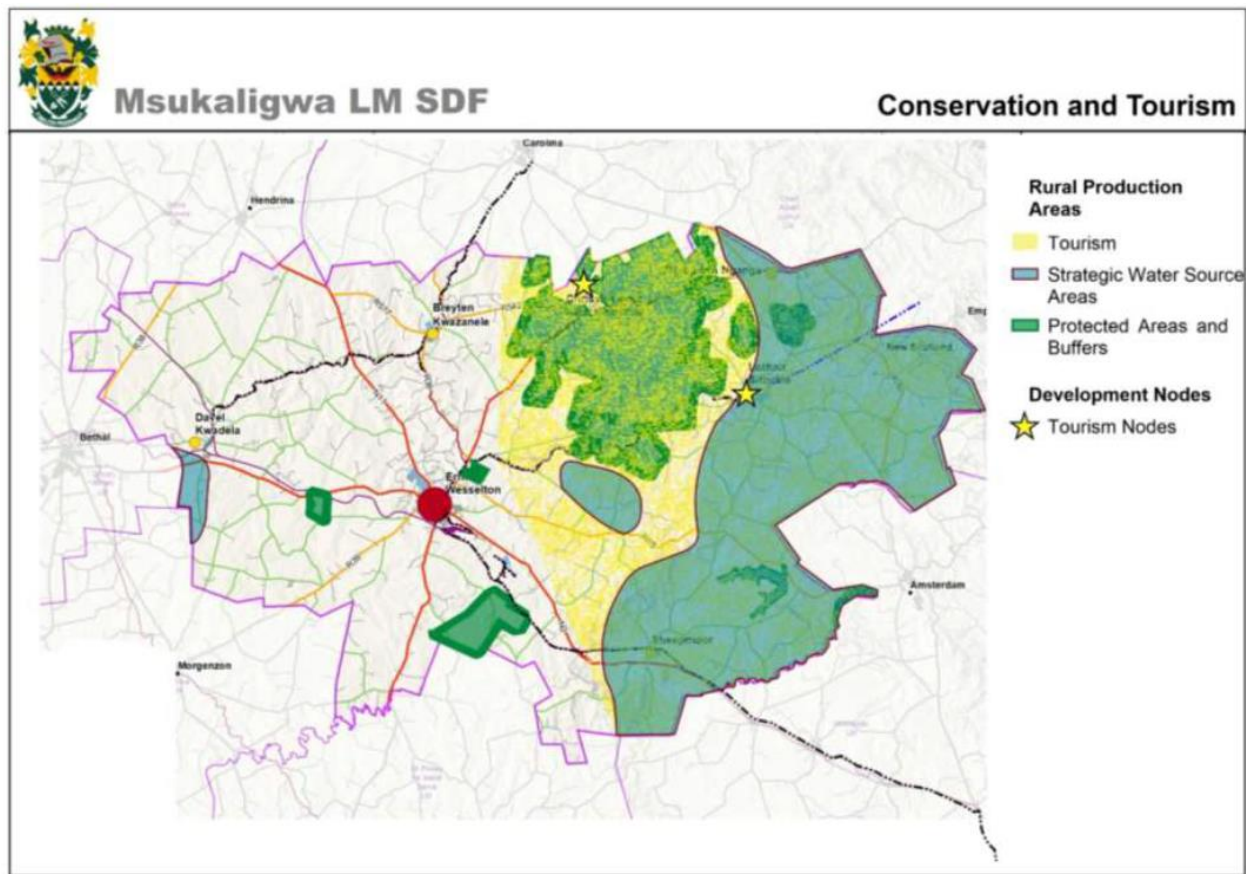


Figure 2.5: Msukaligwa SDF-Conservation and Tourism

Mining Areas

The SDF acknowledges the importance of the mining sector and notes that it will need to be accommodated over the short to medium term. However, of relevance to the proposed development the SDF refers to green industries and indicates that the existing site of the Camden Power Station and surrounds should be made available for new industrial development in the long term, to manage the long-term impact of the Power Station being decommissioned.

The existing road and rail infrastructure render the area in the vicinity of the Power Station and the site itself highly accessible creating an opportunity for redevelopment with alternative uses requiring extensive space and good connectivity. The SDF also notes that the mining belt area holds other potential that should be harnessed with a long-term view of diversifying the local economy to soften the long-term impact of eventual decline in mining. As indicated in Figure 2.6, the development area is located in an area where current mining

activities take place (brown areas). The composite spatial development framework for the MM is informed by the various structuring elements. The spatial layout is reflected in Figure 2.7. As indicated in Figure 2.7, the majority of the development area falls within a commercial agriculture area. There is also a protected area located to the south of the development area.

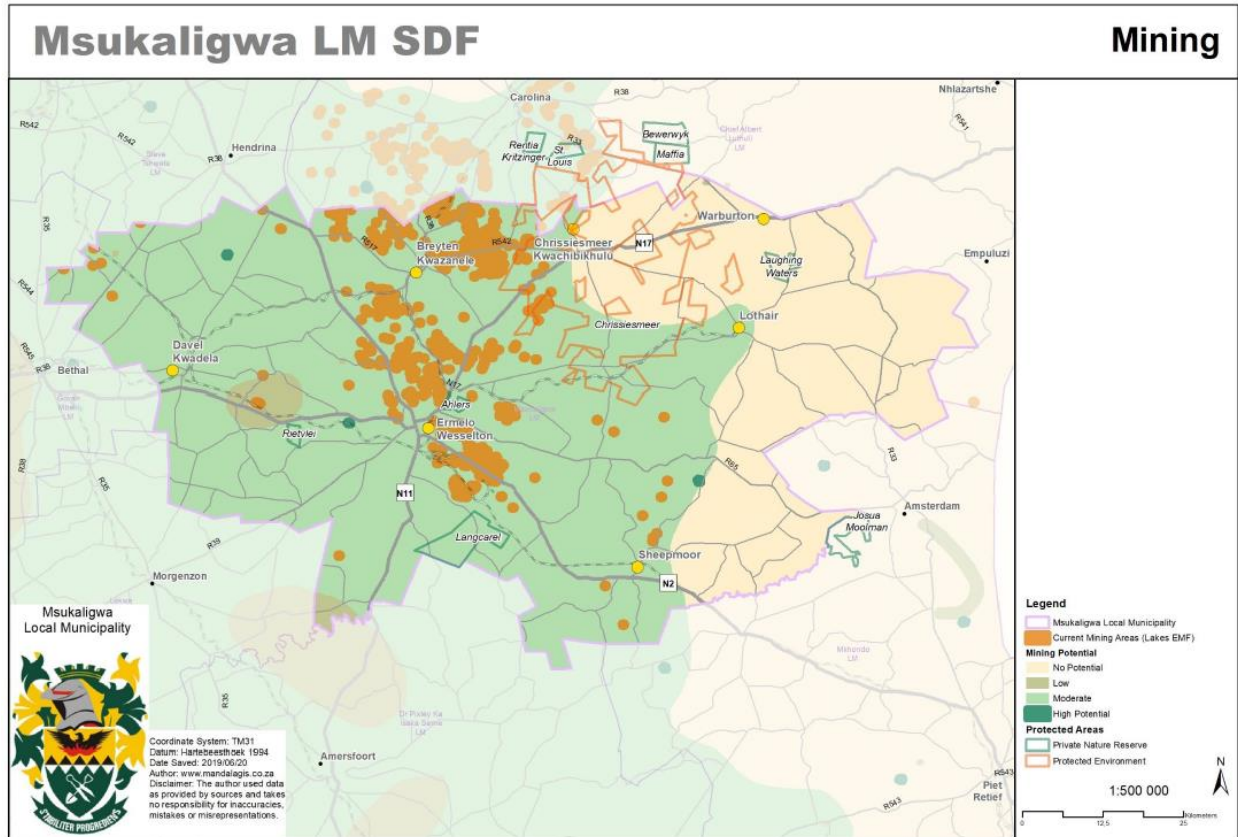


Figure 2.6: Msukaligwa SDF-Mining

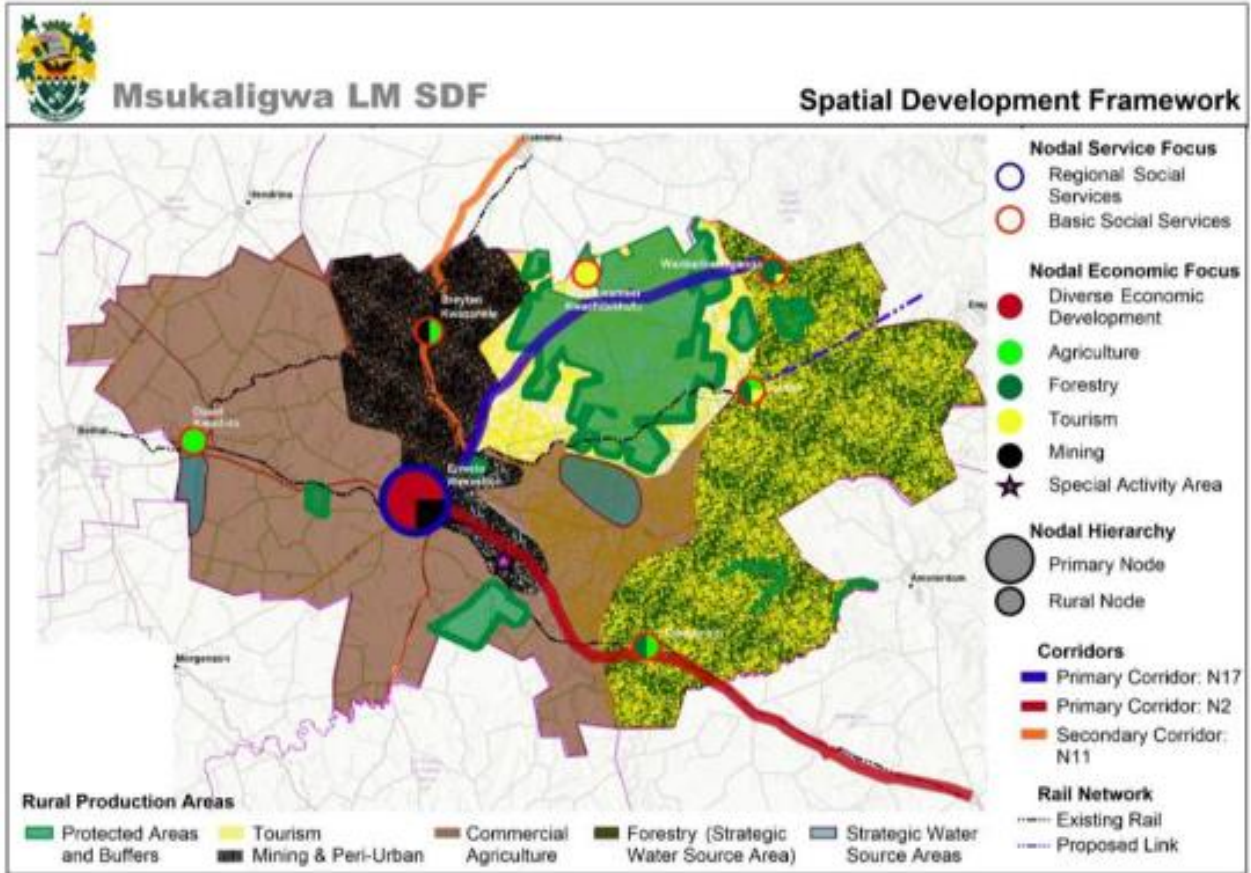


Figure 2.7: Msukaligwa SDF-Composite Spatial Development Framework

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.
- Provincial context.
- Overview of district and local municipalities.
- Site and the surrounding land uses.

3.2 ADMINISTRATIVE CONTEXT

The study area is located within the Msukaligwa Municipality (MM) within the Mpumalanga Province. The MM is one of the seven Local Municipalities that make up the Gert Sibande District Municipality (Figure 3.1). The town of Ermelo is the administrative seat of the MM.

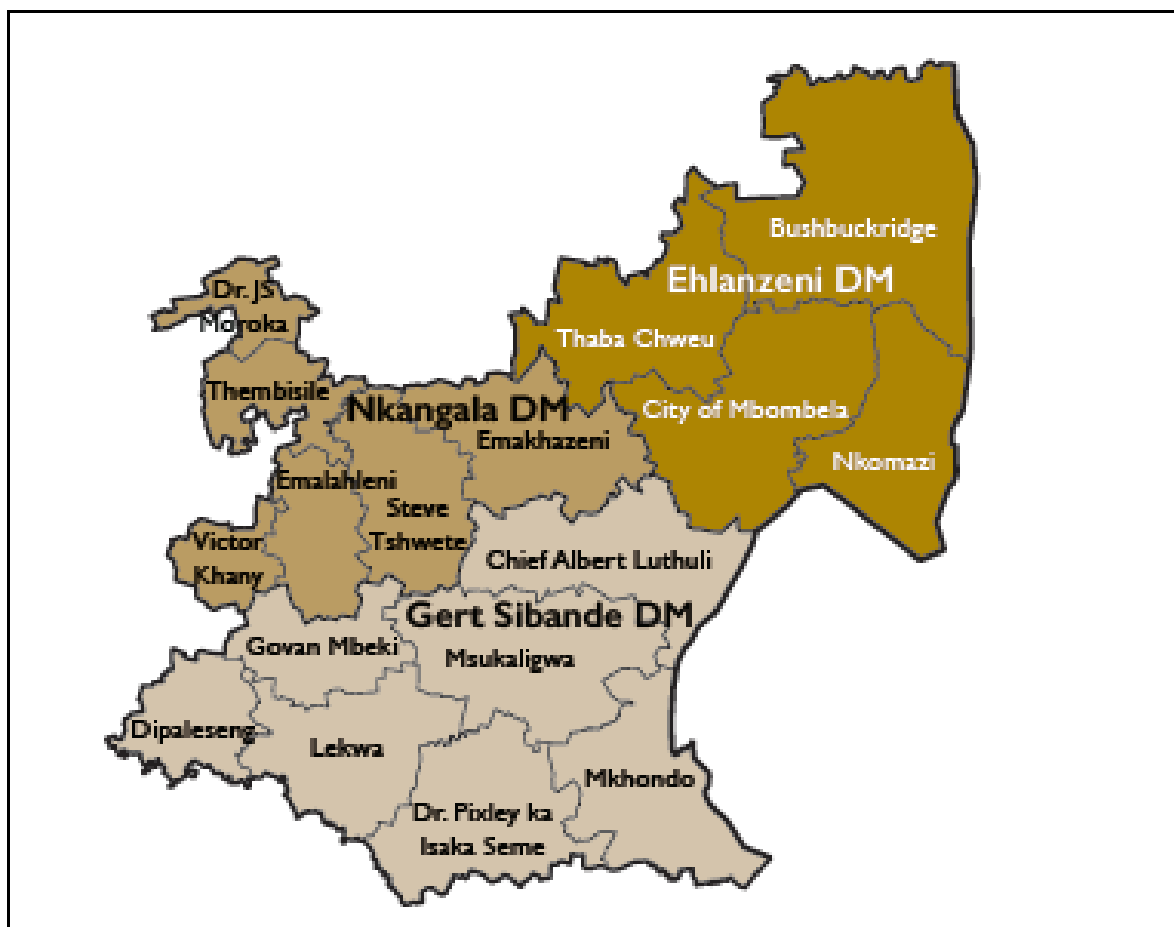


Figure 3.1: Location of Msukaligwa Municipality within the Gert Sibande District Municipality and Mpumalanga Province.

3.3 DEMOGRAPHIC OVERVIEW

Population

The population of the MM in 2016 was 164 608 (Community Household Survey 2016). Of this total, 35.4% were under the age of 18, 60.4% were between 18 and 64, and the remaining 4.1% were 65 and older. The MM therefore had a high percentage of the population that fall within the economically active group of 18-65. The figures are higher than the figures for the GSDM and Mpumalanga (57.7% and 56.6% respectively). This is likely to be due to the employment opportunities associated with the mining and manufacturing activities in the MM.

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 to reduced revenue for local authorities to meet the growing demand for services. The traditional approach is based on people younger than 15 or older than 64. The 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 ratios for the MM, the GSDM and Mpumalanga in 2016 were 65.4%, 73.5% and 77% respectively. The high dependency ratios reflect the limited employment and economic opportunities in the area and the province as a whole. As indicated above, a high dependency ratio also places pressure on local authorities in terms of service delivery.

In terms of race groups, Black Africans made up 91.6% of the population on the MM, followed by Whites, 6.9% and Asian or Indians, 0.9%, and Coloureds, 0.6%. This figures for the GSDM are similar. The main first language spoken in the MM was isizulu, 79.1%, followed by Siswati, 7.3% and Afrikaans, 6.2%.

Households and house types

The total number of households in the MM in 2016 was 51 090, which constituted approximately 20% of the total number of households in the GSDM. Of these 66.2% were formal houses, 9.1% flats in backyards, 6.6% traditional dwellings, and 9.4% shacks or informal dwellings. The figures for the GSDM were 67.2%, 4.6%, 6.7% and 13.4% respectively. The majority of dwellings in the MM are therefore formal structures. A relatively large percentage of the properties in the MM (43.3%), while 5.9% were owned and in the process of being paid off. 22.1% of the households rented their properties, while 10.6% occupied their properties rent free. The rent-free figure is likely to be associated with farm workers. The relatively high number of properties that are owned and or in the process of being paid off reflects a relatively stable and established community.

In terms of household heads, approximately 38.9% of the households in the MM and 39.1% of the households in the GSDM were headed by women. These figures similar to the provincial figure of 39.71%. The high percentage of households headed by women reflects the likelihood that the men have left the area in search of employment opportunities in Gauteng. Women headed households tend to be more vulnerable.

Household income

Based on the data from the 2011 Census, 12.6% of the population of the MM had no formal income, 4.1% earned less than R 4 800, 7.1% earned between R 5 000 and R 10 000 per annum, 17.7% between R 10 000 and R 20 000 per annum and 20.9% between R 20 000 and 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 62.4% of the households in the MM and 65.2% in the GSDM live close to or below the poverty line. The low-income levels reflect the rural nature of the local economy and the limited formal employment opportunities outside in the urban areas. 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 MM. This in turn impacts on the ability of the MM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the MM and GSDM that live close to or below the poverty line is likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment

The official unemployment rate in the MM in 2016 was 15.6%, while 42.6% were employed, and 36.4% were regarded as not economically active. However, the COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in both the ULM and Ward 3. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Education

In terms of education levels, the percentage of the population over 20 years of age in the MM and GSDM with no schooling was 10.6% (2016), compared to 10.8% and 11.3% for the GSDM and Mpumalanga Cape Province. The percentage of the population over the age of 20 with matric was 34.12%, compared to 34.3% and 36.1% for the GSDM and Mpumalanga. The education levels for the MM are therefore similar to the DM and Provincial figures.

3.4 MUNICIPAL SERVICES

Electricity

Based on 2016 survey, 87% of households in the MM had access to electricity, compared to 90% for the GSDM and 93% for Mpumalanga.

Access to water

Based on the 2016 survey information, 81.7% of households in the MM were supplied by a service provider, while 5.8% relied on their own service or natural sources (4%). The reliance on own services or natural sources reflects the rural nature of large parts the MM.

Sanitation

72.3% of the households in the MM had access to flush toilets (2016), while 18.8% relied on pit toilets and 3.2% had no access to formal sanitation. The high percentage of households that rely on pit toilets is linked to the relatively high percentage (9.4%) of households that live in shacks.

Refuse collection

Only 59.4% of the households in the MM had access to regular refuse removal service, while 16.5% disposed of their waste at their own dump and 7.1% had not access to facilities. The low percentage of households that have access to regular refuse removal services is linked to the relatively high percentage (9.4%) of households that live in shacks. The relatively higher percentage that dispose of their waste at their own dump reflects the rural nature of the area and the difficulty of providing municipal services to areas located at a distance from the main towns in the area.

3.5 HEALTH, EDUCATION AND COMMUNITY FACILITIES

Health Services

The MM IDP indicates that there is 1 government and 1 private hospital in the MM, 10 primary health care clinics, and 4 mobile clinics (Table 3.1).

Table 3.1: Health services in Msukaligwa Municipality

Facilities	Number
Private Hospitals	1
Primary Health Care Clinics	10
Mobile Clinics	4
Government hospitals	1
Infectious Hospital (TB)	1
Dentists	4
Gynaecologist	1
Social Workers	12
Private Doctors	20

Educational Facilities

The MM IDP indicates that there are 71 primary schools, 6 high schools, 12 combined schools and 11 secondary schools in the MM. There is 1 FET College, but no tertiary facility (Table 3.2). The IDP notes that given the growth in the area there is a need for at least a tertiary institution within the GSDM. Development within Ermelo has also created a need for more primary and high schools.

Table 3.2: Educational Facilities in Msukaligwa Municipality

Facility	Number
No. of Primary Schools	71
No. of High School	6
No. of Combined Schools	12
No. of Secondary Schools	11
No. of Tertiary Education Facilities	0
No. of FET Colleges	1
No. of Training Centres/Adult Education	9
No. of Private Schools	3
Day Care Centres	40

Community Facilities

Table 3.3 lists the community facilities in the MM. As indicated in the table, Ermelo as the administrative centre is relatively well catered for in terms of community facilities, including police stations, sports facilities, libraries, community halls and pension pay out points. However, Sheepmore, which is the closest rural settlement to the development area does not have a library and the sports facility is an informal soccer field.

Table 3.3: Community facilities

Area/Town	Police Station	Public Sport Facilities	Public Libraries	Community Halls	MPCC/TSC	Post Offices	Pension pay points	Comments
Breyten/KwaZanele	1	4	2	2	1	1	1	There is one informal soccer field at Breyten
Ermelo, Wesselton, Cassim Park and Thusiville	2	9	4	5	-	1	2	There are five informal soccer field at Wesselton. The Thusiville library is completed but not yet operating.
Chrissiesmeer/Kwachibikhulu	1	1	1	1	-	1	1	There is one informal soccer field at Chrissiesmeer
Area/Town	Police Station	Public Sport Facilities	Public Libraries	Community Halls	MPCC/TSC	Post Offices	Pension pay points	Comments
Davel/Kwadela	1	2	1	1	-	1	1	There is one informal soccer field at KwaDela. There is a complaint that the existing library at Davel is far from the majority users who reside at KwaDela.
Lothair/Silindile	1	1	1	1	1	1	1	The TSC is almost completed and postal services run by agency at Lothair
Sheepmoor	1	1	-	1	-	1	1	There is one informal soccer field at Sheepmoor. No library at Sheepmoor
Warburton/Nganga	-	1	-	-	-	1		Postal services run by agency at Warburton. The sport facility is an informal soccer field. No library service at Warburton.
TOTAL	7	19	8	11	2	6		

3.6 ECONOMIC OVERVIEW

The economic growth rate for Msukaligwa was at 3.0% per annum on average over the period 1996 to 2017 and forecasted average annual GDP growth for 2017-2022 relatively low at 1.3%. The contribution of Msukaligwa to the Mpumalanga economy was around

4.3%, making it the fifth largest local economy in the province. It is the second largest economy in the District, contributing around 15.5%.²¹

The key economic sectors in the MM in 2017 in terms of contribution to GDP were mining (20.3%), community services (18.5%), trade (including industries such as tourism) (18.2%) and finance (14.2%) (Table 3.4). Despite the importance of agriculture, it only contributed 6% to GDP in 2017. The IDP notes that the MM has a comparative advantage in economic sectors such as agriculture, transport, and mining.

Table 3.4: Contribution of sectors to Msukaligwa Municipality GDP

Economic Sector	2014	2017	Change
Agriculture	5,3%	6,0%	0,7%
Community Services	18,4%	18,5%	0,1%
Construction	2,7%	2,7%	0,0%
Finance	13,3%	14,2%	0,9%
Manufacturing	5,1%	5,1%	0,0%
Mining	20,8%	20,3%	-0,5%
Trade	18,5%	18,2%	-0,3%
Transport	11,3%	11,3%	0,0%
Utilities	4,5%	3,8%	-0,7%

Finance and Agriculture achieved the highest, although slight, growth in contribution from 2014 to 2017. The contribution of utilities, mining and trade declined slightly.

In terms of employment, the trade sector (20.6%) was the most important sector in terms of employment, followed by community services (15.3%), mining (12.8%), finance (11.6%) and manufacturing (10.1%) (Table 3.5).

Table 3.5: Contribution to employment of sectors in Msukaligwa Municipality

Employment Sector	2014	2017	Change
Agriculture	6%	6,3%	0,3%
Community Services	14,5%	15,3%	0,8%
Construction	7,9%	8,5%	0,6%
Finance	11,2%	11,6%	0,4%
Manufacturing	9,9%	10,1%	0,2%
Mining	14,7%	12,8%	-1,9%
Trade	21,1%	20,6%	-0,5%
Transport	4,5%	4,7%	0,2%
Utilities	2,5%	2,4%	-0,1%

In terms of unemployment, the MM unemployment rate was the 6th lowest among all the municipal areas of Mpumalanga. The unemployment rate deteriorated slightly from 23.1% in 2014 to 24.1% in 2017. Unemployment rates are higher for females at 29.8% and for males at 24.1%. However, youth unemployment at 34.5% is a key concern.

The IDP notes that in terms of future economic development, coal mining can be expected to remain an important sector for the short to medium term. However, the role of this

sector is expected to decline in the medium to long term due to limited coal resources, and a move away from a coal-based economy locally and globally due to the impact on climate. The current transport and logistics sector is also likely to be impacted on by a decline in coal mining.

3.7 OVERVIEW OF STUDY AREA

3.7.1 Introduction

The study area is located ~ 10 km to the south-east of the town of Ermelo, which is the administrative centre of the MM. Ermelo is the administrative seat of both the Msukaligwa Local Municipality (MLM) and the Gert Sibande District Municipality (GSDM) and is also known as the garden city of Mpumalanga and the gateway to the province. The small settlement of Camden associated with Camden Power station (located 2.3 km north of the project site), is the only other urban area located in significant proximity.

Three national highways, namely the N2, N11 and the N17 intersect at Ermelo. The N2 freeway connects Ermelo with Richards Bay on the KwaZulu Natal coastline. The N11 South connects the town to Newcastle to the south and then onto the Ladysmith before linking up with the N3 to Durban. The N11 north connects to Middelburg and the N4 freeway west to Pretoria. The N17 West connects the town to the southern suburbs of Johannesburg and N17 East to eSwatini.

Ermelo is also a major railway junction between Mpumalanga and KwaZulu-Natal. The rail junction connects to Machadodorp which is on the Pretoria and Maputo railway line. The town also lies on the Richards Bay railway line that connects the Mpumalanga coalfields with the export Port of Richards Bay on the Indian Ocean.

The study area is flanked by the N2 to the north and north-east of the site, and the N11 to the west and south west of the site. The Richards Bay railway line traverse the area to the south of the Camden Power station site. The Eskom Camden Coal Power station is located immediately to the north and north east of the site (Photograph 3.1). Construction of the 1600 MW power station commenced in November/December 1962 and the first turbo-generator was commissioned in April 1967. The last of the eight units was commissioned in 1969. The Camden Power station became the starting point of the national power grid, consisting of a series of up to 400 kV lines which today interconnect the entire country. The power station has six 111.86 m high cooling towers and four 154 chimney (smoke stacks) that served 8 boilers.

Between 1990 and 2006 the station was mothballed, but South Africa's energy crisis in the early 21st century prompted Eskom to recommission the station, starting with unit 6 in July 2005 and completing with unit 1 in July 2008. The development of the Camden Power station also involved the construction of the village of Camden, located ~ 1.3km to the north of the power station. The village, which consists of 356 was established to accommodate administration, operating and maintenance personnel. Community facilities including a community hall, sports facilities, included four tennis courts, a bowling green, swimming bath, shooting range, rugby, hockey, soccer, and cricket fields and jukskei, and the associated clubhouses and changerooms were also established. Several parks, situated throughout the residential property, provided playgrounds for some 500 children at Camden. Schooling was provided in Ermelo for these children, with a regular bus service operating between Camden and Ermelo⁵. The settlement currently accommodates a SANDF military base (Camden).

⁵ <https://www.eskom.co.za/sites/heritage/Pages/Camden.aspx>



Photograph 3.1: Camden Power Station

The proposed Camden 1 Collector substation and up to 400 kV line project is located just to the south of the Camden power station, approximately 11 km south-east of the town of Ermelo in the south-central part of Mpumalanga Province (Figure 3.2). The small Camden settlement associated with Camden power station (located 1.3 km north of the project site), is the only other urban area located in significant proximity.

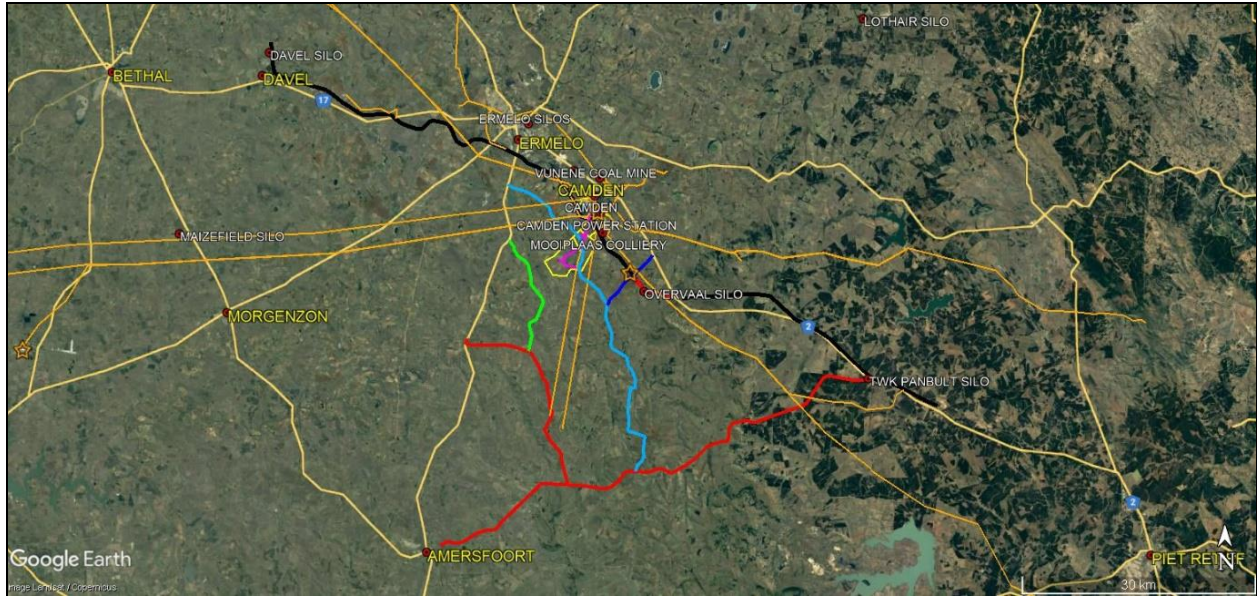


Figure 3.2: Proposed up to 400 kV line and collector substation alternatives (pink) and subject properties (yellow) indicated in relation to settlements, grain silos and local collieries, Camden power plant, existing Eskom lines (orange lines), railway line (black), and local public gravel road network, viz., the Familiehoek road (green) De Emigratie road (light blue), Overvaal road (dark blue) and other (red)

Study area properties are primarily accessed off three public gravel roads which intersect with the N11 or N2, viz. the De Emigratie- (N11), Familiehoek- (N11) and Overvaal (N2) roads. Of these, the De Emigratie road is of most relevance to the project. It functions as a north-south-aligned spine, ultimately providing two routes between the N11 and the N2 via the study area (Photograph 3.2). Base farms are typically accessed directly off these roads, with internal roads providing access to uninhabited farm portions or properties. Access to farm roads is typically unrestricted (i.e., no access gates – but there are exceptions). A road off the Overvaal road (N2-De Emigratie Road) provides the only access road to the Overvaal silo complex.



Photograph 3.2: De Emigratie road on Welgelegen (site property)

The study area essentially forms part of the Ermelo commercial farming district. Ermelo is a key producer of field crops and livestock, typically in mixed operations. Field crops are grown under dryland conditions. Key crops include maize and dry beans (Photograph 3.3). Ermelo is a major producer of maize. Six large silo complexes are located within a 40 km

distance of Ermelo. Those in significant proximity to the study area are located at Overvaal rail siding and in Ermelo and serve a broader area than the immediate study area (Photograph 3.4).



Photograph 3.3: Maize fields on Uitkomst farm along the De Emigratie gravel road; Camden power station in the background.



Photograph 3.4: Overvaal silo located along Richards Bay railway line

Both beef cattle and sheep are raised (Photographs 3.5 and 3.6). The natural grassveld grazing resource has a relatively high carrying capacity of around 1 head of cattle (LSU) to 4.5 hectares. By utilizing harvest residue, carrying capacities may be increased to 1 LSU/ha, i.e., the activities are interdependent. Most owners also utilize pastures for hay production. The veld is prone to veldfires. The risk is greatest during the dry winter months. Key grazing spp. such as Oulandsgras (*Eragrostis curvula*) may take up to 3 years to recover to full productivity (van der Meulen, pers. comm).



Photograph 3.5: Beef cattle grazing on Adrianople Farm



Photograph 3.6: Kraal on Uitkomst with maize field in the background.

The study area settlement pattern is sparse and concentrated along the main public gravel roads. Study area operations typically consist of a number of (often adjacent) properties. Many farmers also lease additional land. The estimated minimum size of an economically feasible cropping operation is around 1000 ha. There is a tendency towards larger operations in order to maintain a viable economy of scale in the face of continuously rising input costs. Base farms are typically inhabited by farm owners and or managers (Photograph 3.7). Some properties are devoid of structures, while farmsteads on a few have become redundant.



Photograph 3.7: Farmstead cluster on Klipfontein

The study area terrain is undulating. Farms typically consist of a patchwork of cropped areas and veld used as rangeland. Essentially all higher potential arable land has been brought under cultivation. The landscape is largely treeless, but substantial (and distinctive) oak lanes and small groves are located on some study area properties. Relatively small numbers of farm labourer families continue to reside on a few farms, but the general trend is towards transporting in labourers from Ermelo on a daily or weekly basis. Larger operations may provide permanent employment to up to 40 workers. Most of the opportunities are associated with cropping activities. Small groups of households with historical tenure rights reside in small clusters on a number of farms along the key public gravel roads (Photograph 3.8).



Photograph 3.8: Farm labourers' housing along the Familiehoek Road on Klipfontein

A number of historic and operational coal mines are located in the immediate vicinity of Camden Power station (Photograph 3.9). These include the active Mooiplaas colliery adjacent to the railway line south of Camden power station, and the large La Brie and Vunene mines to the north of the N2 between Camden and Ermelo. No historic diggings or active mining currently takes place to the west (south) of the railway line, i.e., the immediate study area. Prospecting has recently been carried out on a number of study area farms. Camden consists of 356 dwellings and was constructed to accommodate Eskom personnel⁶. The settlement currently accommodates a SANDF military base (Camden).



Photograph 3.9: Camden power station seen from the N2

The area located to the south of Camden (study area) is currently affected by 5 Eskom line corridors. These include two parallel line corridors approaching Camden from the west (both traversing the N11, Photograph 3.10), two further parallel corridors entering Camden from the south (traversing De Emigratie road, Photograph 3.11), and a corridor aligned parallel to the north of the KZN railway line, entering Camden from the south-east via a small substation located along the railway line just to the west of the Overvaal road.

⁶ <https://www.eskom.co.za/sites/heritage/Pages/Camden.aspx>



Photograph 3.10: 400 kV and 275 kV lines looking east from the N11 approximately 1.5 km south of Ermelo.



Photograph 3.11: 400 kV line crossing the De Emigratie Road on Uitkomst, with Camden power station in the background

While Ermelo is considered a gateway for traffic between the Rand and KZN, the town and surrounds are not a major dedicated tourism destination. This is linked to the transformed landscape (mining, monoculture cropping) in the broader region. A number of accommodation facilities are located in and around Ermelo, but essentially cater to business-related or stop-over travellers. A few venue-type facilities are located on the southern outskirts of Ermelo, these essentially catering for local functions such as weddings.

3.7.2 Site properties

The proposed up to 400 kV overhead line and associated collector substation directly affect four properties (including Camden Power station). The affected properties are owned by three land owners (Table 3.6). The properties owned by Ms Petronella Reyneke (322/1 and 322/2) would be affected by all infrastructure alternatives. The property owned by Mr de Jager (290/14/RE) would only be affected by the proposed up to 400 kV line alternatives (Figure 3.3).

Table 3.6: Overview of properties affected by proposed infrastructure

PROPERTY	IMPACT	OWNER	LAND USE
329	up to 400 kV Alts 1& 2	Eskom	Eskom Camden power plant & substation
290/14/RE Mooiplaats	up to 400 kV Alts 1& 2	Mr Lood de Jager	Dryland cropping; Grazing
322/1 Welgelegen	Substation Alt 2; up to 400 kV Alts 1& 2; LILO Alt 2	Ms Petronella Reyneke	Dryland cropping; Grazing Land leased out
322/2 Welgelegen	Substation Alt 1 up to 400 kV Alt 1; LILO Alt 1		Residential (base farm); Residential (labour, tenured); Dryland cropping; Grazing; Land leased out

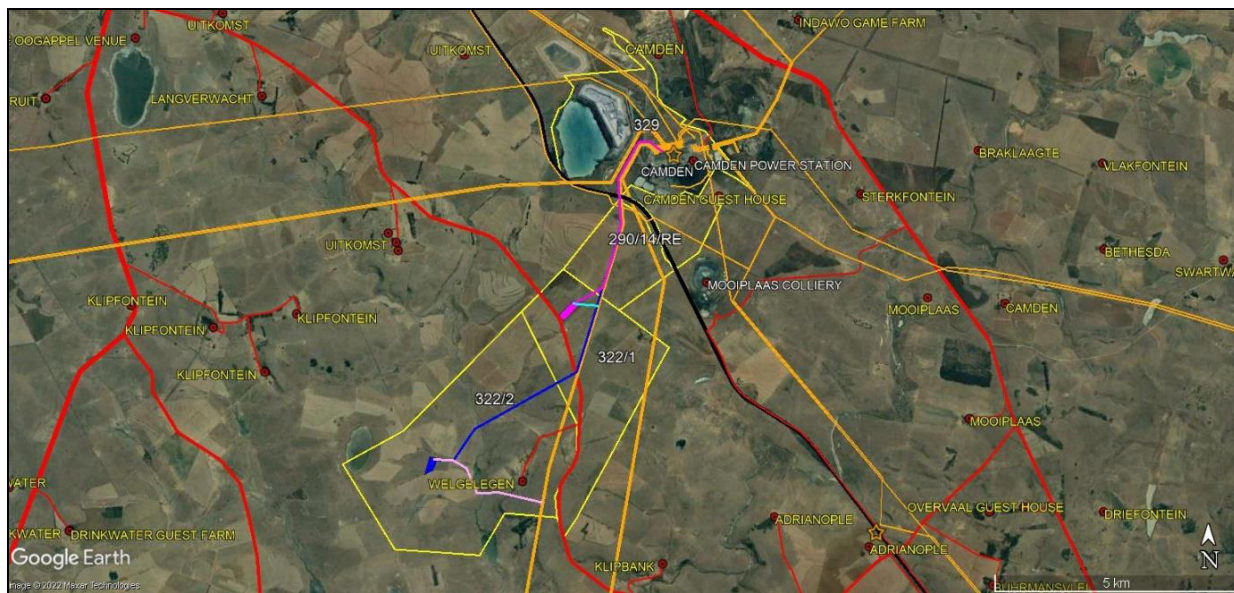


Figure 3.3: Proposed Camden I up to 400 kV line and Collector Substation alternatives and subject properties (yellow) indicated in relation to existing Eskom lines (orange lines), railway line (black) and local gravel roads (red). Also indicated are the proposed Collector substation Alt 1 (dark blue fill) and Alt 2 (pink fill); proposed up to 400 kV line Alt 1 (dark blue line) and Alt 2 (pink); and link-in/ link-out Alt 1 (light pink) and Alt 2 (light blue line).

Welgelegen 322/1 (Collector Substation site Alt 2) and 322/2 (Alt 1) are part of three contiguous properties owned by Ms Reyneke. The Reyneke land is currently leased out for cropping and stock farming purposes to two separate local farmers, Messrs. Lood de Jager and Bernard Scheepers (Photograph 3.12). Ms Reyneke and her son Louis reside in separate dwellings on the yard on 322/2 (Photograph 3.13). Mr Reyneke is employed as farm manager by Mr Scheepers, and also runs a small logistics (grain transport) operation from 322/2. Eight tenured households reside in a cluster of small houses adjacent to the De Emigratie road (Photograph 3.14). Members of two households are employed by the Reynekes. Both properties are affected by the existing 2 x up to 400 kV corridors approaching Camden power station from the south west.



Photograph 3.12: Beef cattle on Welgelegen



Photograph 3.13: Outbuildings on Welgelegen farm yard



Photograph 3.14: Farm labourers'/ tenured dwellings on Uitkomst seen from access road to farmstead off the De Emigratie road, up to 400 kV line pylon in foreground

Mooiplaas 290/14/RE forms part of a substantially larger mixed farming operation owned by Mr Lood de Jager. Mr De Jager's operation is based on Uitkomst Farm adjacent to the west. The extensive farmyard straddles Uitkomst 292/2 and 292/10, and includes three primary dwellings, a few workers' houses and outbuildings (Photographs 3.15 and 3.16). Mooiplaas Farm straddles the Richards Bay railway line. Portions on both sides of the railway line are used for cropping activities. No structures are located on the property. The property is currently affected by four (4) Eskom line corridors. This is linked to its location relative to Camden substation.



Photograph 3.15: One of three primary dwellings located on Uitkomst



Photograph 3.16: Soy bean fields on Uitkomst

3.1.1 Potentially sensitive social receptors

Apart from Eskom Camden, the affected properties are primarily used for mixed farming operations. Dwellings are located only on Welgelegen 322/2. Welgelegen and Uitkomst are accessed directly off the De Emigratie Road. Mooiplaas is accessed via internal roads (portion south of line) and the N2 (north). All the properties are currently affected by Eskom lines to varying extents (Table 3.7).

Table 3.7: Overview of properties affected by proposed infrastructure

PROPERTY	IMPACT	OWNER	ACCESS	COMMENT
329	up to 400 kV Alt 1: 2 km up to 400 kV Alt 2: 2 km	Eskom	N2	Eskom Mercury power plant; 11 x lines currently feed in/ out of Camden substation
290/14/RE Mooiplaats	up to 400 kV Alt 1: 2 km up to 400 kV Alt 2: 2.1 km	Mr Lood de Jager	N2 De Emigratie Rd	Existing Eskom 3 x up to 400 kV + 1 x 88 kV lines; Traversed by KZN railway line
322/1 Welgelegen	CS Alt 2: 5 ha up to 400 kV Alt 1: 2.1 km up to 400 kV Alt 2: 670 m LILO Alt 2: 520 m	Ms Petronella Reyneke	De Emigratie Rd	Existing Eskom 2 x up to 400 kV lines; Affected by 7 Camden I& II projects
322/2 Welgelegen	CS Alt 1: 5 ha up to 400 kV Alt 1: 3.1 km LILO Alt 1: 2.7 km		De Emigratie Rd	Existing Eskom 1 x up to 400 kV line; Affected by 6 Camden I& II projects

The Collector Substation (CS) alternatives would each affect approximately 5 ha on two properties belonging to the same owner, Ms Reyneke. The land is currently leased out for mixed farming purposes. The Alternative 1 site consists of veld and is used exclusively for grazing. The Alternative 2 site consists of managed pasture used for grazing and hay production.

The up to 400 kV line alternatives would both affect the same land owners. Mooiplaats (De Jager) would essentially be affected in the same way by both Alternative, namely over a distance approximately 2 km, and running parallel to and west of an existing Eskom up to 400 kV line. A portion of the existing and proposed alignments are located across a cropped area over a distance of approximately 800 m.

Alternative 1 would affect both Reyneke properties, over a combined distance of 5.2 km, while Alternative 2 would only affect 322/1, and only over a short distance (670 m). Both would establish new alignments. None of the alternatives would affect cropped areas and both traverse managed pasture areas. The Loop in/ out (LILO) alternatives would only affect the Reyneke properties. Alternative 1 (feeding out of CS Alternative 2) would affect only 322/1, and over a relatively short distance (520 m). Alternative 2 would affect only 322/2, over a distance of 2.7 km. Both would establish new alignments, essentially connecting with the existing up to 400 kV corridor perpendicularly.

Due to the relatively sparse local settlement pattern, exposure to residential receptors is limited. Only one receptor, the farm yard on Welgelegen 322/2, is located within 2 km of either CS site alternative (Alternative 1, 1.8 km). The farm yard on 322/2 is also the only receptor located 1 km distance of any of the proposed overhead line alternatives (LILO Alternative 1, 340 m). A up to 400 kV line is currently located approximately 480 m to the east of the Welgelegen farm yard. The line traverses the access road from the De Emigratie Road but is screened from the yard by topography and vegetation. Table 3.8 lists the properties in relation to the proposed up to 400 kV line and CS alternatives.

Table 3.8: Proposed infrastructure in relation to most proximate residential receptors

FARM	CS 1	CS 2	up to 400 kV 1	up to 400 kV 2	LILO 1	LILO 2
Welgelegen(main)	1.8 km	3.4 km	1.4 km	3.6 km	340 m	3.8 km
Welgelegen (labour)	2.6 km	2.3 km	1.2 km	2.5 km	1.1 km	2.7 km
Camden residential	9.1 km	4.9 km	1.4 km	1.4 km	8.9 km	4.9 km
Camden Guest House	7.9 km	3.7 km	1.5 km	1.5 km	4.8 km	3.4 km
Adrianople (Saaiman)	7 km	5.9 km	5 km	5.8 km	2.7 km	5.6 km
Klipbank (Mabuza)	5 km	5.4 km	4.3 km	5.5 km	2.8 km	5.3 km
Klipkrans	5.5 km	9.6 km	5.9 km	9.9 km	5.8 km	10.1 km
Klipfontein (Zeelie)	3.9 km	6.1 km	3.9 km	6.3 km	3.9 km	6.6 km
Klipfontein (De Jager)	3.9 km	5.4 km	4.1 km	5.6 km	4.1 km	5.8 km
Uitkomst (De Jager)	4.2 km	3.5 km	4.2 km	3.7 km	4.3 km	3.8 km

In terms of potential cumulative impacts, the subject project is one of 8 currently proposed by Enertrag in the broader study area. Welgelegen 322/1 and 322/2 (Reyneke) would be affected by 7 and 6 projects each (the same set). These include the Camden I WEF, Camden I Green Hydrogen and Ammonia Plant, and four sets of transmission lines and associated substations (Figure 3.4). There is therefore potential for cumulative impacts on the property. Based in the findings of the site visit the project alternatives associated with Collector Substation Alternative 2 would result in the least cumulative impact, as the impacts would be restricted to 322/1.

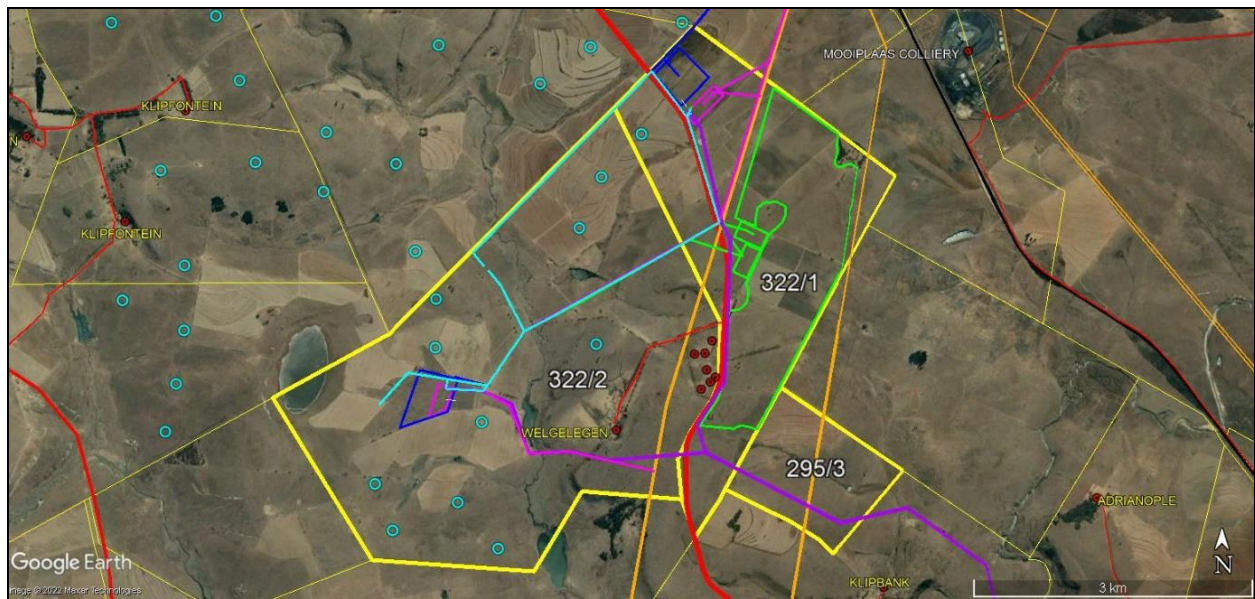


Figure 3.4: Cumulative impact of proposed Camden I and II projects infrastructure on Reyneke properties (bold yellow outlines) and De Emigratie road (bold red): Camden I Hydrogen & Ammonia plant (dark blue), Camden I PV and Tx (green), Camden I WEF & Tx (light blue), Camden I Collector substation & up to 400 kV line; and Camden II WEF Tx line. Also indicated are Eskom lines (orange) and the railway line (black)

SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES

4.1 INTRODUCTION

The section is divided into the following sections:

- Compatibility with relevant policy and planning context (“planning fit”).
- Social issues associated with the construction phase.
- Social issues associated with the operational phase.
- Social issues associated with the decommissioning phase.
- Social implications of “no development” alternative.
- Social implications associated with cumulative impacts.

4.2 ASSESSMENT OF POLICY AND PLANNING FIT

The development of renewable energy is strongly supported at a national, provincial, and local 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, which all refer to and support renewable energy. The development of renewable energy is also supported by the MMSDF. In this regard the SDF acknowledges the importance of the mining sector and notes that it will need to be accommodated over the short to medium term. However, of relevance to the proposed development the SDF refers to green industries and indicates that the existing site of the Camden Power Station and surrounds should be made available for new industrial development in the long term, to manage the long-term impact of the Power Station being decommissioned. The proposed grid infrastructure power is essential to enable the energy from the renewable energy facilities to be fed into the national grid.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

The findings of the SIA indicate that social impacts for the construction of both Collector Substations (Alternative 1 and 2) and associated up to 400 kV lines will be similar. Separate assessments have therefore not been undertaken. The significance ratings therefore apply equally to both Collector Substations options.

Potential positive impacts

- Creation of employment, skills development, and business opportunities.

Potential negative impacts

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

4.3.1 Creation of local employment, training, and business opportunities

Based on similar projects the construction phase of for the grid connection and collector substations will extend over a period of approximately 6-12 months and create in the region of 50-80 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 Ermelo. 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. The total wage bill will be in the region of R 10 million (2022 Rand values). 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 and associated collector substations will be ~ R 350 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.

Table 4.1: Impact assessment of employment, skills development, 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 (2)	Local (3)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Medium (3)
Reversibility	N/A	N/A
Probability	Probable (3)	Highly probable (4)
Significance	Low (18)	Moderate (32)
Status	Positive	Positive
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Opportunity to up-grade and improve skills levels in the area.		

Assessment of No-Go option

There is no impact as the current status quo would 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

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.

-
- 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 contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such a 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 MM 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 service providers. These companies should be notified of the tender process and invited to bid for project-related work.

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 Impact of construction workers on local communities

The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

Given the relatively small number of construction workers, namely ~50-80, and short duration of the construction phase, the potential impact on the local community is likely to be negligible.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Very Low (1)
Reversibility	With rehabilitation/mitigation (3)	With rehabilitation/mitigation (3)
Probability	Low Probability (2)	Low Probability (2)
Significance	Low (18)	Low (14)
Status	Negative	Negative
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be entirely eliminated	
Mitigation: See below		
Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent residual/cumulative impacts on the affected individuals and/or their families and the community.		

Assessment of No-Go option

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

Recommended mitigation measures

The potential risks associated with construction workers can be mitigated. The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the Construction Phase. Aspects that should be covered include:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent and the contractor(s) should develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation.
- The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 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 farmers 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 and/or fences being damaged, or stock theft linked either directly or indirectly to the presence of farm workers on the site.

Given the relatively small number of construction workers, namely ~50-80, and short duration of the construction phase, the potential impacts are likely to be negligible. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction on and off the site workers during the construction phase.

Table 4.3: 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 (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Highly Probable (4)	Low Probability (2)
Significance	Moderate (40)	Low (16)
Status	Negative	Negative
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

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- 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.
- All farm gates must be closed after passing through.
-

- 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 losses 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 in 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.

4.3.4 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. The potential risk of grass fires will be higher during the dry, windy winter months from May to October. The impacts will be largely local and can be effectively mitigated.

Table 4.4: Risk posed by veld fires to livestock, farm infrastructure and grazing

Nature: Potential loss of livestock and grazing and damage to farm infrastructure associated with increased incidence of grass fires		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Low Probability (2)
Significance	Moderate (30)	Low (16)
Status	Negative	Negative
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:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- 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.
- 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 should ensure that construction related activities that pose a potential fire risk, such as welding, are properly 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 summer months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor should provide fire-fighting training to selected construction staff.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.
- 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.

4.3.5 Nuisance impacts associated with construction related activities

The construction activities on site and movement of heavy construction vehicles during the construction phase has the potential to create noise and dust impacts, damage local roads and create safety impacts for other road users. 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. The traffic related impacts associated with the transport of materials to the site are also likely to be limited. Given the relatively small number of construction workers and the short construction period the traffic related impacts associated with transporting workers to and from the site are likely to be limited.

Table 4.5: Assessment of the impacts associated with construction related activities

Nature: Potential noise, dust and safety impacts associated with movement of construction related activities and movement of traffic to and from the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Low Probability (2)
Significance	Low (21)	Low (12)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: If damage to local roads is not repaired then this will affect the other road users and result in higher maintenance costs. The costs will be borne by road users who were no 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:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- Ongoing communication with land owners and road users during construction period.
- Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.
- Repair of affected road portions at the end of construction period where required.
- Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers.
- All vehicles must be roadworthy, 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 social impacts associated with the operational phase of both Collector Substations (Alternative 1 and 2) and associated up to 400 kV lines will be

similar. Separate assessments have therefore not been undertaken for CS 1 and 2. However, based on the findings of the SIA CS 2 (the northern option) is the preferred option. CS 1 and C2 are both located on property owned by Ms Reyneke who indicated that CS 2 was the preferred option. The reasons are discussed in Section 4.5.

Potential positive impacts

- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.
- Use of existing ESKOM grid infrastructure planned for decommissioning.

Potential negative impacts

- Visual impacts and associated impacts on sense of place.
- Impact of maintenance activities on farming activities and operations.

4.4.1 Improve energy security and support the renewable energy sector

The primary goal of the proposed renewable energy facilities (REFs) proposed for the area is to improve energy security in South Africa by generating renewable energy. The proposed power line is essential to enable the energy from the REFs to feed into the national grid. 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 generators⁷. 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 of revenue during due to load shedding period⁸.

⁷ 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

⁸ ["How does load shedding affect small business in SA?"](#). *The Yoco Small Business Pulse* (3: Q1 2019): 3

Table 4.6: Improve energy security, reduce reliance on coal generated power sector

Nature: Development of infrastructure to improve energy security and reduce reliance on coal		
	Without Mitigation⁹	With Mitigation¹⁰
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Medium (3)
Reversibility	N/A	N/A
Probability	Highly Probable (4)	Definite (5)
Significance	Moderate (44)	Moderate (44)
Status	Negative	Positive
Can impact be enhanced?	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

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

Recommended mitigation measures

Should the proposed grid connection infrastructure be approved the proponent should:

- Maximise the number of employment opportunities for local community members.
- Implement training and skills development programs for members from the local community.
- Maximise opportunities for local content and procurement.

4.4.2 Creation of employment and business opportunities

The potential employment, skills development and business related opportunities associated with the power line and collector substations will be limited and largely confined to periodic maintenance and repairs. The potential socio-economic benefits are therefore likely to be limited. The potential opportunities can however be enhanced if a local service provider is appointed to undertake the work required. This may involve providing training and skills development to enable a locally based service provider to provide the required services.

⁹ Assumes power line is not established

¹⁰ Assumes power line is established

Table 4.7: Impact assessment of employment, skills development and business creation opportunities

Nature: Creation of employment, skills development 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	Low (2)	Low (2)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Probable (3)
Significance	Low (14)	Low (24)
Status	Positive	Positive
Reversibility	N/A	
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Creation of permanent 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.

In addition, the proponent should investigate providing training and skills development to enable locally based service providers to provide the required services for the maintenance of the powerline.

4.4.3 Use of existing ESKOM grid infrastructure planned for decommissioning

The proposed development will create opportunities to utilize existing ESKOM grid infrastructure earmarked for decommissioning. This will reduce the consumptive demands associated with establishing new grid infrastructure and make the project more cost effective.

Table 4.8: Use of existing grid infrastructure

Nature: utilize existing ESKOM grid infrastructure earmarked for decommissioning		
	Without Mitigation	With Enhancement
Extent	Local and Regional (1)	Local and Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Medium (4)
Reversibility	N/A	N/A
Probability	Low Probability (2)	Probable (3)
Significance	Low (14)	Moderate (30)
Status	Positive	Positive
Reversibility	N/A	
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Reduce consumptive demands associated with establishing new grid infrastructure.		

Assessment of No-Go option

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

Recommended enhancement measures

Maximise opportunities to utilize existing grid infrastructure.

4.4.4 Visual impact and impact on sense of place

The proposed development has the potential to impact on the areas existing rural sense of place. Based on the findings of the site visit the potential impact on the areas sense of place is likely to be limited. This is due to the existence of the Camden Power station and existing power lines in the area. None of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

Table 4.9: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed grid infrastructure and the potential impact on the area’s sense of place.		
	Without Mitigation	With Mitigation¹¹
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (27)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: 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

Implement recommendations of the VIA.

4.4.5 Potential 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.

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.

¹¹ Not possible to effectively mitigated visual impacts

Table 4.10: 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 (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (30)	Low (27)
Status	Negative	Negative
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 affected farms.
- It is recommended that no maintenance workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.5 IDENTIFICATION OF PREFERRED OPTION

As indicated in Table 3.6 (above), CS Alternative 1 and 2 are located properties belonging to Ms Reyneke (Welgelegen 322/1 and 322/2). These properties would be affected by all infrastructure alternatives. The property owned by Mr de Jager (Mooiplaats 290/14/RE) would only be affected by the proposed up to 400 kV line alternatives. Ms Reyneke has indicated that CS 2 (the northern option) located on 322/1 Welgelegen is the preferred option as this would contain the impacts associated with the CS and associated up to 400 kV line or Loop-in-Loop Out link to the Eskom Camden I – Incandu 400kV line. The up to 400 kV line or Loop-in-Loop-out link options associated with CS 2 are considerably shorter than

the options associated with CS 1 (the southern option). The impact in terms of land loss and farming activities would therefore be less.

The Loop-in-Loop-out Option linking into the Eskom Camden I – Incandu 400kV line associated with CS 2 is also preferred over the establishment of a new up to 400 kV overhead line. The Loop-in-Loop-out Option is shorter than the up to 400 kV line linking CS 2 to the Camden Power station (~ 300-500m vs 2.7 km). The Loop-in-Loop-out Option associated with CS 2 also does not require the establishment of a new up to 400 kV transmission line parallel to the existing Eskom line. This would avoid the impact on Mr de Jager's property (290/14/RE Mooiplaats Farm). The Loop-in-Loop-Out option associated with CS 2 therefore minimises the impact on the two landowners that will be impacted by the proposed up to 400 kV grid connection associated with the Camden developments.

4.6 CUMULATIVE IMPACT ON SENSE OF PLACE

The potential cumulative impacts on the areas sense of place will be largely linked to potential visual impacts. In this regard the Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues are also likely to be relevant to solar facilities and associated infrastructure. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more wind farms (power lines) will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more wind farms (power lines) along a single journey, e.g. road or walking trail).
- The visual compatibility of different wind farms (power 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.

The guidelines also note that cumulative impacts need to be considered in relation to dynamic as well as static viewpoints. The experience of driving along a tourist road, for example, needs to be considered as a dynamic sequence of views and visual impacts, not just as the cumulative impact of several developments on one location. The viewer may only see one renewable energy facility and the associated infrastructure at a time, but if each successive stretch of the road is dominated by views of renewable energy facilities, then that can be argued to be a cumulative visual impact (National Wind Farm Development Guidelines, DRAFT - July 2010).

There are a number of existing power lines in the area associated with the Camden Power Station. The potential for cumulative impacts therefore exists. However, at the same time the areas sense of place has been altered by the existing power lines and the Camden Power station. The sense of place has also been impacted by coal mining operations. As a result, the potential impact of the proposed power lines on the areas sense of place is likely to be limited. The cumulative impacts are also likely to be limited. In addition, none of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

Table 4.11: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of associated grid infrastructure 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)	Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Medium (3)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (27)	Moderate (40)
Status	Negative	Negative
Can impacts be mitigated?	Limited	
Mitigation: See below		

Assessment of No-Go option

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

Recommended mitigation measures

No mitigation measures are required.

4.7 ASSESSMENT OF NO-DEVELOPMENT OPTION

The proposed power line is essential to enable the proposed REFs 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 its 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. this would represent a significant negative social cost.

Table 4.12: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to improve energy security and reduce reliance on coal power.		
	Without Mitigation¹²	With Mitigation¹³
Extent	Local-National (3)	Local-National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Medium (3)
Reversibility	Reversible (1)	Reversible (1)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (44)	Moderate (44)
Status	Negative	Positive
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 infrastructure should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.

¹² Assumes power line is not developed

¹³ 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 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.
- A review of relevant literature on social and economic impacts.
- The experience of the authors with transmission lines.

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.
- Decommissioning phase impacts.
- No-development option.

5.2.1 Policy and planning issues

The development of renewable energy is strongly supported at a national, provincial, and local 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, which all refer to and support renewable energy. The development of renewable energy is also supported by the MMSDF. In this regard the SDF acknowledges the importance of the mining sector and notes that it will need to be accommodated over the short to medium term. However, of relevance to the proposed development the SDF refers to green industries and indicates that the existing site of the Camden Power Station and surrounds should be made available for new industrial development in the long term, to manage the long-term impact of the Power Station being decommissioned. The proposed grid infrastructure power is essential to enable the energy from the renewable energy facilities to be fed into the national grid.

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 6-12 months and create in the region of 50-80 employment opportunities. The total wage bill will be in the region of R 10 million (2022 Rand values). The capital expenditure associated with the construction of power line will be ~350 million (2022 Rand values) and will create opportunities for the local and regional and local economy.

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.
- Risk of veld fires.
- 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)	Moderate (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

5.2.3 Operational phase impacts

The benefits associated with the Camden REFs 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, skills development, and local procurement opportunities.
- Use of existing ESKOM grid infrastructure planned for decommissioning.

Potential negative impacts

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

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be **Low Negative** if the required mitigation measures are effectively 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	Moderate (Negative) ¹⁴	Moderate (Positive) ¹⁵
Creation of employment, skills development, and procurement opportunities during maintenance	Low (Positive)	Low (Positive)
Use of existing Eskom grid infrastructure planned for decommissioning	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with the presence of maintenance workers	Moderate (Negative)	Low (Negative)

5.2.4 Identification of preferred options

Collector Substation (CS) Alternative 2 (Welgelegen 322/1) is the preferred option. This was confirmed by the landowner, Ms Reyneke. The up to 400 kV line or Loop-in-Loop-out link options associated with CS 2 are considerably shorter than the options associated with CS 1 (the southern option). The impact in terms of land loss and farming activities would therefore be less. The Loop-in-Loop-out Option linking into the Eskom Camden I – Incandu 400kV line associated with CS 2 is also preferred over the establishment of a new up to 400 kV overhead line. The Loop-in-Loop-out Option is shorter than the up to 400 kV line option and avoids the impact on Mr de Jager’s property (290/14/RE Mooiplaats Farm). The Loop-in-Loop-Out option associated with CS 2 therefore minimises the impact on the two landowners that will be impacted by the proposed up to 400 kV grid connection.

5.2.5 Cumulative impact on sense of place

There are a number of existing power lines in the area associated with the Camden Power Station. The potential for cumulative impacts therefore exists. However, at the same time the areas sense of place has been altered by the existing power lines and the Camden Power station. The sense of place has also been impacted by coal mining operations. The potential impact of the proposed power lines on the areas sense of place is likely to be limited. The cumulative impacts are also likely to be limited. In addition, none of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

¹⁴ Assumes power line is not developed

¹⁵ Assumes power line is developed

5.2.6 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its 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.

5.3 CONCLUSION AND RECOMMENDATIONS

Conclusion

The energy security benefits associated with the proposed Camden REFs are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure. The construction of the proposed Camden up to 400 kV power line and associated collector substation is therefore an essential component of the overall project.

The findings of the SIA indicate that the construction and maintenance of the up to 400 kV powerline and associated collector substation will create employment and business opportunities. However, these opportunities will be limited. The findings of the SIA also indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed Camden up to 400 kV overhead power line and the associated collector substation are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed Camden up to 400 kV overhead power line and associated substation is therefore supported by the findings of the SIA.

Recommendation

Collector Substation (CS) Alternative 2 (Northern option located on 322/1 Welgelegen) is the preferred option from a social perspective. The Loop-in-Loop-out Option linking into the Eskom Camden I – Incandu 400kV line associated with CS Alternative 2 is the preferred grid connection option. However, the findings of the SIA also indicate that the remainder of the grid connection options are suitable and acceptable from a social perspective.

ANNEXURE A

INTERVIEWS

- Bester-de Jager, Ms. Jolande (2022-03-24). Uitsig and Adrianople 296/1 Farms.
- Buhrman, Mr Hein (telephonic 2022-03-22). De Emigratie 327/3/RE.
- Reyneke, Mr Louis (2022-03-24). Welgelegen farm.
- Reyneke, Ms Petronella (2022-03-24). Welgelegen farm.
- Saaiman, Mr Rassie (2022-03-25). Adrianople 296/RE.
- Van der Meulen, Mr Johan (2022-03-25). Buhrmansvlei, Adrianople 296/2 and De Emigratie farms.
- Zeelie, Mr David (2022-03-24). Klipfontein farm.

REFERENCES

- The National Energy Act (2008).
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- The White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2010-2030).
- The National Development Plan (2011).
- Mpumalanga Spatial Development Framework (2019).
- Msukaligwa Municipality Integrated Development Plan (2019-2020).
- Msukaligwa Spatial Development Framework (2019).

INTERNET

- https://egis.environment.gov.za/renewable_energy.
- <https://www.eskom.co.za/sites/heritage/Pages/Camden.aspx>

MAPS

- Chief Directorate National Geo-Spatial Information (2009). 2629DB Ermelo, Ed 4.
- Chief Directorate National Geo-Spatial Information (2009). 2630AC Chrissiesmeer, Ed 3.
- Chief Directorate National Geo-Spatial Information (2009). 2630CA Camden, Ed 3.
- Chief Directorate National Geo-Spatial Information (2009). 2630CC Kalkoenkrans, Ed 3.

ANNEXURE B: ASSESSMENT METHODOLOGY

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

Assessment of Impacts and Mitigation

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct¹⁶, indirect¹⁷, secondary¹⁸ as well as cumulative¹⁹ impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria²⁰ presented in **Table 0-1**.

Table 0-1: Impact Assessment Criteria and Scoring System

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action

¹⁶ Impacts that arise directly from activities that form an integral part of the Project.

¹⁷ Impacts that arise indirectly from activities not explicitly forming part of the Project.

¹⁸ Secondary or induced impacts caused by a change in the Project environment.

¹⁹ Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

²⁰ The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ <i>Significance = (Extent + Duration + Reversibility + Magnitude) × Probability</i>				
IMPACT SIGNIFICANCE RATING					
Total Score	0 – 30		31 to 60		61 – 100
Environmental Significance Rating (Negative (-))	Low (-)		Moderate (-)		High (-)
Environmental Significance Rating (Positive (+))	Low (+)		Moderate (+)		High (+)

ANNEXURE C: CV

Tony Barbour

ENVIRONMENTAL CONSULTING AND RESEARCH

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Tony Barbour's has 26 years' experience in the field of environmental consulting and management. His experience includes working for 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, Senegal, Nigeria, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Sudan and Armenia.

ANNEXURE D: DECLARATION OF INDEPENDENCE

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;

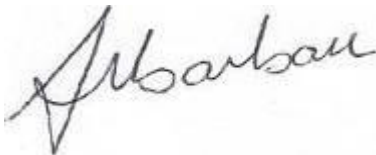
I will comply with the Act, Regulations and all other applicable legislation;

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):

10 May 2022

Date: