

SOCIAL IMPACT ASSESSMENT
FOR
TRANSALLOYS PV SOLAR ENERGY FACILITY
MPUMALANGA PROVINCE
AUGUST 2022

Prepared for

SAVANNAH ENVIRONMENTAL

By

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

Savannah Environmental (Pty) Ltd was appointed by Transalloys as the lead consultant to manage the Environmental Impact Assessment (EIA) process for the establishment of the 50 MW Photovoltaic (PV) Solar Energy Facility adjacent to its smelter complex near the town of Emalahleni (Witbank), Mpumalanga Province. The smelter is used to produce export grade Siliconmanganese. The proposed PV SEF will generate sufficient energy to meet Transalloys current and future expansion requirements. The site is located within the Emalahleni Renewable Energy Development Zone (REDZ).

Tony Barbour Environmental Consulting was appointed by Savannah to undertake a specialist Social Impact Assessment (SIA) as part of an Environmental Impact Assessment (EIA) process. This report contains the findings of the SIA undertaken as part of the EIA process.

SUMMARY OF KEY FINDINGS

The assessment section is divided into:

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

POLICY AND PLANNING ISSUES

The findings of the review indicate that renewable energy is strongly supported at a national, provincial, and local level. At a national level the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to renewable energy. Renewable energy is also supported at a provincial and local municipal level. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

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 is expected to extend over a period of ~18 months and create approximately 150 employment opportunities. The total wage bill for the construction phase is estimated to be in the region of R 20 million (2022 Rand value). The majority of the employment opportunities, specifically the low and semi-skilled opportunities, are likely to be available to local residents in the area, specifically residents from

Emalahleni. The majority of the beneficiaries are likely to be historically disadvantaged (HD) members of the community.

The capital expenditure associated with the construction phase will be in the region of R 1 billion (2022 Rand value). A percentage of the wage bill will also be spent in the local economy which will create opportunities for local businesses in Emalahleni. 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.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of job seekers.
- Increased risk of grass fires associated with construction related activities.
- Noise, dust, and safety impacts of construction related activities and vehicles.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation were **Low Negative**. The potential negative impacts 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	Medium (+)	Medium (+)
Presence of construction workers and potential impacts on family structures and social networks	Low (-)	Low (-)
Influx of job seekers	Low (-)	Low (-)
Increased risk of veld fires	Medium (-)	Low (-)
Impact of construction activities and vehicles	Medium (-)	Low (-)

OPERATIONAL PHASE

Potential positive impacts

- The establishment of infrastructure to generate renewable energy.
- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training.

Development of renewable energy infrastructure

The proposed PV SEF also creates an opportunity for Transalloys to meet its current and future energy needs with clean, renewable energy. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole.

Creation of employment and business opportunities

The total number of permanent employment opportunities would be ~15. The majority of low and semi-skilled beneficiaries are likely to be HD members of the community.

Potential negative impacts

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

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation were **Low Negative**. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

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

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation	Significance With Mitigation
Promotion of renewable energy projects	High (+)	High (+)
Creation of employment and business opportunities	Low (+)	Medium (+)
Visual impact and impact on sense of place	Medium (-)	Medium (-)
Loss of agricultural land	Medium (-)	Low (-)

CUMULATIVE IMPACTS

Cumulative impact on sense of place

The potential for cumulative impacts associated with combined visibility (whether two or more solar facilities will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more solar facilities along a single journey exists. However, given the location of the site within an industrial and mining setting the significance of the impact is likely to be **Low Negative**. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

Cumulative impact on services

The establishment of the proposed SEF and the other REFs in the EM may place pressure on local services. This pressure will be associated with the potential influx of workers to the area associated with the construction and operational phases of renewable energy projects proposed in the area, including the proposed SEF. With effective mitigation the impact is rated as **Low Negative**.

In addition, as indicated below, this impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of renewable energy as an economic driver in the area.

Cumulative impact on local economies

In addition to the potential negative impacts, the establishment of the proposed SEF and other renewable energy projects in the area also has the potential to create a number of socio-economic opportunities for the EM, which, in turn, will result in a positive social benefit. The positive cumulative impacts include creation of employment, skills development and training opportunities, creation of downstream business opportunities. These benefits should also be viewed within the context of the impact of the decline in the mining sector in recent years. This benefit is rated as **High Positive** with enhancement.

DECOMMISSIONING

The number of people employed during the operational phase will be in the region of ~ 15. The potential negative social impacts on these employees as a result of decommissioning of the facility can be effectively managed through the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for Transalloys and South Africa to supplement its energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producers of carbon emissions in the world, this would represent a High negative social cost. The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed SEF. This also represents a negative social cost. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The findings of the SIA indicate that the development of the proposed 50 MW PV SEF and associated infrastructure will create employment and business opportunities for locals in the EM during both the construction and operational phase of the project. The proposed PV SEF also creates an opportunity for Transalloys to meet its current and future energy needs with clean, renewable energy. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure. The establishment of the proposed 50MW PV SEF and associated infrastructure is therefore supported by the findings of the SIA.

Recommendations

The enhancement and mitigation measures outlined in the SIA and other key specialist reports should be implemented.

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 specialist report, the requirements as indicated in such notice will apply.	Comply with the Assessment Protocols that were published on 20

	<p>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

CFB	Circulating Fluidised Bed
DEA	Department of Environmental Affairs (National)
DEA&DP	Department of Environmental Affairs and Development Planning (WCP)
DM	District Municipality
HD	Historically Disadvantaged
EIA	Environmental Impact Assessment
ELM	Emalahleni Local Municipality
IDP	Integrated Development Plan
LED	Local Economic Development
LM	Local Municipality
MW	Megawatt
MPGDS	Mpumalanga Provincial Growth and Development Strategy
NDP	National Development Plan
NDM	Nkangala District Municipality
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
SDF	Spatial Development Framework
SEF	Solar Energy Facility
SIA	Social Impact Assessment

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

Savannah Environmental (Pty) Ltd was appointed by Transalloys as the lead consultant to manage the Environmental Impact Assessment (EIA) process for the establishment of the 50 MW Photovoltaic (PV) Solar Energy Facility adjacent to its smelter complex near the town of Emalahleni (Witbank), Mpumalanga Province (Figure 1.1). The smelter is used to produce export grade Siliconmanganese. The proposed PV SEF will generate sufficient energy to meet Transalloys current and future expansion requirements. The site is located within the Emalahleni Renewable Energy Development Zone (REDZ).

Tony Barbour Environmental Consulting was appointed by Savannah to undertake a specialist Social Impact Assessment (SIA) as part of an Environmental Impact Assessment (EIA) process. This report contains the findings of the SIA undertaken as part of the EIA process.



Figure 1.1: Location of proposed 50 MW PV SEF (White area)

1.2 TERMS OF REFERENCE AND APPROACH

The terms of reference for the SIA require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility.

- A description and assessment of the potential social issues associated with the proposed facility.
- Identification of enhancement and mitigation aimed at maximising opportunities and avoiding and or reducing negative impacts.

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

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project. This requires a site visit to the area and consultation with affected individuals and communities. As part of the process a basic information document was prepared and made available to key interested and affected parties. The aim of the document was to inform the affected parties of the nature and activities associated with the construction and operation of the proposed development to enable them to better understand and comment on the potential social issues and impacts.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying alternatives and mitigation measures.

The identification of potential social issues associated with proposed facility is based on observations during the project site visit¹, review of relevant documentation, experience with similar projects and the general area. Annexure A contains a list of the secondary information reviewed. Annexure B outlines the assessment methodology used to assign significance ratings to the assessment process.

1.3 PROJECT LOCATION AND DESCRIPTION

1.3.1 Location

The proposed site is located approximately 8km west of Emalahleni, south of the N4 highway and north of the small town of Clewer. The proposed PV SEF development area is located adjacent to the existing Transalloys Complex which is located within 1km south-east of Evraz Highveld Steel and Vanadium facility. The development area includes the following farm portions:

- Portions 25, 26, 33, 34, 35, 36 and 37 of the Farm Elandsfontein 309 JS.
- Portions 20, 24 and 38 of the Farm Schoongezicht 308 JS.

1.3.2 Project description

Transalloys (Pty) Ltd propose to develop the Transalloys Solar PV SEF facility and its associated electrical infrastructure adjacent to their smelter complex on Clewer Road 1034, Witbank in the Emalahleni Local Municipality. The project is located in the greater Nkangala District Municipality of Mpumalanga province approximately 34km west of Middleberg and

¹ The site visit to the area was undertaken as part of the SIA undertaken in 2014 for the establishment of a proposed 150 MW coal power station. The energy source has now been changed to renewable solar energy.

37km east of Bronkhorstspuit and within the REDZ9 in Emalahleni and the International Corridor.

A technically suitable project site of ~235ha has been identified by Transalloys (Pty) Ltd for the establishment of the PV facility. The proposed facility will have a contracted capacity of up to 50MW and will include the following infrastructure:

- Solar PV array comprising PV modules and mounting structures (monofacial or bifacial and a single axis tracking system)
- Inverters and transformers
- Cabling between the project components
- On-site facility substation and power lines between the solar PV facility and the plant.
- Site offices, Security office, operations and control, and maintenance and storage laydown areas
- Access roads, internal distribution roads

The PV facility is proposed to meet Transalloys' current electricity demands and future expansion requirements. The plant will be a captive generating plant whereby generated electricity will be fed directly into the smelter complex for direct consumption. The development of the PV power plant project would effectively mean that Transalloys would become independent of the Eskom electricity grid, thereby creating additional capacity within the Eskom grid for use by other electricity users. The establishment of the PV SEF would also reduce Transalloys' carbon footprint and contribute towards reducing air pollution in the area.

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Technology

Assumed that the proposed PV SEF technology is effective and will meet the energy needs of the proponent.

Need for the project

The need for the project has been assessed by the proponent.

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.

Site visit

A site visit was undertaken in 2014 as part of the SIA for the establishment of a coal power station. The author is therefore familiar with the study area and socio-economic conditions. As such a follow up site visit was not deemed necessary.

1.4.2 Limitations

Demographic data

Demographic data is largely based on the 2016 Household Community Survey. Where available more recent data is referred to.

1.5 SPECIALIST DETAILS

Tony Barbour has 30 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 300 SIAs, including over 100 SIAs for renewable energy projects. He is also 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.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour, the specialist consultant responsible for undertaking the study and preparing the report, is independent and does not have vested or financial interest in proposed project being either approved or rejected.

1.7 REPORT STRUCTURE

The report is divided into five sections, namely:

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

SECTION 2: POLICY AND PLANNING ENVIRONMENT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the “policy and planning fit²” 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 PV SEF. For the purposes of the meeting the objectives of the SIA the following policy and planning documents were reviewed, namely:

- Beneficiation strategy for the minerals industry of South Africa (2011).
- The National Energy Act (2008).
- The National Development Plan (2011).
- New Growth Framework (2010).
- National Infrastructure Plan (2011).
- Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa (CSIR, 2015)
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (MEGDP)(2011)
- Mpumalanga Provincial Growth and Development Strategy (2004-2014).
- Mpumalanga Spatial Development Framework (2019).
- Emalahleni Municipality Integrated Development Plan (2017-2022).
- Emalahleni Municipality Spatial Development Framework (2014).

2.2 NATIONAL LEVEL POLICY

2.2.1 Beneficiation strategy for the minerals industry of South Africa

A beneficiation strategy for the Minerals industry of South Africa developed by the Department of Mineral Resources was approved by Cabinet in June 2011. The strategy is closely linked with the Governments “New Growth Path”, which seeks to place the national economy on a production-led growth trajectory in order to tackle the country’s developmental challenges of unemployment, inequality, and poverty. The New Growth Path sets a target of five million new jobs by 2020 and identifies six key sectors that must drive growth and job-creation. The mining sector is one of the six key sectors with a particular focus on ensuring greater local processing of South Africa’s abundant natural resources. The potential benefit to the economy associated with beneficiation is highlighted by South Africa’s comparative advantage in terms of mineral wealth. In this regard the South Africa

² 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.

has an estimated in-situ value of US\$ 2.5 trillion and an economically exploitable life of mine of more than a century for non-energy mineral commodities.

In 2008, gross revenue from sales of all minerals in South Africa amounted to just below R300 billion. Similarly, while just over R86 billion was generated from processing of base metals, precious metals and other minerals. This represents the national opportunity loss in export revenue and employment creation opportunities. The beneficiation of the minerals to finished consumer goods not only increases the revenue gained from the exploitation of the mineral resource, but also significantly increases labour absorptive capacity of the industry.

The beneficiation strategy is aimed at providing a strategic focus for South Africa's minerals industry in terms of developing mineral value chains and facilitating the expansion of beneficiation initiatives in the country, up to the last stages of the value chain. The beneficiation strategy is rooted in several policies, including the MPRDA, the BBSEE, Precious Metals Act and the Diamonds Amendment Act. In addition, this strategy seeks to fundamentally transform the industry from being largely resource based to knowledge based. It also complements programs of Government, such as the New Growth Path, NIPF (IPAP 2), energy security, skills development and others. The strategy notes that beneficiation presents one of the rarest opportunities for South Africa to continue sustainable growth of its economy beyond mining.

In so doing the vision set out in the strategy is to advance development through the optimisation of linkages in the mineral value chain, facilitation of economic diversification, job creation and industrialisation. It also aims to expedite progress towards knowledge based economy and contribute to an incremental GDP growth in mineral value addition per capita in line with the vision outlined in the NGP, NIPF and the Advanced Manufacturing Technology Strategy (AMTS).

To achieve this the strategy outlines a framework that will enable an orderly development of the country's mineral value chains, thus ensuring South Africa's mineral wealth is developed to its full potential and to the benefit of the entire population. The strategy identifies ten strategic mineral commodities from which five value chains are outlined. The value chains are intended to indicate the inherent value for South Africa in embracing beneficiation for all strategic mineral commodities. They are also chosen to demonstrate intrinsic, multi-tier value proposition benefits for South Africa, including creation of new jobs, development of requisite skills, investment in research and development, economic growth, sustainable development and cost-effective support for the broader policies of government. The value changes considered in the document are for:

- Coal.
- Uranium and thorium.
- Iron and steel.
- Pigment and titanium metal production.
- Autocatalytic converters and diesel particulate filters.
- Jewellery fabrication.

In developing the strategy, the document recognises that beneficiation should:

- Be considered on a value-chain by value-chain basis,
- Be geared towards higher levels of employment intensity and value-addition.
- Take into account infrastructure considerations (such as energy and water availability).

The strategy notes that in lieu of the three spheres of sustainable development, namely environment, social and economic, the introduction of stringent environmental legislation

presents opportunities for South Africa to leverage benefit in the balanced approach of implementing the strategy. This leverage will attract investment, technology and skills to expedite growth in the sector. This proposition recognises the importance of the balancing act between much needed socio-economic growth and compliance to established environmental laws of the country.

Transalloys support beneficiation by producing export grade Siliconmanganese at its smelter complex near Witbank in the Mpumalanga Province. The proposed PV SEF will generate sufficient clean, renewable energy to meet the current and future expansion energy needs of the smelter. The proposed project therefore supports the current and future beneficiation operations undertaken by Transalloys.

2.2.2 National Energy Act (Act No 34 of 2008)

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar and wind:

“To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (...); to provide for (...) increased generation and consumption of renewable energies” (Preamble).

2.2.3 National Development Plan 2030

In its introduction the National Development Plan (NDP) states “The National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society”.

Section 4 of the NDP, Economy infrastructure – The foundation of social and economic development, contains a section on the energy sector. Based on a review of this section the following points are regarded as relevant to the proposed project.

- South Africa needs to maintain and expand its **electricity**, water, transport, and telecommunications infrastructure in order to support economic growth and social development goals. Given the government's limited finances, **private funding** will need to be sourced.
- South Africa has a relatively good core network of national economic infrastructure. The challenge is to maintain and expand it to address the demands of the growing economy. In the transport and energy sectors – dominated by state-owned enterprises – the economy has already been constrained by inadequate investment and ineffective operation and maintenance of existing infrastructure;
- Current investment levels are insufficient and maintenance programmes are lagging. The government needs to better coordinate collaborative investment by businesses and provincial and local government into key infrastructure projects investments.
- Innovation and technology for cleaner coal use. There is potential to increase the efficiency of coal conversion, and any new coal power investments should incorporate the latest technology.

Under the heading “The Energy Sector: Empowering South Africa”, the NDP notes that 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 section also notes that South Africa is very dependent on coal. It is the country's largest economically recoverable energy resource and among its three top mineral export earners. Internationally, South Africa ranks fifth as a coal producer and exporter. Domestically, coal is used to produce over 70 % of primary energy, more than 90 % of electricity and a third of liquid fuels. As a result, South Africa is a significant emitter of carbon dioxide, which contributes to climate change.

However, adequate supply is a key concern, especially for electricity and liquid fuels. South Africa experienced multiple power failures between 2005 and 2008, resulting in lower economic growth and widespread inconvenience. Even though the 2009 recession depressed demand, the supply-demand balance remains tight.

While the focus of the NDP is on meeting the energy needs of South Africa as a whole, the development of a PV SEF by Transalloys to meet its own energy needs reduces the demand on the national grid and is so doing benefits South Africa as a whole. It also supports the objectives set out in the NDP of involving the private sector in the supply of energy.

2.2.4 The New Growth Path Framework

The aim of the New Economic Growth Path Framework is to enhance growth, employment creation and equity. 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.

The New Growth Path also identifies five other priority areas as part of the programme, through a series of partnerships between the State and the private sector. The Green Economy as one of the five priority areas to create jobs, including expansions in construction and the production of technologies for solar, wind and biofuels. In this regard, clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

2.2.5 National Infrastructure Plan

Government adopted a National Infrastructure Plan (NIP) in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The aim of the NIP is support 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 included three energy SIPs, namely SIP 8, 9 and 10.

- SIP 8: Green energy in support of the South African economy.
- SIP 9: Electricity generation to support socio-economic development.

- SIP 10: Electricity transmission and distribution for all.

The NIP 2050 was gazetted for public comment on 10 August 2021³. The first phase of the NIP 2050 focuses on four critical network sectors that provide a platform, namely, energy, freight transport, water, and digital infrastructure. In line with the NDP, the vision for the energy sector is to promote:

- Economic growth and development through adequate investment in energy infrastructure” (generation, transmission, and distribution) and reliable and efficient energy service at competitive rates, while supporting economic growth through job creation by stimulating supply chains.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution, reduce water usage and mitigate the effects of climate change.

The NIP 2050 notes that by 2030, the NDP set a target that more than 90% of the population should enjoy access to grid connected or off-grid electricity by 2030. To realise this vision, South Africa's energy system will be supported by effective policies, institutions, governance systems, regulation and, where appropriate, competitive markets. In terms of energy mix, NIP 2050 notes that coal will contribute significantly less to primary-energy needs in the future, while gas will have an important enabling role, energy supply will be **increasingly dominated by renewable energy resources– especially wind and solar which are least cost and where South Africa has a comparative advantage.**

NIP 2050 also notes that South Africa is signatory of the Paris Agreement which aims to achieve Net Zero greenhouse gas emissions by 2050. To achieve this will require a shift to a least cost energy path that is increasingly reliant on renewables. For South Africa this is imperative for the following reasons:

- SA cannot afford to overspend while dramatically expanding capacity
- Renewables can be built quickly and in modular form thereby avoiding many of the challenges associated with mega projects.
- Trade partners are expected to increasingly impose border carbon taxes harming SA exports.
- SA will need to commit to emission reductions as a global citizen.

2.2.6 Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa

The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2015) identified eight (8) **Renewable Energy Development Zones** (REDZs) (Phase 1 REDZs). The REDZs identified areas where large scale wind energy facilities can be developed in a manner that limits significant negative impacts on the environment while yielding the highest possible socio-economic benefits to the country. On 17 February 2016, the Cabinet of the Republic of South Africa (Cabinet) approved the gazetting of Renewable Energy Development Zones (REDZs). 8 REDZs and 5 Power Corridors have been identified. On 26 February 2021, Minister Barbara Dallas Creedy, published Government Notice No. 142, 144 and 145 in Government Gazette No. 44191 which identified 3 additional REDZs (Phase 2 REDZs) for implementation as well as the procedures to be followed when applying for environmental authorisation for electricity transmission or distribution infrastructure or

³ Gazette No. 44951

large-scale wind and solar photovoltaic energy facilities in these REDZs. The total number of REDZ is therefore 11 (Figure 2.2). The proposed PV SEF is located within the Emalahleni REDZ.

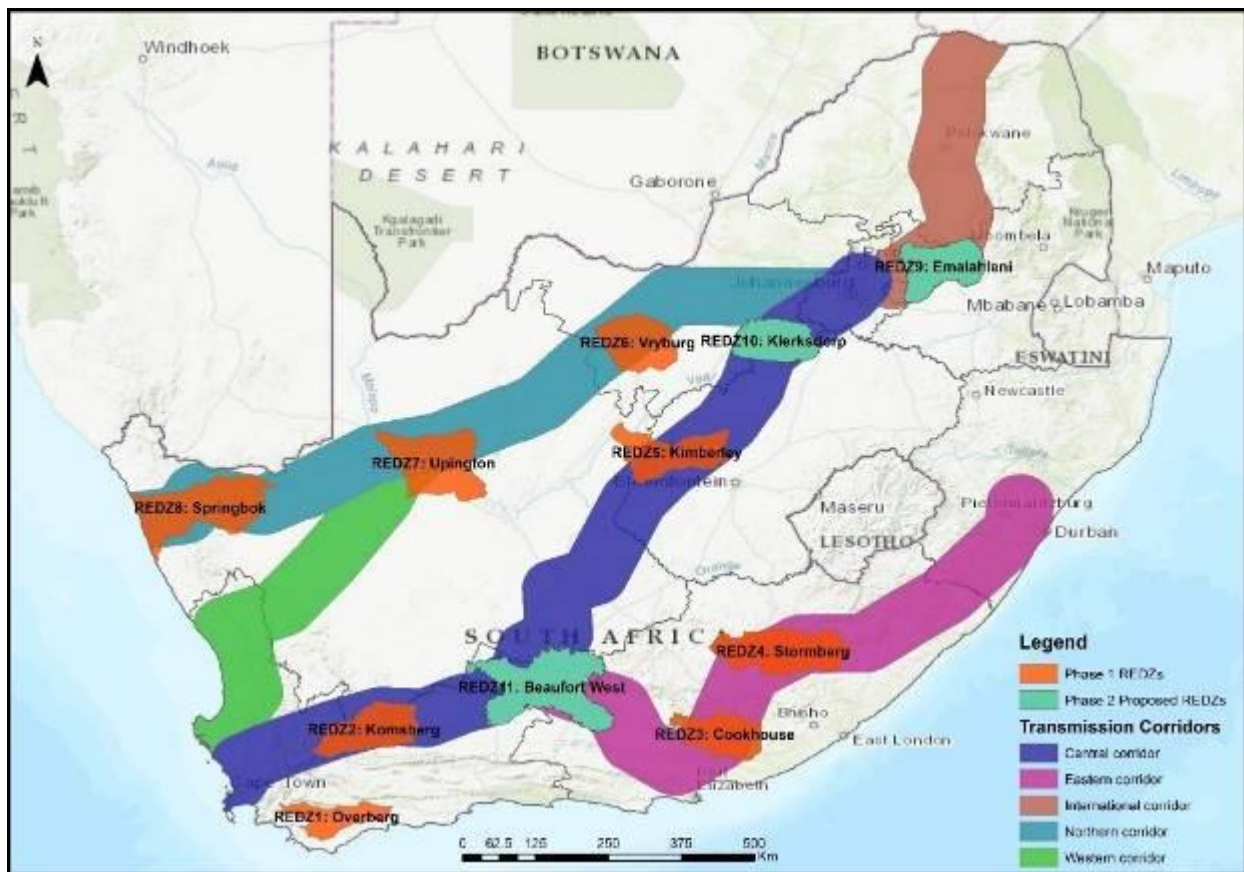


Figure 2.1: Location of Renewable Development Zones and Transmission Corridors in South Africa (Source CSIR)

2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

2.3.1 Mpumalanga Province Provincial Growth and Development Strategy

The Mpumalanga Provincial Growth and Development Strategy (MPGDS) is a nine-year strategy (2004-2014) which aims to achieve the objectives of Vision 2014. As a provincial policy framework, it sets the tone and pace for shared growth and development in the Province. It addresses the key social, economic, environmental and spatial imperatives in the Province. The policy and strategy objectives of the PGDS are to:

- Give effect to the principles of a developmental state by facilitating cooperative governance and by prioritising development.
- Facilitate and support sustainable development through following an integrated approach to managing the relationship between socio-economic development and the environment.
- Actively promote and support economic growth and development in terms of the provincial economy, it's linkages to the national and international economy and with an emphasis on provincial priorities such as targeted growth areas, priority sectors and

corridors as well as developmental priorities such as employment and eradicating poverty.

- Facilitate and provide essential services in social and human development in areas such as health, education, social welfare, community safety and with an emphasis on human capital development including human resources development and skills development.
- Give special attention to transversal priorities including poverty eradication, also in targeted spatial areas and with an emphasis on areas such as gender equity, disability and youth. Transversal priorities also include the development of joint policy and planning capacities as well as monitoring and evaluation arrangements with an emphasis on capacity building.

The principles underpinning the MPGDS are informed by the notion of a developmental state. The key tasks of the developmental state are to achieve higher rates of growth and sustainable development to address social challenges such as poverty and inequality. The core elements of the developmental state include:

- The focus upon people and households, with the objectives of eradicating poverty and unemployment, ensuring equitable access to affordable benefits and ensuring that social infrastructure receives the same priority as physical infrastructure.
- The promotion of sustainable development by eliminating the gap between the first and second economies, while managing globalisation and developing social and institutional capacities.
- The initiation of selected interventions in the economy, not to focus on fast economic growth as an end in itself, but as a developmental strategy that generates sustainable growth directed towards the creation of jobs, the eradication of poverty, human and social development, yet without compromising environmental sustainability.
- The use of co-operative governance and democratic participation, working within an environment of general consensus with open discussion of alternatives to assist in implementation, and the associated monitoring and evaluation process.

The implementation of the MPGDS is informed by the following vision, mission, and value statements.

- Vision: An improved quality of life for all the people of Mpumalanga.
- Mission: To promote viable economic growth and development, especially where it addresses job-creation and poverty reduction, in an environmentally sustainable manner within a spatial context and incorporating the principles of good governance.

The MPGDS states the importance of strengthening sustainable development through a number of initiatives and interventions, of which the following are relevant:

- Create an Environmental Hub to identify, develop and commercialise environmentally sustainable technologies and innovations such as green buildings, domestic renewable energy projects, recycling, and resource efficiency, etc).
- Improve land use management and planning through an integrated land use planning approach.
- Improve demand-side resource efficiency with respect to the utilisation of water, electricity, and all other resources for the benefit of all.
- Manage pollution including air quality, water quality and chemical seepage.
- Promote renewable energy technology use at the commercial, industrial, and domestic level.

The MPGDS states that key question to be addressed by the provincial government and all its social partners is, "How to ensure that Mpumalanga province remains globally competitive whilst still addressing issues of exclusion, inequality, marginalisation and moving towards a sustainable growth trajectory?"

The MPGDS further states that fundamental to answering the above question and improving the quality of lives of the people of Mpumalanga is building a *sustainable growth path that is people-centred and will contribute to eradicating poverty, supported by economic growth & development and social development in a sustainable manner*. The following seven priorities are put forward to achieve this:

- Use indigenous resources to create jobs.
- Support the industrial and service sectors to create jobs.
- Reduce the impact of poverty through social services.
- Enhance social cohesion and developing human capital.
- Strengthen sustainable development.
- Maximise the provincial benefits from the mining and energy sectors while mitigating any environmental impacts.
- Improve governance and spatial integration.

The priorities that are relevant to the proposed project include:

- Support the industrial and service sectors to create jobs.
- Enhance social cohesion and developing human capital.
- Strengthen sustainable development.
- Maximise the provincial benefits from the mining and energy sectors while mitigating any environmental impacts.

2.3.2 Mpumalanga Growth and Development Path

The Mpumalanga Economic Growth and Development Path (MEGDP)(2011) is informed by the National Economic Growth Path. The MEGDP notes that Mpumalanga is committed to increasing local economic development and job creation in the agricultural, industrial, manufacturing, **green economy**, tourism, and mining sectors. The (MEGDP) is informed by six key pillars, namely:

- Job creation.
- Inclusive and shared growth of a diversified economy.
- Spatial distribution.
- Integration of regional economies.
- Sustainable human development.
- Environmental sustainability.

The pillars of job creation, the development of a diversified economy, and sustainable environmental development are all relevant to the proposed development. The MEGDP also identifies a number of key employment drivers aimed at realising the MEGDP objectives and securing strong and sustainable growth for the next decade. Of relevance these include the creation of employment of economic sectors including energy and the development of new economies including green industries.

2.3.3 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

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

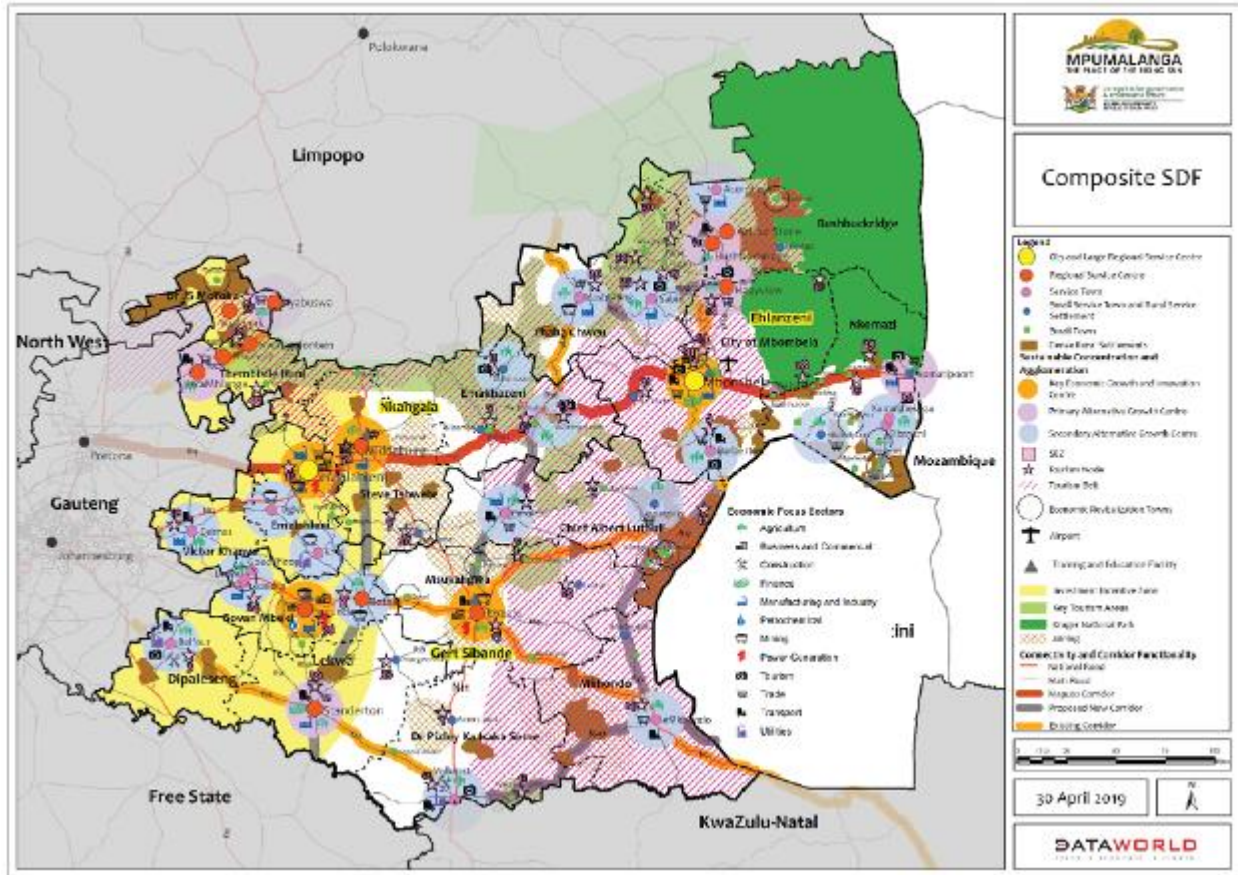
Mpumalanga is home to 12 of Eskom's 15 coal-fired power stations; petrochemical plants; metal smelters; coal and other mines; brick and stone works; fertiliser and chemical

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.

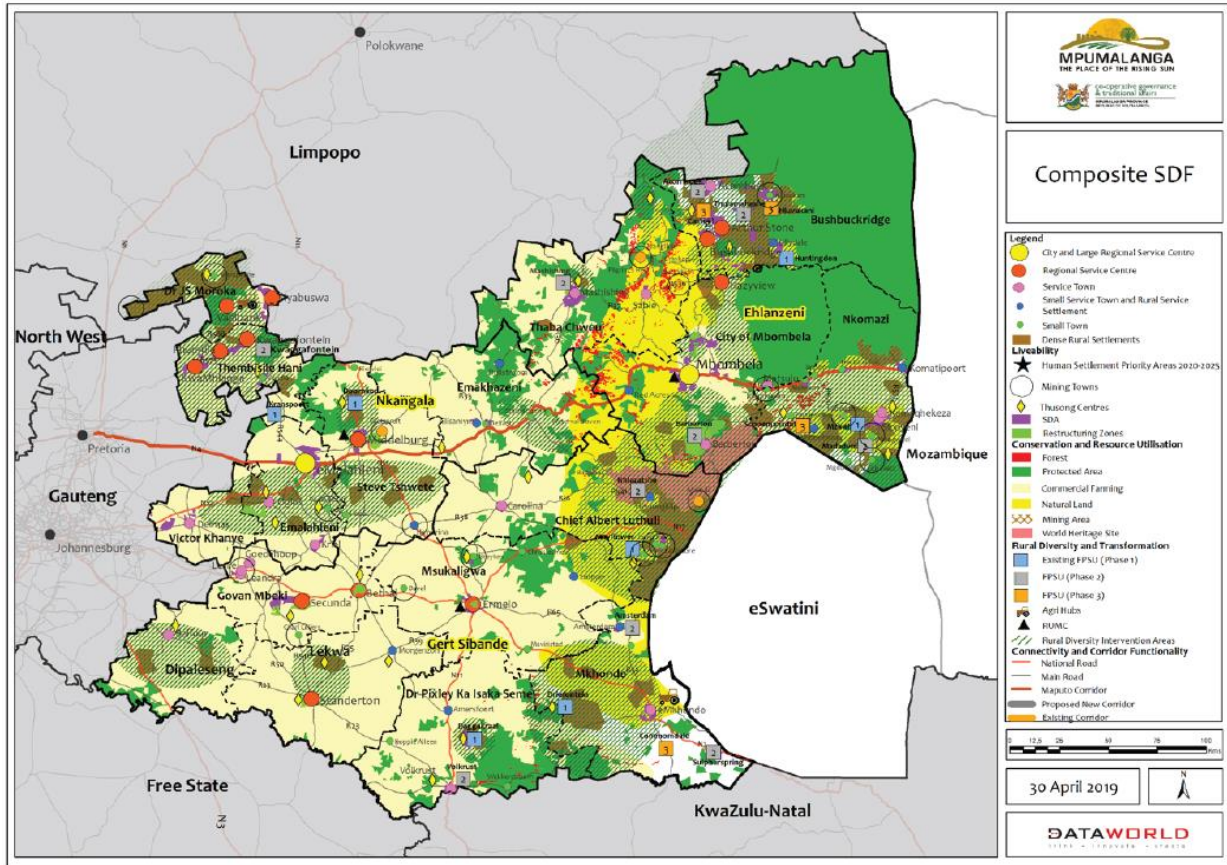
Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment

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, Emalahleni is identified as a City and a large Regional Service Centre (yellow dot) and the development area located to the south west of the town falls within an investment incentive area (yellow) (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

2.3.4 Emalahleni Municipality Integrated Development Plan (2017-2022)

The vision of the Emalahleni Local Municipality (ELM) is “To be a centre of excellence and innovation” Emalahleni “The energy heartbeat of Southern Africa and economic hub of Mpumalanga”. Linked to the vision is the mission statement, which is “Empowerment of our communities and providing innovative and excellent service that is conducive for sustainable economic development and social transformation”.

The IDP lists the top five goals of the ELM, of which socio-economic growth and a safe environment is the most relevant to the proposed development. The IDP also identifies 6 KPAs, of which the KPA 3, Local Economic Development, and KPA 6, Spatial and Cross Cutting Issues, are the most relevant for the proposed development.

Local economic development

In terms promoting economic development the ELM adopted a 5-year Local Economic Development (LED) strategic framework in 2011/12. The purpose of the LED strategy is to develop the economic capacity of the local area to improve its economic future for the benefit of all residents. Of relevance to the project the LED strategy seeks to:

- Assess the local economy in the context of sectoral growth and challenges.
- Identify LED opportunities and development initiatives to be implemented by key stakeholders and role players.
- Identify LED programmes and projects to uplift local communities.

- Promote SMMEs.

The municipality has a comparative advantage in the following sectors:

- Mining.
- Manufacturing.
- Utilities.

In terms of challenges, the IDP notes that shortage of energy due to Eskom electricity creates challenges for local businesses and economic development. The lack of manufacturing incubation hubs, training as well as coaching and mentoring programmes are also identified as a challenge. The proposed development can assist to address these two challenges.

The IDP also lists a number of other challenges facing economic development in the ELM. The following are relevant to the proposed development.

- Low skills levels.
- High unemployment and the influx of people from other parts of the district, province and countries.
- Inadequate support of SMMEs.
- Poor business relationship and lack of common vision amongst business and other institutions.

A number of options are identified to address these challenges, including:

- Attracting external investment (nationally and internationally).
- Ensuring that the local investment climate is functional for local businesses, (mainly SMMEs).
- Investing in physical (hard) infrastructure.
- Supporting small and medium sized enterprises.
- Promoting economic transformation in order to enable meaningful participation of SMMEs.
- Promoting investment programmes that lead to broad based economic empowerment.
- Development of capacity and skills for SMMEs.
- Engagement of Private Sector and Government for the support of SMMEs.

A SWOT analysis undertaken as part of the IDP process identified a number of strengths, opportunities and threats that are relevant to the project, namely:

Strengths

- Skilled workforce.

Opportunities

- Raw material processing facilities.
- Economic hub – Mpumalanga.
- Potential for establishment of University of Mpumalanga engineering faculty to be located in Emalahleni.
- Strategic Geographical location of ELM in terms of Maputo corridor.
- Industrial and mining developments and associated potential for increased revenue base.
- Diversification of the economy.
- Skills training and development.

Threats

- Civil unrest.
- Land invasion.
- Service backlog and run-down infrastructure networks and roads.
- Depletion of mineral resources.
- High unemployment rate (closure of industries).
- Impact of climate change.

Spatial and cross cutting issues

The IDP notes that the ELM strategically located within the Mpumalanga provincial context as it serves the function of a gateway municipality and town into the province for eight of the nine provinces of South Africa. Its proximity to the Johannesburg, Ekurhuleni and the Tshwane Metropolitan Municipalities, which jointly constituted the largest economy in the country serve the municipality favourably.

In terms of spatial or cross cutting issues the Emalahleni Spatial Development Framework lists four strategic objectives, namely:

- **Strategic Objective 1:** To enhance the sustainability of the area by way of protection, management, and enhancement of the natural environmental resources of the Municipality.
- **Strategic Objective 2:** To improve spatial efficiency, justice, and sustainability by consolidating urbanisation around existing nodes and corridors and within an urban development boundary.
- **Strategic Objective 3:** To maintain/enhance connectivity between the identified activity nodes, and with surrounding regional towns and activity areas.
- **Strategic Objective 4:** To build a diverse, efficient, and resilient local economy and to optimise the spatial distribution of conflicting economic sectors

Strategic objective 4 is the most relevant to the proposed development. In this regard the SDF notes that area to the south of the N12 freeway hosts a combination of mining activity, power stations and extensive agricultural use (mostly crop farming). The mining areas host South Africa's key coal reserves and important power stations, including Kendal, Matla, Duvha and Kriel. The mining belt also extends northward towards Emalahleni City. This area is thus characterised by conflicting demand between mining, electricity generation and agriculture. The SDF notes that the primary objective should be to prevent mining activity from encroaching onto high potential agricultural land and areas of high biodiversity; and to ensure that the areas of mining activity are properly rehabilitated and that the agricultural value of the land be restored once the mineral resources are depleted.

Strategic Objective 4 also notes that the industrial and manufacturing activities within the ELM should be strongly supported. Spatially, the SDF recommends that the bulk of new industrial development be consolidated along the N4 and N12 Development Corridors. Similar to the recommendations for mining activity in the ELM, industrial development should not be allowed to negatively affect high potential agricultural land or identified environmentally sensitive and/or tourism precincts.

2.3.5 Emalahleni Municipality Spatial Development Framework (2014)

The ELM SDF notes that the ELM is the most industrialised municipal area in Nkangala District Municipality (NDM) and has the largest concentration of power stations in South Africa. Its mining and industrial history is reflected in the area's heritage places.

There are two key elements that inform the spatial structure and settlement patterns in the ELM, namely the transport network and mining. The transport network specifically the N4 and N12 freeways and the national railway line which traverse the area from east to west and which form part of the Maputo-Walvis Bay Corridor, play a key role in terms of the areas spatial land use pattern. Emalahleni City and its extensions have developed in a linear pattern along these freeways and railway lines, with the Central Business District (CBD) located north of the convergence point. The rich coal deposits and associated coal mines and power stations in the southern parts of the ELM are a key structuring element and have had and will continue to have a major influence on settlement development and expansion trends in this part of the ELM.

The ELM SDF is based on the following four strategic objectives, namely:

- Strategic Objective 1: To enhance the sustainability of the area by way of protection, management and enhancement of the natural environmental resources of the Municipality.
- Strategic Objective 2: To improve spatial efficiency, justice and sustainability by consolidating urbanisation around existing nodes and corridors and within an urban development boundary.
- Strategic Objective 3: To maintain/enhance connectivity between the identified activity nodes, and with surrounding regional towns and activity areas.
- Strategic Objective 4: To build a diverse, efficient, and resilient local economy and to optimise the spatial distribution of conflicting economic sectors.

Strategic Objective 4 is the most relevant to the proposed development. Industrial development and manufacturing is listed under strategic objective 4 as a key area. Of relevance to the proposed development SDF notes that the existing industrial and manufacturing activities within the ELM should be strongly supported. This includes nine major industrial areas, of which six are situated within or around eMalahleni City, including the KwaMthunzi Vilakazi/ Highveld Steel industrial area to the west of town where the PV SEF site is located. The six major industrial areas in the ELM, including the Highveld Steel Plant area as illustrated in Figure 33.1 (Figure 2.4 below) in the SDF. The SDF notes that the industrial areas within the ELM represent the cluster of industrial activity in the NDM. The SDF also recommends that bulk of new industrial development be consolidated along the N4 and N12 Development Corridors (Figure 2.5).

Manufacturing is identified as one of the key sectors with huge potential for beneficiation and longer value chains, with resultant impacts on job creation, economic growth and SMME development. The SDF also states that given the relationship between manufacturing and other sectors such as mining, agriculture and construction, the manufacturing sector potential within Emalahleni needs special exploration and exploitation.



Figure 2.4: KwaMthunzi Vilakazi/ Highveld Steel Industrial Area showing site area

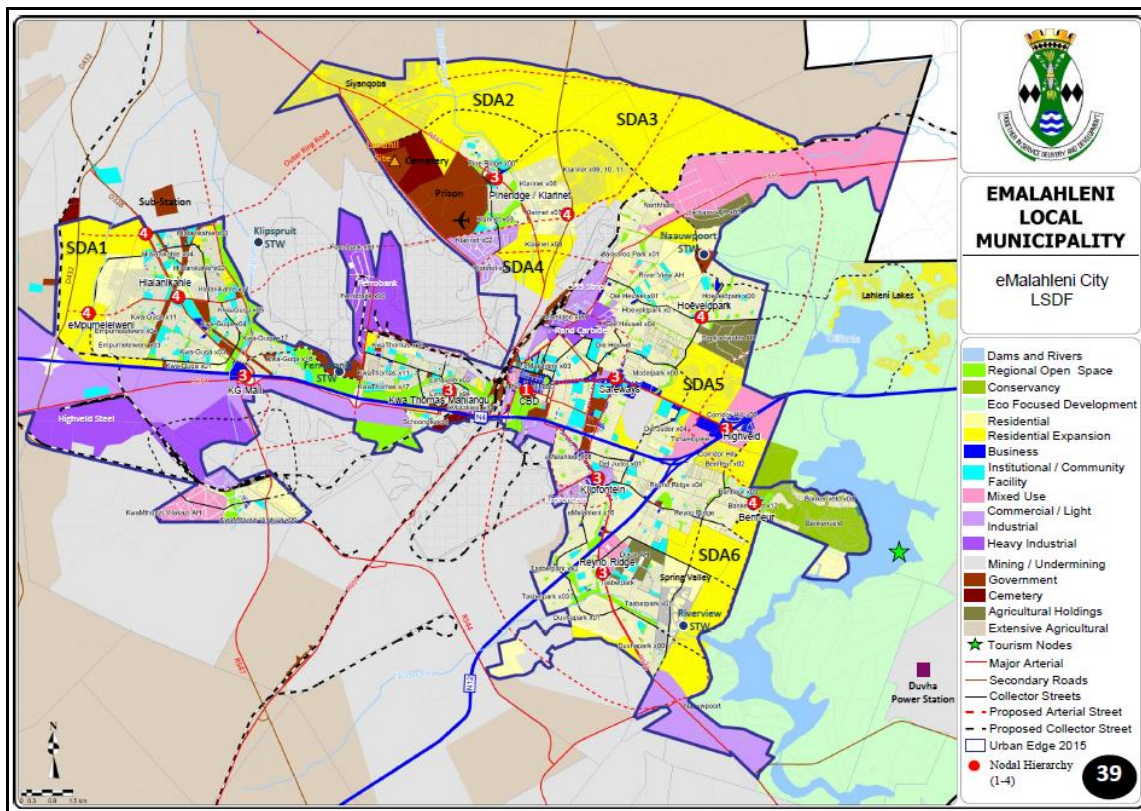


Figure 2.5: SDF Land Use Map for ELM

Based on the situational analysis, the SDF identifies a number of opportunities and constraints related to the spatial structure, population, and economy of the ELM. The following are of relevance to the proposed development.

Opportunities

- Favourable location in terms of the regional road and rail network. The combination of the N4 freeway, service road and railway line between Emalahleni and Middelburg pose the opportunity for corridor development along the N4 freeway – Maputo Development Corridor.
- Rich coal reserves, creating major economic development opportunities in the mining and electricity sectors.
- Close proximity to Gauteng and the major markets in Gauteng.

Constraints

- Although the level of employment in the study area has increased, the population profile still shows high levels of unemployment coupled with low-income levels which result in poverty.
- The long-term sustainability of resource-specific settlements, especially related to mining activity and power stations, is questionable, seeing that the mines and power stations have finite lifespans.
- Limited availability of industrial land.

SECTION 3: OVERVIEW OF STUDY AREA

3.1 INTRODUCTION

Section 3 provides an overview of:

- The administrative context.
- The provincial context.
- District and local municipal context.
- The site and surrounding area.

3.1 ADMINSTRATIVE CONTEXT

The proposed project is located in the Emalahleni Local Municipality (ELM) which forms part of the Nkangala District Municipality (NDM) (Figure 3.1). The town of Witbank is the administrative seat of the ELM. The NDM is located to the North-West of the Mpumalanga Province and is the smallest district in land mass (21%) and has the second largest population concentration (35%) in the province. The NDM covers an area of about 2677.67 km² in extent. The Nkangala District Municipality is made up of six local municipalities, namely:

- Emakhazeni Local Municipality.
- Steve Tshwete Local Municipality.
- Thembisile Hani Local Municipality.
- Dr JS Moroka Local Municipality.
- Emalahleni Local Municipality.
- Victor Khanye Local Municipality.

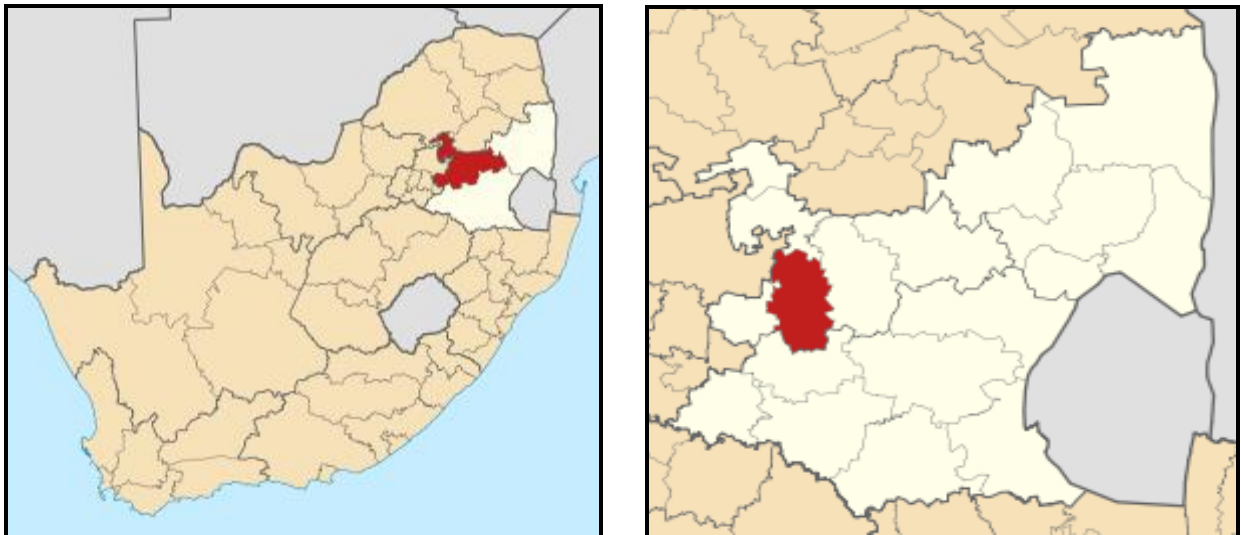


Figure 3.1: The location of Nkangala District Municipality (left) Emalahleni Local Municipality (right) within the Mpumalanga Province (cream) (Source: Wikipedia)

3.2 PROVINCIAL CONTEXT⁴

The proposed project is located in the Mpumalanga Province which covers an area of 76 495 km², which is the represents 6.5% of the total area of South Africa. The western part of the Mpumalanga is characterised by high altitude grasslands referred to as the Highveld, while the eastern portion is characterised by low altitude subtropical savannah interspersed with rocky outcrops, referred to as the Lowveld. The province is divided by the Drakensberg Escarpment making the central regions mountainous reaching altitudes in excess of 2000m. The climatic conditions range from moist and warm in the east to dry and cooler in the west. The province falls with the summer rainfall region of South Africa. The Mpumalanga Province consists of 3 District Municipalities, namely Gert Sibande, Nkangala, and Ehlanzeni District Municipalities and 18 Local Municipalities (Figure 3.2).

Population

The population of Mpumalanga was 4 039 939 in 2011 (Census 2011) and increased to 4 335 964 by 2016 (Community Household Survey 2016). This represents a growth rate of 1.61 % per annum.

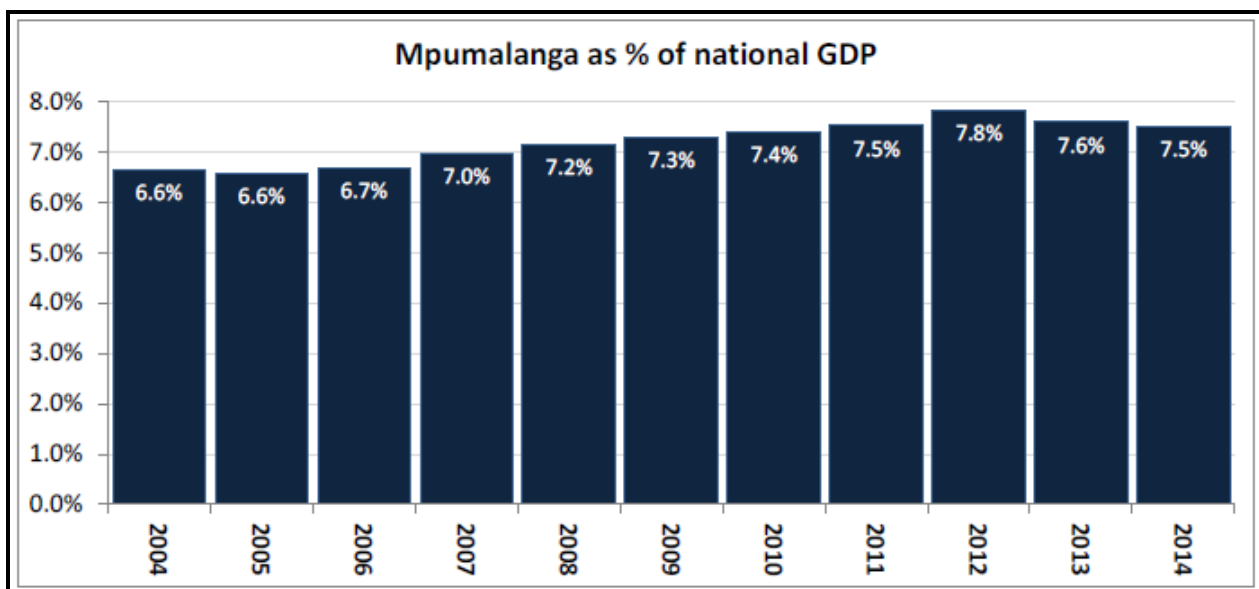


Figure 3.2: Location of district municipalities within Mpumalanga (Source MPGDS, 2008)

⁴ The information contained in the PGDS does not include the data from Census 2011. Were possible this information has been added.

Regional Economy

The regional economy of Mpumalanga is dominated by mining, mostly coal for the Eskom power plants located in the province. The province also has an established and extensive heavy industrial sector, which is closely linked to the mining sector, and a strong commercial agricultural sector. These industries have driven its growth since 2011. In terms of the national economy, Mpumalanga contributed 7% towards the national GDP in 2014/15. The real economy (represented by agriculture, mining, manufacturing and construction) made up 40% of Mpumalanga's output. The real-economy sector was dominated by mining, at 22% of the provincial economy, followed by manufacturing at 12%, construction at 3%, and agriculture at 3%. Mpumalanga contributed 22% of national mining, 8% of national manufacturing, 9% of agriculture and 6% of construction. Mpumalanga's economy therefore remains heavily reliant upon the primary sector, specifically mining. As indicated in Figure 3.3, the contribution to the national GDP has remained reasonably constant over the since 2008.

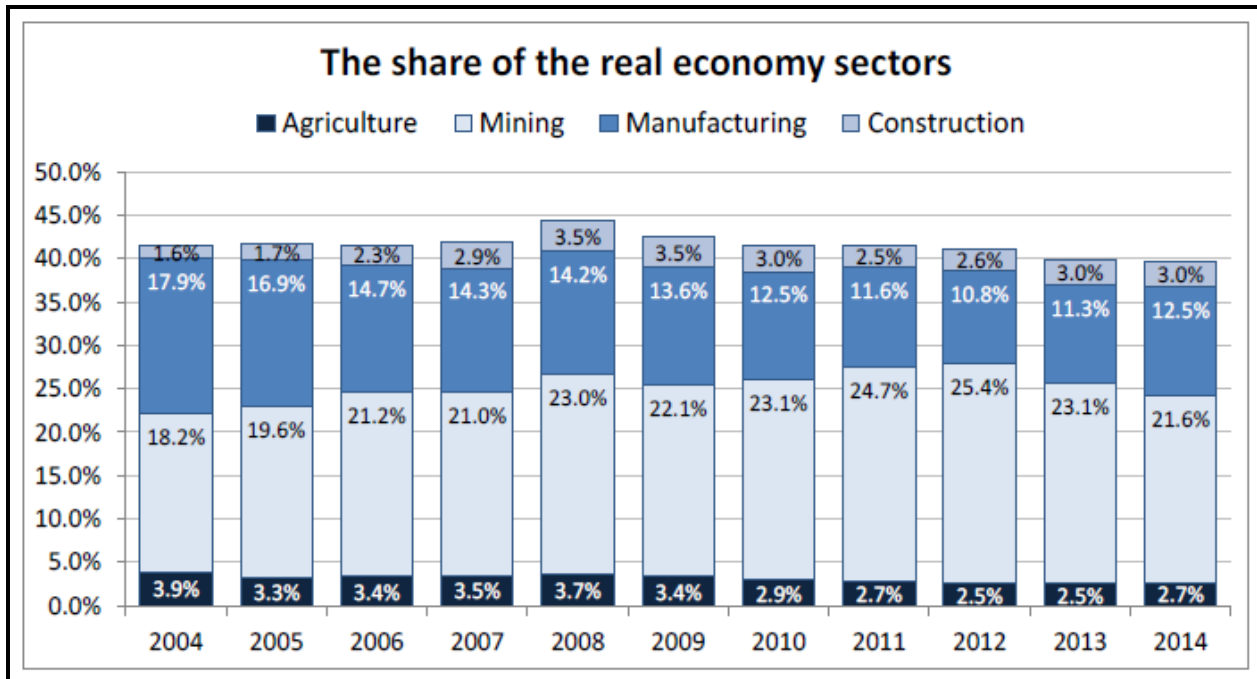


Source: Real Economy Bulletin, 2016

Figure 3.3: Contribution to national GDP.

Economic Sectors

As indicated in Figure 3.4, the key economic sectors in 2014 terms of contribution to GDP-R are Mining (21.6%) and Manufacturing (12.5%), followed by the Construction (3%) and Agriculture (2.7%) sectors. The increase in the contribution of the mining sector up until 2011 is linked to the commodity boom.



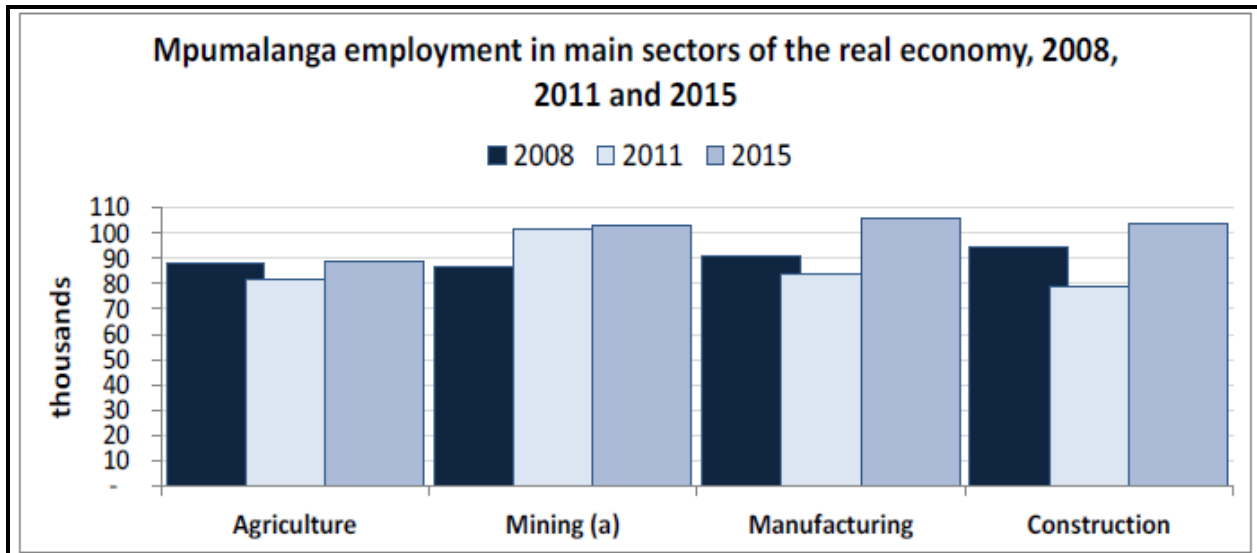
Source: *Real Economy Bulletin, 2016*

Figure 3.4: Share of key economic sectors

Employment

In terms of employment, the most important sector was Manufacturing (106 000 workers), followed by Construction (104 000), Mining (103 000) and Agriculture (89 000). Therefore, while Construction and Agriculture only contribute 5.7% towards the real economy, they accounted for 48% of the jobs in the four main sectors in 2015.

As indicated in Figure 3.5, employment in all four sectors increased between 2011 and 2015, with the largest increases in the Manufacturing and Construction sectors. At a national level, Mpumalanga accounted for 6% of South African manufacturing employment. The top five manufacturing industries in the province in terms of employment, were basic iron and steel plus metal products; chemicals and plastic; food and beverages; glass and non-metallic minerals; and clothing, textiles, and footwear. In terms of the mining sector, coal mining was the biggest single employer.



Source: *Real Economy Bulletin, 2016*

Figure 3.5: Contribution of key sectors to employment

Employment and unemployment

The Census data indicates that 43% of the working-age population in Mpumalanga were employed in 2015, compared to the national figure of around 40%. The international norm is around 60%. The average wages in Mpumalanga was also slightly higher than most other provinces, with the exception of Gauteng and the Western Cape. In 2014, the median formal wage in the province was R4 200 and the median wage for domestic, informal and agricultural workers was R1 800 (Real Economy Bulletin, 2016). This is compared to the national average of R4 000 for formal workers, and R1 500 for other employees. In terms of formal employment, ~ 67% of total employment in the province was in the formal sector, compared to the national average of 69%. The relatively high employment and wage levels in the province have contributed towards in-migration into Mpumalanga. In this regard the population grew 37% from 1996 to 2015, compared to a national average of 35% (Real Economy Bulletin, 2016).

3.3 SOCIO-ECONOMIC OVERVIEW OF THE PROJECT AREA

3.3.1 Demographic information

As indicated in Table 3.1., the population of the NDM increased from 1 308 129 in 2011 to 1 445 642 in 2016, which represents an increase of ~ 11 % over the 5 year period. The population of the ELM increased from 395 466 in 2011 to 455 228 in 2016, which represents an increase of 15% over the same period. In terms of racial groups, Black African's made up 90.9 % of the population of the NDM in 2016, followed by Whites (7.7%), Coloureds (0.9%) and Asians (0.7%) in 2016. The figures for the ELM were 86.1% Black African, 11.9 % Whites, 1.2% Coloured and 0.8% Asian. The main languages were Siswati (29.1), followed by IziZulu (28.8%) and IsiNdebele (10.1%)(Community Survey 2016).

The increase in the population in both the NDM and ELM was linked to an increase in the 15-65 and older age groups. The increase in the economically active age group of 15-65 years in the ELM is likely linked to the influx of job seekers to the area from the surrounding rural areas in the province. This is also reflected in the decrease in the dependency ratios in both the NDM and ELM (see below). This highlights the economic importance of the area and towns such as Witbank and Middleburg. As expected, the number of households in both the

NDM and ELM increased between 2011 and 2016, increasing from 356 911 to 421 624 in the NDM and 119 874 to 150 420 in the ELM. The size of the household sizes in both areas decreased marginally to 3.4-3.0 in 2016 respectively.

The dependency ratio in both the NDM and ELM decreased from 50.4 to 46 and from 40.4 to 38% respectively. The age dependency ratio is the ratio of dependents, people younger than 15 or older than 64, to the working, age population, those ages 15-64. The decrease represents a positive socio-economic improvement and reflects a decreasing number of people dependent the economically active 15-64 age group. As indicated above, there has been an increase in the percentage of economically active people in both the NDM and ELM. The dependency ratios for both the NDM and ELM are lower than the provincial and national ratios, which were 56.0 and 52.7 in 2011 respectively.

In terms of percentage of formal dwellings, the number of formal dwellings in the NDM increased decreased from 82.8 % in 2011 to 81.6 in 2016. In the ELM the number of formal dwellings also decreased from 77.2 % to 74.4% for the same period. This is likely to be due the influx of job seekers to the area and the increase in informal dwellings as a percentage of total households.

The 2016 Community Survey does not provide details on unemployment levels. However, as a trend, official unemployment rate in both the NDM and ELM decreased for the ten-year period between 2001 and 2011. In the NDM the rate fell significantly from 43.8 to 30.0 %, a decrease of 13.8 %. In the ELM the unemployment rate decreased from 38.4 % to 27.3 %, a decrease of 11.1 %. Youth unemployment in both the NDM and ELM also dropped over the same period. However, the youth unemployment rate in both the NDM and ELM remains high at 39.6 % and 36.0% respectively. The unemployment rate for females in the ELM was 37.1% compared to 20.8% for males. This reflects the dominant role played by the mining sector in the ELM economy (see below).

The education levels in both the NDM and ELM also improved, with the percentage of the population over 20 years of age with no schooling dropping in the NDM decreasing from 11.5 % to 9.3%. For the ELM the decrease was from 5.8 % to 4.9. The percentage of the population over the age of 20 with matric also increased in both the NDM and ELM, from 29.4 % to 36% in the NDM and 38.7 % in the ELM.

Table 3.1: Overview of key demographic indicators for the NDM and ELM

ASPECT	NDM		ELM	
	2011	2016	2011	2016
Population	1 308 129	1 445 642	395 466	455 228
% Population <15 years	28.5	27.3	25.2	24.5
% Population 15-64	66.5	68.6	71.2	72.5
% Population 65+	5.0	4.1	3.6	3.0
Households	356 911	421 624	119 874	150 420
Household size (average)	3.5	3.4	3.2	3.0
Formal Dwellings %	82.8	81.6	77.2	74.4
Dependency ratio per 100 (15-64)	50.4	50.4	40.4	40.4
Unemployment rate (official) - % of economically active population	30	Not available	27.3	Not available
Youth unemployment rate (official) - % of economically active population 15-34	39.6	Not available	36.0	Not available
No schooling - % of population 20+	11.5	9.3	5.8	5.8
Matric - % of population 20+	29.4	36.0	31.4	38.7

Source: Community Survey 2016 and StatsSA Census 2011 Municipal Fact Sheet

3.3.2 Municipal services

As indicated in Table 3.2, with the exception in of the percentage of households with access to flush toilets, the provision of the other key services measured in terms of weekly refuse removal, piped water and electricity, has decreased in the NDM between 2011 and 2016. The data for the ELM indicates that access to flush toilets and piped water has improved, while refuse removal and electricity for lighting has decreased. This is likely as a result of the influx of job seekers to the area and also poor management that has characterised many local authorities in South Africa in recent years. It is also ironic that the percentage of households in the ELM that use electricity for lighting has decreased given that the ELM is the home of some of the largest coal powers stations in South Africa. The services levels in the ELM are also lower than the national levels for households that use electricity. This is ironic given that the ELM is a key producer of electricity in South Africa.

Table 3.2: Overview of access to basic services in the NDM and ELM

	NDM		ELM	
	2011	2016	2011	2016
% households with access to flush toilet	48.7	51.0	68.8	70.0
% households with weekly municipal refuse removal	48.3	48.0	67.2	65.0
% households with piped water inside dwelling	40.6	39.0	54.9	56.0
% households which uses electricity for lighting	85.7	85.7	73.4	72.3

Source: Community Survey 2016 and StatsSA Census 2011 Municipal Fact Sheet

3.3.3 Economic overview

The 2006 National Spatial Development Perspective (NSDP) identified Witbank (Emalahleni) as an example of a mass-produced and specialised economic concentration. The NSDP proposed that these areas of national economic significance should be specifically targeted for public policy interventions. The presence of abundant coal has attracted coal mining in the region since the mid nineteenth century and it later became a prime location for the electricity generating industry. The presence of water, transport routes, power and coal then attracted the steel industry and the development of large plants such as those of Highveld Steel and Vanadium Corporation and Ferrometals (see below)(SACN, 2014).

The National Development Plan also identifies Emalahleni for intervention because of its potential for rapid growth and location on a trans-national corridor (the Maputo Development Corridor (SACN 2014)). The economic importance of the region has also led the Mpumalanga Provincial Government to investigate the potential development of a steel and metal fabrication hub in the area.

The ELM has over 22 collieries that have created a significant number of jobs. The mining city has expanded rapidly and international companies such as Anglo American, BHP Billiton, Evraz, Eskom, Exxaro Resources, Joy Mining Machinery, Komatsu, the Renova Group, SAB-Miller, SAMANCOR, Shanduka Beverages, Xstrata and Zenith Inc. are among the strategic players.¹²⁹ There are also a number of power stations, such as the Duvha Power Station and steel mills namely Evraz Highveld Steel and Vanadium Limited which require coal. According to data from Global Insight formal employment in the ELM has risen by about 29% from 73 437 jobs in 1996 to just over 105 000 jobs in 2011, while informal employment has trebled from 7190 jobs in 1996 to nearly 23 000 jobs in 2011 (SACN 2014).

Main economic sectors

Among the main economic sectors in terms of employment are coal mining, steel manufacturing, energy generation and the retail, wholesale and hospitality sectors.

Coal

Coal mining is the largest industry in Emalahleni, and one of the oldest. The Emalahleni and Highveld coalfields produce in the region of 80% of the country's coal. The mines are owned and operated by a number of large international companies, including Anglo American, Exxaro, Sasol, BHP Billiton and Xstrata. A number of BEE enterprises have also become involved in the sector in recent years. Approximately 75% of local production is used domestically, with the bulk used by Eskom to generate electricity, while exports make up

the remaining 25%. The majority of the coal exported is exported to the EU, China and India through the dedicated coal terminal at Richards Bay port.

Steel and iron

Evrz Highveld Steel and Vanadium formed the basis of the steel industry in the area and has been producing steel since 1957. The company's facilities in Emalahleni are designed to combine iron ore with high vanadium content and produce both vanadium and steel. The Ferrometals steel plant owned by SAMANCOR is also located in the ELM. When it was established in 1959 it was one of the largest chrome producing sites in the world. The iron and steel operations have declined in recent years resulting in job losses. In order to address the issue, the Mpumalanga Provincial Government together with the South African Iron and Steel Institute is investigating the establishment of a steel and metal fabrication hub between Emalahleni and Middelburg.

Energy

Most of South Africa's power (over 70%) is derived from coal-burning power stations operated by Eskom which supplies over 84% of the electricity in the country. A number of large coal power stations are located in the ELM. However, many of these power stations are old and emissions pose a threat to the environment and human health.

3.4 OVERVIEW OF SITE AND LAND USES

The proposed Transalloys Solar PV SEF facility and its associated electrical infrastructure is located to the east of the Transalloys smelter complex ~ 10km to the south-west of the CBD of Emalahleni (Witbank) (Figure 3.6). The urban land uses in the vicinity of the site include the town of Clewer located immediately to the south of the site and residential township areas, including Vosman, associated with Emalahleni located ~ 1km to the north of the site (Figure 3.6)(Photograph 3.1 and 3.2). The N4 and R 104 are located to the north of the site and separate the site from the residential areas. The R 547 runs along the eastern boundary of the site. The area to the east of the R547 is open farmland. This area has been identified as potential future area for coal mining.



Figure 3.6: Location of PV SEF site



Photograph 3.1: Clewerville residential area



Photograph 3.2: Residential areas to the north of N4

The area to the south of the N4 is dominated by industrial and mining activities. The dominant heavy industrial activities include the Transalloys smelter complex and the Evraz Highveld Steel and Vanadium complex located ~ 2 km north-west of the Transalloys smelter complex and the PV site (Photograph 3.3, 3.4, 3.5 and 3.6). The mining activities are dominated by coal mines, including the Elandsfontein Colliery located ~ 2.7km to the south-west of the PV SEF site and Landau Colliery located ~ 3km to the south-east of the site. The area has therefore been substantially altered by industrial and mining activities. As such there are no sensitive social receptors that would be impacted by the proposed PV SEF.



Photograph 3.3: Evraz Highveld Steel and Vanadium complex



Photograph 3.4: Entrance to Transalloys smelter facility of the R547



Photograph 3.5: view from east toward Transalloys smelter facility and PV SEF site



Photograph 3.6X: Tranalloys smelter complex

SECTION 4: IDENTIFICATION OF KEY ISSUES

4.1 INTRODUCTION

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

- Review of project related information.
- Site visit and interviews with key interested and affected parties⁵.
- Experience/ familiarity of the author with the area and local conditions.
- Experience with similar projects.

The assessment section is divided into the following sections:

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

4.2 ASSESMENT OF POLICY AND PLANNING FIT

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 at a provincial and local level. The development of the proposed PV SEF is therefore supported by key policy and planning documents.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

The key social issues associated with the construction phase are the following:

Potential positive impacts

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

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of jobseekers.
- Increased risk of grass fires associated with construction related activities.
- Noise, dust, and safety impacts associated with construction related activities and vehicles.

⁵ Site visit was undertaken in 2014 as part of the SIA for a proposed 150 MW coal power station. The potential negative social impacts associated with the establishment of a 50MW PV SEF will be limited compared to a 150MW coal power station.

4.3.1 Creation of local employment, training, and business opportunities

The construction phase of the PV SEF will extend over a period of approximately 18 months and create in the region of 150 employment opportunities. Members from the local communities in the area, specifically Emalahleni, would be in a position to qualify for most of the low skilled and semi-skilled employment opportunities. Most of these employment opportunities will accrue to Historically Disadvantaged (HD) members of the community. Based on information from similar projects the total wage bill will be in the region of R 20 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 the local towns in the area.

Given relatively high local unemployment levels in the area, this will represent a significant, if localised, social benefit. The capital expenditure associated with the construction phase will be approximately R 1 billion (2022 Rand value). Given the well-developed local economy the potential for local construction and engineering companies to benefit from aspects of the construction phase is likely to be high. The local service sector will also benefit from the construction phase. The potential opportunities would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.

In terms of training and skills development, the relatively short duration of the construction phase will make it difficult to implement an effective training and skills development programme. In addition, the majority of benefits are likely to accrue to personnel employed by the relevant contractors.

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

Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	With Enhancement
Extent	Local – Regional (2)	Local – Regional (3)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (40)	Medium (44)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Improved pool of skills and experience in the local area.		

Assessment of No-Go option

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

Recommended enhancement measures

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

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 EM 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 EM 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.

The objective will be to source as many of the low and semi-skilled workers locally. These workers will be from the local community and form part of the local family and social networks. This will reduce the risk and mitigate the potential impacts on the local community. The potential impact on the local community will therefore be negligible. The balance of semi-skilled and skilled workers will be accommodated in Emalahleni.

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 for community as a whole (2)	Short term for community as a whole (2)
Magnitude	Moderate for the community as a whole (6)	Low for community as a whole (4)
Probability	Probable (3)	Probable (3)
Significance	Medium for the community as a whole (30)	Low for the community as a whole (21)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be 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 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

- 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 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 dismissed. All dismissals must comply with the South African labour legislation.
- The proponent and the contractor should implement an HIV/AIDS and COVID-19 awareness programme for all construction workers at the outset of the construction phase.
- The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.
- Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/or on a regular basis. This would reduce the risk posed to local family structures and social networks.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 Influx of job seekers

Large construction projects tend to attract people to the area in the hope that they will secure a job, even if it is a temporary job. These job seekers can in turn become "economically stranded" in the area or decide to stay on irrespective of finding a job or not. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the manner in which they conduct themselves can impact on the local community. The main areas of concern associated with the influx of job seekers include:

- Impacts on existing social networks and community structures.
- Competition for housing, specifically low-cost housing.
- Competition for scarce jobs.
- Increase in incidences of crime. The concern is that these job seekers may not leave town immediately and, in some cases, may stay indefinitely.

These issues are similar to the concerns associated with the presence of construction workers and are discussed in Section 4.3.2. However, the impacts associated with the influx of job seekers are typically associated with large construction projects located in smaller towns that extend over a number of years. The proposed project is not located in or near a small town and does not represent a large construction project. The potential for the influx

of job seekers is therefore likely to be low. The potential impacts associated with the influx of job seekers are therefore likely to be negligible.

Table 4.3: Assessment of impact of job seekers on local communities

Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Permanent (5) (For job seekers that stay on the town)	Permanent (5) (For job seekers that stay on the town)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (24)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation: See below		
Residual impacts: See cumulative impacts.		

Assessment of No-Go option

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

Recommended mitigation measures

It is impossible to stop people from coming to the area in search of a job. However, as indicated above, the proponent should ensure that the employment criteria favour local residents in the area. In addition:

- 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 implement a “locals first” policy, specifically with regard to unskilled and low skilled opportunities.

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 farmsteads in the area. In the process, farm infrastructure may also be damaged or destroyed and human lives threatened. The potential fire risk of grass fires is highest during

the dry winter months (April-October). This period also coincides with dry, windy conditions in the area.

Table 4.4: Assessment of impact of increased risk of grass fires

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

Assessment of No-Go option

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

Recommended mitigation measures

The mitigation measures include:

- The proponent should prepare a Community Health, Safety and Security Plan (CHSSP) prior to commencement of 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. The agreement should be signed before the construction phase commences.
- The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are effectively managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.

- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor to provide fire-fighting training to selected construction staff. No construction staff, with the exception of security staff, to be accommodated on site overnight.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

4.3.5 Nuisance impacts associated with construction related activities

Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage roads. The access to the site will via the N4 and R 547. Care should be taken to ensure that construction vehicles accessing and leaving the site do not pose a safety threat to motorist using the R 547. The preparation of the site and associated levelling and clearing of vegetation will expose the soil to wind and result in dust. The dust impacts will be exacerbated during windy periods. The impacts will be largely local and can be effectively mitigated.

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

Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (15)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Potential damage to local road, specifically the R547		

Assessment of No-Go option

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

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.
- Time transport of heavy equipment and materials to avoid peak am and pm periods on the R547
- Dust suppression measures to 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 following key social issues are of relevance to the operational phase:

Potential positive impacts

- The establishment of renewable energy infrastructure and generation of green energy.
- Creation of employment and business opportunities.

Potential negative impacts

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

4.4.1 Development of infrastructure for the generation of clean, renewable energy

South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. As a result, South Africa is the nineteenth largest per capita producer of carbon emissions in the world, and Eskom, as an energy utility, has been identified as the world's second largest producer carbon emissions.

The proposed PV SEF will generate sufficient energy to meet Transalloys' current electricity demands and future expansion requirements. In this regard the facility will be a captive generating plant whereby generated electricity will be fed directly into the smelter complex for direct consumption. The development of the power plant project would enable Transalloys to become independent of the Eskom electricity grid, thereby creating additional capacity within the Eskom grid for use by other electricity users.

The energy will also be from a renewable source and therefore reduce Transalloy's carbon footprint and in so doing also assist to reduce South Africa's carbon footprint. The proposed development 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 generators⁶. 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

⁶ 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

reduced their revenue, with 40% of small businesses losing 20% or more of revenue during due to load shedding period⁷.

Table 4.6: Implementation of clean, renewable energy infrastructure

Nature: Development of infrastructure to generate clean, renewable energy		
	Without Enhancement	With Enhancement
Extent	Local, Regional and National (4)	Local, Regional and National (5)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Probability	Highly Probable (4)	Definite (5)
Significance	High (64)	High (85)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Overall reduction in CO ₂ emission, reduction in water consumption for energy generation, contribution to promoting use of renewable energy in South Africa.		

Assessment of No-Go option

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

Recommended mitigation measures

Should the project be approved, the proponent should:

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

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

The PV SEF will create ~ 10-15 permanent employment opportunities. Additional temporary employment opportunities will also be created, linked to maintenance and cleaning of solar panels etc. Most of the employment opportunities associated with the operational phase is likely to benefit HD members of the community. It will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase. Such a programme would support the strategic goals of promoting local employment and skills development contained in the EM IDP. As indicated above, the establishment of the proposed PV SEF

⁷ ["How does load shedding affect small business in SA?"](#). *The Yoco Small Business Pulse* (3: Q1 2019):

should also be viewed within South Africa’s current reliance on coal powered energy to meet the majority of its energy needs and the on-going energy crisis facing the economy.

Table 4.7: Assessment of employment and business creation opportunities during the operational phase

Nature: Creation of employment and business opportunities during the operational phase		
	Without Mitigation	With Enhancement
Extent	Local – Regional (2)	Local – Regional (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (40)	Medium (44)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Improved pool of skills and experience in the local area.		

Assessment of No-Go option

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

Recommended mitigation measures

Should the project be approved, the proponent should:

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

4.4.3 Loss of productive agricultural land

The establishment of the PV SEF will result in the loss of agricultural land. However, the EM SDF indicates that the area has been identified for industrial and commercial development. The area is also surrounded by existing industrial and coal mining operations. The impact on current and future agricultural uses of the land is therefore regarded as low. The owner/s of the site will also be compensated for the loss of land. The impact of the proposed PV SEF on the economic potential of the farm will therefore be low.

Table 4.8: Loss of productive agricultural land

Nature: Potential loss of productive agricultural land associated with the PV SEF footprint and associated potential impact on viability of operations		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (6)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Moderate (33)	Low (24)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the workers on the farms and their families. However, area has been identified for future industrial development and compensation for loss of land will be paid to affected landowners.		

Assessment of No-Go option

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

Recommended mitigation measures

The recommendations contained in the Agricultural Assessment should be implemented.

4.4.4 Impact on sense of place and rural character of the landscape

The proposed PV SEF has the potential to impact on the areas existing rural sense of place. However, given the surrounding land uses which include the existing Transalloys and Evraz Highveld Steel and Vanadium facility, several coal mines and townships associated with Emalahleni the potential impact on the areas sense of place will be limited. The site is also located within the Emalahleni REDZ and has therefore been identified as being suitable for the establishment of renewable energy facilities.

Table 4.9: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed solar facility and the potential impact on the area's rural sense of place and adjacent land uses.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (21)	Low (21)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Support for local agricultural sector and farming		

Assessment of No-Go option

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

Recommended mitigation measures

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

4.5 ASSESSMENT OF DECOMMISSIONING PHASE

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. Given the relatively small number of people employed during the operational phase (~ 15), the social impacts at a community level associated with decommissioning will be limited. In addition, potential impacts associated with the decommissioning phase can be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low (negative).

Table 4.10: Social impacts associated with decommissioning

Nature: Social impacts associated with retrenchment including loss of jobs, and source of income		
	Without Mitigation	With Mitigation
Extent	Local and regional (2)	Local and regional (1)
Duration	Medium Term (2)	Very Short Term (1)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (18)
Status	Negative	Negative
Reversibility	Yes, assumes retrenchment packages are paid to all affected employees	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Loss of jobs and associated loss of income etc. can impact on the local economy and other businesses. However, decommissioning can also create short term, temporary employment opportunities associated with dismantling etc.		

Recommended mitigation measures

The following mitigation measures are recommended:

- The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.
- All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning.
- Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.

4.6 CUMULATIVE IMPACT ON SENSE OF PLACE

The potential for cumulative impacts associated with combined visibility (whether two or more solar facilities will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more solar facilities along a single journey does exist. However, as indicated above, given the surrounding land uses which include the existing Transalloys and Evraz Highveld Steel and Vanadium facility, several coal mines and townships associated with Emalahleni the potential impact on the areas sense of place will be limited. In addition, the site is located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishing of large scale renewable energy facilities. The potential cumulative impact on the areas sense of place is therefore likely to be low.

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

Nature: Visual impacts associated with the establishment of more than one SEF and the potential impact on the area’s rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (24)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. Solar energy plant components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: See below		

Assessment of No-Go option

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

Recommended mitigation measures

The recommendations of the VIA should be implemented.

4.7 CUMULATIVE IMPACT ON LOCAL SERVICES

The establishment of the proposed SEF and the other renewable energy facilities in the EM has the potential to place pressure on local services in local towns in the area. Services affected include medical, education and accommodation. This pressure will be associated with the influx of workers to the area associated with the construction phases, and to a lesser extent, the operational phases. However, given the size of Emalahleni and the history of mining and industrial activity in the area the impact is likely to be limited. The potential impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of a renewable projects in the area. These benefits will create opportunities for investment in the EM, including the opportunity to up-grade and expand existing services. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

Table 4.12: Cumulative impacts on local services

Nature: The establishment of a number of renewable energy facilities in the EM has the potential to place pressure on local services.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (21)	Low (24)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. Solar energy plant components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: See below		

Comment on No-Go option

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

Recommended mitigation measures

The EM should engage with proponents involved in the development of renewable energy projects in the EM to co-ordinate and manage the development and operation of renewable energy projects in the area with the specific aim of mitigating potential negative impacts and enhancing opportunities. This would include identifying key needs, including capacity of existing services, accommodation and housing and the implementation of an accredited training and skills development programmes aimed at maximising the opportunities for local workers to be employed during the construction and operational phases of the various proposed projects. These issues should be addressed in the Integrated Development Planning process undertaken by the EM.

4.8 CUMULATIVE IMPACT ON LOCAL ECONOMY

In addition to the potential negative impacts, the proposed SEF also has the potential to create significant positive cumulative impacts. In this regard the establishment of a number of SEFs in the area will create socio-economic opportunities for the REM, which, in turn, will result in positive social benefits. The positive cumulative impacts include the creation of employment, skills development and training opportunities, and downstream business opportunities. The potential cumulative benefits for the local and regional economy would apply to both the construction and operational phase of the renewable energy projects in the EM.

Table 4.13: Cumulative impacts on local economy

Nature: The establishment of a number of REFs in the EM will create employment, skills development and training opportunities, creation of downstream business opportunities.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Definite (5)
Significance	Low (27)	High (60)
Status (positive/negative)	Positive	Positive
Reversibility	Yes. Solar energy plant components and other infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Enhancement: See below		

Assessment of No-Go option

There is no impact as it maintains the current status quo. This would represent a lost socio-economic opportunity for the EM.

Recommended mitigation measures

The proposed establishment of suitably sited renewable energy facilities within the EM should be supported.

4.9 ASSESSMENT OF NO-DEVELOPMENT OPTION

As indicated above, South Africa currently relies on coal-powered energy to meet more than 90% of its energy needs. As a result, South Africa is 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 carbon emissions. The No-Development option would represent a lost opportunity for Transalloys to reduce its carbon footprint and meet its energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost. The No-Development Option is therefore not supported.

Table 4.14: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity to meet energy needs with clean, renewable energy		
	Without Enhancement⁸	With Enhancement⁹
Extent	Local-International (4)	Local-International (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (56)	Moderate (56)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		

Recommended enhancement measures

The proposed facility should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented. However, the impact of large solar facilities on the sense of place and landscape are issues need to be addressed in the location, design, and layout of the proposed facility.

⁸ Assumes PV SEF is not developed

⁹ Assumes PV SEF is developed

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

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

- A review of the issues identified during the Scoping Process.
- A review of key planning and policy documents pertaining to the area.
- Site visit and semi-structured interviews with interested and affected parties¹⁰.
- A review of social and economic issues associated with similar developments.
- The experience of the authors with other solar energy projects in South Africa.

5.2 SUMMARY OF KEY FINDINGS

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

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

5.2.1 Policy and planning issues

The findings of the review indicate that renewable energy is strongly supported at a national, provincial, and local level. At a national level the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to renewable energy. Renewable energy is also supported at a provincial and local municipal level. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

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 is expected to extend over a period of ~18 months and create approximately 150 employment opportunities. The total wage bill for the construction phase

¹⁰ Site visit was undertaken in 2014 as part of the SIA for a proposed 150 MW coal power station. The potential negative social impacts associated with the establishment of a 50MW PV SEF will be limited compared to a 150MW coal power station.

is estimated to be in the region of R 20 million (2022 Rand value). The majority of the employment opportunities, specifically the low and semi-skilled opportunities, are likely to be available to local residents in the area, specifically residents from Emalahleni. The majority of the beneficiaries are likely to be historically disadvantaged (HD) members of the community.

The capital expenditure associated with the construction phase will be in the region of R 1 billion (2022 Rand value). A percentage of the wage bill will also be spent in the local economy which will create opportunities for local businesses in Emalahleni. 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.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impacts related to the potential influx of job seekers.
- Increased risk of grass fires associated with construction related activities.
- Noise, dust, and safety impacts of construction related activities and vehicles.

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation were **Low Negative**. The potential negative impacts 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	Medium (+)	Medium (+)
Presence of construction workers and potential impacts on family structures and social networks	Low (-)	Low (-)
Influx of job seekers	Low (-)	Low (-)
Increased risk of veld fires	Medium (-)	Low (-)
Impact of construction activities and vehicles	Medium (-)	Low (-)

5.2.3 Operational phase impacts

Potential positive impacts

- The establishment of infrastructure to generate renewable energy.
- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training.

Development of renewable energy infrastructure

The proposed PV SEF also creates an opportunity for Transalloys to meet its current and future energy needs with clean, renewable energy. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy

economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole.

Creation of employment and business opportunities

The total number of permanent employment opportunities would be ~15. The majority of low and semi-skilled beneficiaries are likely to be HD members of the community.

Potential negative impacts

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

The findings of the SIA indicate that the significance of all the potential negative impacts with mitigation were **Low Negative**. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

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

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation	Significance With Mitigation
Promotion of renewable energy projects	High (+)	High (+)
Creation of employment and business opportunities	Low (+)	Medium (+)
Visual impact and impact on sense of place	Medium (-)	Medium (-)
Loss of agricultural land	Medium (-)	Low (-)

5.2.4 Assessment of cumulative impacts

Cumulative impact on sense of place

The potential for cumulative impacts associated with combined visibility (whether two or more solar facilities will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more solar facilities along a single journey exists. However, given the location of the site within an industrial and mining setting the significance of the impact is likely to be **Low Negative**. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

Cumulative impact on services

The establishment of the proposed SEF and the other REFs in the EM may place pressure on local services. This pressure will be associated with the potential influx of workers to the area associated with the construction and operational phases of renewable energy projects proposed in the area, including the proposed SEF. With effective mitigation the impact is rated as **Low Negative**.

In addition, as indicated below, this impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of renewable energy as an economic driver in the area.

Cumulative impact on local economies

In addition to the potential negative impacts, the establishment of the proposed SEF and other renewable energy projects in the area also has the potential to create a number of socio-economic opportunities for the EM, which, in turn, will result in a positive social benefit. The positive cumulative impacts include creation of employment, skills development and training opportunities, creation of downstream business opportunities. These benefits should also be viewed within the context of the impact of the decline in the mining sector in recent years. This benefit is rated as **High Positive** with enhancement.

5.2.5 Decommissioning phase

Given the relatively small number of people employed during the operational phase (~150), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be **Low Negative**.

5.2.6 Assessment of no-development option

The No-Development option would represent a lost opportunity for Transalloys and South Africa to supplement its energy needs with clean, renewable energy. Given South Africa's position as one of the highest per capita producers of carbon emissions in the world, this would represent a High negative social cost. The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed SEF. This also represents a negative social cost. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.

5.3 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The findings of the SIA indicate that the development of the proposed 50 MW PV SEF and associated infrastructure will create employment and business opportunities for locals in the EM during both the construction and operational phase of the project. The proposed PV SEF also creates an opportunity for Transalloys to meet its current and future energy needs with clean, renewable energy. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The proposed site is also located within the Emalahleni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure. The establishment of the proposed 50MW PV SEF and associated infrastructure is therefore supported by the findings of the SIA.

Recommendations

The enhancement and mitigation measures outlined in the SIA and other key specialist reports should be implemented.

ANNEXURE A

INTERVIEWS

Site visit and interviews undertaken in 2014 as part of SIA for 150MW coal power station

REFERENCES

- Beneficiation strategy for the minerals industry of South Africa (2011).
- The National Energy Act (2008).
- The National Development Plan (2011).
- New Growth Framework (2010).
- National Infrastructure Plan (2011).
- Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa (CSIR, 2015)
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (MEGDP)(2011)
- Mpumalanga Provincial Growth and Development Strategy (2004-2014).
- Mpumalanga Spatial Development Framework (2019).
- Emalahleni Municipality Integrated Development Plan (2017-2022).
- Emalahleni Municipality Spatial Development Framework (2014).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

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

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

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude
P = Probability

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

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

ANNEXURE C

TONY BARBOUR CV

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

EDUCATION

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

EMPLOYMENT RECORD

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

LECTURING

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

RELEVANT EXPERIENCE AND EXPERTISE

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

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

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

ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour _____, declare that -- General

declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

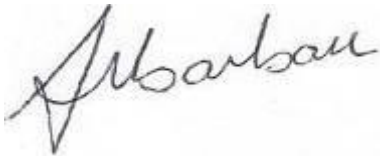
I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

17 August 2022

Date: