



SOCIAL IMPACT ASSESSMENT REPORT:

FOR THE PROPOSED DEVELOPMENT OF KHANYAZWE FLEXPOWER PLANT AND ASSOCIATED INFRASTRUCTURE IN MALELANE WITHIN THE JURISDICTION OF NKOMAZI LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.

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Over the last five years, she has served on four PRI advisory committees and the Advisory Board for the Sustainability Accounting Standards Board. Hangwi regularly speaks on ESG panels at conferences globally. She is an Eisenhower Fellow.

During her career in sustainable development within different industries, she has worked in non-government organisations focusing on community upliftment and has managed the Corporate Social Investment (“CSI”) Fund for Blue chip companies in South Africa.

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DECLARATION OF INDEPENDENCE

I, Vhahangwele Manavhela, declare that I act as an independent specialist consultant in Environmental Social and Governance (ESG) and Socio-Economic Impact Assessment (SEIA).

I am appointed as a Socio-Economic Specialist Consultant Nsovo Environmental Consulting to conduct a Social impact assessment for for the proposed Flexpower Plant and associated infrastructures (Hereafter collectively referred to as 'Study Area' unless referring to each individual infrastructure). The proposed project is located in a farming town, on Portions 1, 4, and 116 of Farm Malelane 389 FP, in Malelane within the Nkomazi Local Municipality, Mpumalanga Province.

I do not have or will not have any financial interest in undertaking the activity other than remuneration for work performed and have or will not have any vested interest in the proposed activity proceeding. I have performed the work relating to the application objectively. I Will provide the client and competent authority with access to all information regarding this Project, whether favourable or not.

I have the expertise as required in Sections 17 and 32 of Regulation 543 issued in terms of the National Environmental Management Act 107 of 1998. I Undertake to disclose to the client and the competent authority any material information that has or may have the potential to influence the decision of the competent authority required in terms of the Environmental Impact Assessment Regulations 2006. I also confirm that the report aligns with Appendix 6 of the EIA regulation.

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1. Introduction

The Khanyazwe Flexpower Project (KFP), located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, represents a significant step towards diversifying South Africa's energy portfolio and improving the reliability of its national electrical grid. This proposed development involves the construction and operation of an up to 800MW natural gas-fired power plant, utilizing cutting-edge Gas Engines or Combined Cycle Gas Turbines. The project site spans Portions 1, 4, and 116 of Farm Malelane 389 FP, a region characterized by its agricultural activities and vibrant local community.

A critical component of the Khanyazwe Flexpower Project is the Social Impact Assessment (SIA), a comprehensive study designed to evaluate the potential social effects of the proposed development on the local community and broader societal context. The SIA aims to identify and quantify positive and negative impacts, considering a wide range of socio-economic factors integral to the community's well-being.

The Social Impact Assessment (SIA) study is designed to identify and distinguish numerous measurable impacts of a proposed development, recognising that not every effect may be significant. It emphasises the importance of input from those directly or indirectly affected in determining the significance of impacts on valued socio-economic components. This study provides a forum for planning how to maximise the beneficial impacts of the development, ensuring community acceptance and cooperation. The SIA assesses the effect on users from introducing new systems, considers retraining needs, and proposes strategies to secure user cooperation before implementing changes.

1.1 Terms of reference

a. Project Overview

The Khanyazwe Flexpower (KFP) project is a proposed development to establish an up to 800MW natural gas-fired power plant in Malelane, within the Nkomazi Local Municipality, Mpumalanga Province. The project will utilize Gas Engines (Internal Combustion Engines - ICE) or Combined Cycle Gas Turbines (CCGT) to generate electricity. It will source natural gas from the Republic of Mozambique Pipeline Investments Company (ROMPCO), which connects Mozambique's Pande Temane gas fields to South Africa. If needed, additional gas may be imported from LNG projects in Matola. The project also includes constructing approximately two 500m 275 and/or 132 kV overhead powerlines to connect the plant to the Eskom Khanyazwe substation.

The associated infrastructure will comprise the following:

- a. **Power Plant Construction and Operation:**
 - Capacity: Up to 800MW
 - Technology: Gas Engines (ICE) or Combined Cycle Gas Turbines (CCGT)
 - Gas Source: ROMPCO pipeline and potential LNG imports from Matola
- b. **Infrastructure Development:**
 - Powerlines: Approximately two 500m 275 and/or 132 kV overhead powerlines to the Eskom Khanyazwe substation

b. Scope of work

According to Barbour (2007:28), the terms of reference (TOR) in an SIA should indicate how and to what extent the SIA specialist should be involved in the purpose and scale of the proposed intervention.

The assessment will consider the following:

- a. Establish the project context and administrative Framework
- b. Define a preliminary project area of influence
- c. Establish the known baseline conditions
- d. Identify anticipated impact
- e. Define studies required to understand the baseline conditions and the impacts further.
- f. Prepare the terms of reference for SIA.

The results of these specialist studies will be integrated into the final Environmental Impact Assessment (EIA) report to be submitted.

1.2 Study Objective

This assessment aims to analyse all the factors to provide an unbiased assessment of the potential social impacts of the proposed Flexpower Plant and associated infrastructures.

The report presents the potential prospects and constraints that would arise because of the implementation of this Project.

The key objectives of the study are as follows:

- a. Identify and assess potential social impacts.
- b. Identify key stakeholders that may be affected by the project.
- c. Develop strategies to mitigate negative impacts and enhance positive outcomes.
- d. Ensure compliance with local regulations and international standards, including IFC Performance Standards.
- e. Provide a framework for continuous monitoring and management of social impacts.

The study is aligned with the principles and guidelines for social impact assessment developed by the inter-organisational committee on principles and guidelines for Social Impact Assessment, focusing on the following:

- (a) Achieve an extensive understanding of local and regional settings affected by the action or policy. SIA provides the best scientific knowledge to understand the social and cultural consequences of planned and unplanned actions.
 - Identify and describe interested and affected stakeholders and other parties; and
 - Develop baseline information (profiles) of local and regional communities.
- (b) Focus on key elements of the human environment. Applying the SIA process will ensure that social and cultural concerns, values, consequences (costs), and benefits for human communities and populations are included in the decision-making process.
 - Identify the critical social and cultural issues related to the action or policy from the community and stakeholder profiles and
 - Select social and cultural variables which measure and explain the issues identified.
- (c) Identify research methods, assumptions, and significance. The SIA process subscribes to the ethic that good science will lead to informed and better decisions. To ensure the best and most appropriate methods are used, SIA practitioners should use trained and qualified social scientists. Protecting the confidentiality of study participants is a guiding tenet.
 - Research methods should be holistic in scope, i.e., they should describe all aspects of social impacts related to the action or policy.
 - Research methods must describe cumulative social effects related to the action or policy.
 - Ensure that methods and assumptions are transparent and replicable.
 - Select forms and levels of data collection analysis which are appropriate to the significance of the action or policy.
- (d) Provide quality information for use in decision-making. The 'good science' ethic requires the collection of quality data representative of all issues and perspectives and holistic and transparent analyses of information and alternatives presented. To ensure the quality and completeness of information and analysis.
 - Collect qualitative and quantitative social, economic, and cultural data sufficient to usefully describe and analyse all reasonable alternatives to the action.
 - Ensure that the data collection methods and forms of analysis are scientifically robust –

- Ensure the integrity of collected data.
- (e) Ensure that any environmental justice issues are fully described and analysed. SIA practitioners must identify disadvantaged, at-risk and minority populations (for instance, race, national origin, gender, handicap/disability, and religion) affected by the proposed action, program, or policy and incorporate information about these populations in the SIA descriptions and analyses.
- Ensure that research methods, data, and analysis consider underrepresented and vulnerable stakeholders and populations.
 - Consider the distribution of all impacts (whether social, economic, air quality, noise, or potential health effects) to different social groups (including ethnic/racial and income groups).
- (f) Undertake evaluation/monitoring and mitigation. The use of the research design and databases established for assessing impacts should be the basis for monitoring and evaluating the actual impacts of the proposed route.
- Establish mechanisms for evaluating and monitoring the action, policy or program.
 - Where mitigation of impacts may be required, provide a mechanism and plan to ensure effective mitigation.
 - Identify data gaps and plan for filling these data needs.

2. Methodology

The study involved thoroughly examining documents provided by Nsovo and other relevant materials to delineate the socio-economic profile of the Project's zone of influence and pinpoint potentially affected communities and key stakeholders. A comprehensive site visit and exploration of the study area were carried out to gain an in-depth understanding of the social factors associated with the region.

Additionally, detailed observations were made regarding the environmental and socio-economic conditions within the communities, including aspects like topography, infrastructure, and livelihood activities. These collective findings were the foundation for the scoping study and identifying potential mitigation measures. GPS information was recorded where feasible to enhance the precision of location data. This holistic approach aimed to comprehensively understand the Project's possible impacts on the social and environmental aspects of the surrounding communities.

2.1 Study Approach

Social impacts affect the level of social and socio-economic activities in a region either positively or negatively. For instance, they directly affect the socio-economic well-being of residents in an area by changing employment levels, education and skills levels, household size and income levels. A socio-economic impact assessment traces demographic and livelihood developments in the local economy. It then measures the cumulative effects of those developments and patterns. The nature of the proposal determines the impact region and can include the entire country, a province, an individual municipality or a combination of municipalities.

Estimating the socio-economic impact of a project or development is very helpful in understanding the potential benefits of various forms of growth and changes made in the built environment. Social impacts can be defined as “The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter how people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society.

The study focused on specifying how adverse impacts may interact with beneficial impacts and identifying how to manage the impacts.

The SIA builds on two fundamental approaches to evaluating the impact of the proposed powerline:

- a) Technical analysis, where researchers identify from their investigations, published studies and complicated simulations how the proposed development will likely affect different groups in society and
- b) Through consultation with stakeholders, a participatory approach will be used to assess the impact of the proposed development from those most affected and knowledgeable about the context.

A quantitative and qualitative methodological approach was applied throughout the study, using a triangulation research technique. A recognised impact assessment technique was used to assess the impacts, and it is described below in greater detail.

The assessment has embraced a methodological approach centred on technical analysis. This involves a systematic and detailed project examination, utilising specialised expertise, tools, and methodologies to evaluate various technical aspects. This method focuses on quantitative data, measurements, and empirical evidence to provide a robust and objective evaluation of the Project's technical feasibility, efficiency, and potential impact. By employing this analytical Framework, the assessment ensures a thorough exploration of the Project's

technical intricacies, facilitating a comprehensive understanding of its implications and contributing to well-informed decision-making processes.

2.2 Data Collection

Data was collected through the following methods.

- An extensive documentation review was also undertaken; the quantitative approach used secondary data from various websites, including Municipalities 'IDPs and Socio-economic studies, GIS maps, Google Earth, and the Demarcation Board.
- A review of maps and aerial photographs of the routes.
- A broader literature scan.

2.3 Mitigation and Monitoring

Specialists should set mitigation measures where adverse impacts are identified (ways of reducing impacts). Where no mitigation is feasible, this should be stated, and the reasons were given. Where positive impacts are identified, ways of enhancing these impacts should also be mentioned. The specialists should set quantifiable standards to which the effectiveness of the mitigation can be measured. This may include input into monitoring and management programmes.

2.4 Study Limitation

The SIA must be based on current and accurate project information. Similarly, the geographic extent of the SIA is influenced by project design and overall planning processes. The report is based on current information received while compiling the feasibility study and considers project information relating to planning and design, implementation, and infrastructure placement.

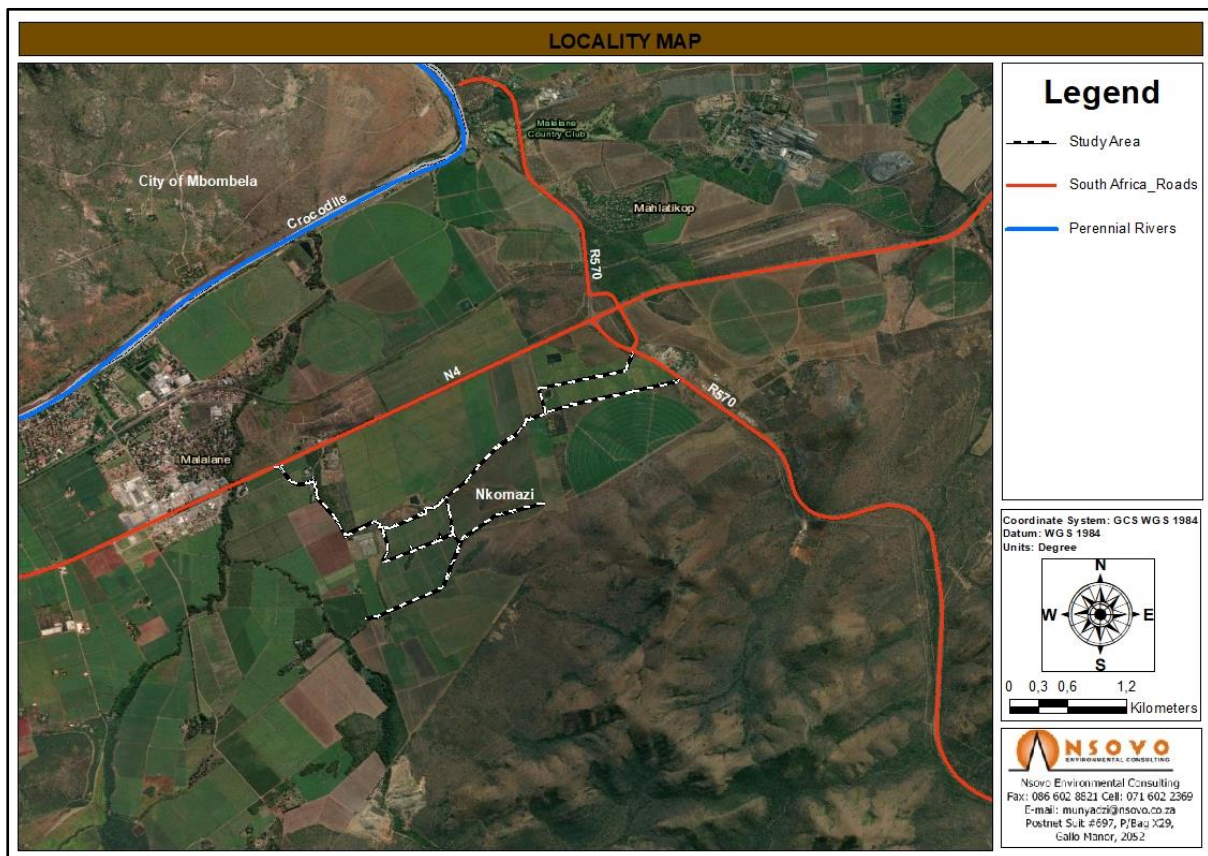
- This study was carried out with the information available to the specialist when executing the study within the available timeframe and budget. The sources consulted are not exhaustive; additional information might exist, which might strengthen arguments or contradict the information in this report.
- It was assumed that the motivation for and the ensuing planning and feasibility studies of the Project were done with integrity and that the information provided to date by the other stakeholders was deemed accurate.

- As is the nature of social research, the results of this study cannot be generalised and applied to the entire population across the whole area and are restricted to the specific study area.
- Also, people's actions can never be predicted with 100% accuracy, even when circumstances don't change, and predictions are based on rigorous research results. The different potential impacts, therefore, must be assessed holistically and not in isolation.

3. Project Description

3.1 Project Location

The proposed Khanyazwe Flexpower (KFP) project is located in a farming town, on Portions 1, 4, and 116 of Farm Malelane 389 FP, in Malelane within the Nkomazi Local Municipality, Mpumalanga Province.



Malelane is a small town in the Nkomazi Local Municipality within Mpumalanga Province. It is situated near the southern entrance of the Kruger National Park, making it a strategic location for tourism and agriculture. The town is known for its lush landscapes, agricultural activities, particularly citrus and sugarcane farming, and proximity to the Crocodile River.

The project site spans three portions of Farm Malelane 389 FP, predominantly rural and agricultural. This area is characterised by extensive agricultural land use, supporting crop production and livestock farming activities. The site is near significant natural reserves and wildlife areas, including the renowned Kruger National Park, approximately 10 km from the southern entrance gate. Additionally, the site is near the Crocodile River, a crucial water resource for the region. The existing infrastructure is limited, primarily consisting of agricultural facilities and access roads that connect the site to the main town of Malelane, located about 5 km away. This proximity provides convenient access to local amenities and services, enhancing the project's integration into the community.

The proposed power plant and associated infrastructure are strategically positioned to connect with existing energy infrastructure, including the Eskom Khanyazwe substation, facilitating efficient integration into the national grid. The location allows for the potential expansion of energy projects and improved regional energy reliability.

3.2 Project Background

The Khanyazwe Flexpower Project is a strategic initiative to enhance South Africa's energy infrastructure by establishing a new, reliable source of electricity generation. Located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, the project involves the development of an up to 800MW natural gas-fired power plant on portions 1, 4, and 116 of Farm Malelane 389 FP. The project site is in a rural area known for its agricultural activities and proximity to natural landmarks such as the Kruger National Park and the Crocodile River.

South Africa has been grappling with electricity supply challenges, including frequent load shedding and voltage collapses, hampered economic growth and affected daily life. The Khanyazwe Flexpower Project seeks to address these issues by diversifying the country's energy sources, thereby enhancing the stability and reliability of the national power grid. By utilising natural gas, considered a cleaner alternative to coal, the project aims to contribute to South Africa's environmental goals of reducing greenhouse gas emissions and transitioning to more sustainable energy sources.

The Khanyazwe Flexpower Project is spearheaded by a consortium of stakeholders committed to advancing South Africa's energy infrastructure. The natural gas required for the power plant will be sourced from the Republic of Mozambique Pipeline Investments Company (ROMPCO), which already has a pipeline connecting Mozambique's Pande Temane gas fields to South Africa. In cases where the gas supply from Mozambique is insufficient, the project plans to utilise imported liquefied natural gas (LNG) from emerging LNG projects in Matola, Mozambique, further ensuring a reliable fuel supply.

The project will also involve the construction of approximately two 500-meter 275 and/or 132 kV overhead power lines to connect the new power plant to the existing Eskom Khanyazwe substation. This connection is crucial for integrating the plant's power into the national grid, thereby enhancing the overall capacity and reliability of South Africa's electrical network.

4. Regulation and Policy Framework

4.1 Regulatory environment

Legislation and policy both play an integral role in the process required to identify and assess the potential social impacts that might be associated with projects. Legislation and policy assist an SIA in assessing a given development's fit with crucial planning and policy documents of the Government, the district, and local municipalities. Therefore, by assessing relevant legislation and policy, one of the SIA's purposes should be to indicate whether a proposed development in its current format conforms to spatial development plans and economic policies by creating development opportunities.

The institutional and legislative frameworks of South Africa were assessed, and the Project is founded on that basis. This framework will, in turn, provide an impact rating and identify mitigation measures. The Local Municipality is silent about the role of private energy purchase agreements.

a. *THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA*

The Constitution of South Africa (Act No 108 of 1996) is the cornerstone of democracy in South Africa. Chapter 2 outlines the Bill of Rights, which includes Section 24 that states: Everyone has the right a) to an environment that is not harmful to their health or well-being, and b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- i. prevent pollution and ecological degradation,
- ii. promote conservation, and
- iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Section 24 thus requires that all activities that may significantly affect the environment and require authorisation by law must be assessed before approval.

b. *NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO107 OF 1998)*

The National Environmental Management Act (No 107 of 1998) (as amended) is the primary piece of legislation in South Africa that governs all matters related to the protection and conservation of the environment. This Act sets out in Chapter 1 the National Environmental Management Principles, which, amongst other things, states that:

- (2) *Environmental management must place people and their needs at the forefront of its concern and equitably serve their physical, psychological, developmental, cultural, and social interests.*
- (3) *Development must be socially, environmentally, and economically sustainable.*
- (4) (a) *Sustainable development requires the consideration of all relevant factors, including the following: (viii) that negative impacts on the environment and people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*
- 4(b) *Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.*
- 4(h) *Community well-being and empowerment must be promoted through environmental education, raising environmental awareness, sharing knowledge and experience and other appropriate means.*
- 4(i) *The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment."*

NEMA also establishes the platform for ensuring Integrated Environmental Management (IEM), whose objective includes:

- 23 -2(b) *identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities to minimise negative impacts, maximising benefits, and promote compliance with the principles of environmental management.*
- 24 (1) *To give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on—*
 - (a) *the environment,*
 - (b) *socio-economic conditions and*

(c) the cultural heritage, activities that require authorisation or permission by law and which may significantly affect the environment must be considered, investigated, and assessed before their implementation and reported to the organ of state charged by law with authorising, permitting, or otherwise allowing the implementation of an activity.”

From the above excerpts of the Act, there is a strong focus on addressing social issues to ensure sustainable environmental management.

c. *The National Heritage Resources Act*

The Act primarily protects historical, cultural, archaeological, and paleontological resources, placing the developer responsible for reporting any objects or material to the responsible heritage resources authority. Also of relevance to this Project, the Act legislates that no person may alter or demolish any structure or part of a structure (older than 60 years) or disturb any archaeological or paleontological site or grave (older than 60 years) without a permit issued by the relevant provincial heritage resources authority. A permit is required to destroy, damage, excavate, alter, or deface archaeological or historically significant sites.

d. *The Development Facilitation Act of 1995*

The Development Facilitation Act significantly affects the SEIA process regarding national planning and requirements. Specific planning principles that are applicable include but are not limited to (quoted from Barbour, 2007: p.18):

- Promoting the integration of the social, economic, institutional, and physical aspects of land development.
- Optimising using existing resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation, and social facilities.
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and the optimum use of existing infrastructure over current needs.
- Encouraging environmentally sustainable land development practices and processes.
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.

4.2 Energy Policy Environment

The policy review provides insight into government socio-economic objectives, plans, and applicable Energy in South Africa legislation. This assists in determining the project's importance and alignment with the developmental objectives of various government spheres.

The policy analysis also attempts to identify potential developmental conflicts and social impacts the Project might create.

The electricity generation mix powers the South African economy is transitioning, with coal to be significantly replaced by wind and solar generation capacity, from an installed capacity of 71% coal and 7.2% wind and solar in 2018 to 43% coal and 33.8% wind and solar in 2030 (IRP 2019). The South African Government's National Development Plan (NDP) is the blueprint for infrastructure development to 2030. The NDP lays out a framework for future power generation in South Africa, while energy policies in South Africa are driven primarily by the Department of Mineral Resources and Energy's (DMRE) Integrated Resource Plan (IRP). The IRP is DMRE's estimate of electricity demand growth, what energy generation types should be procured to meet that demand, and the generation capacity, timing, and cost. The IRP is an electricity infrastructure development plan based on the least-cost electricity supply and demand balance, considering the security of supply and the environment (minimising harmful emissions and water usage).

The IRP envisages a total addition to electricity capacity of 29,500 MW by 2030, led by renewables (notably 14,400 MW from wind and 6,000 MW from solar photovoltaic).

On 17 January 2023, the DMRE announced further amendments to Section 3 of Schedule 2 of the Electricity Regulation Act 4 of 2006 (the "Act"), following earlier changes to the Act in 2021 that raised the generation licence threshold from 1 MW to 100 MW.¹

Private power producers have two options for transferring electricity from their plants to their clients.

- a. the generation facility supplies electricity to one or more customers by Wheeling (i.e. the transfer of electricity from the point of connection of the generation facility to the grid to the end of consumption through a third-party transmission network), and the generator has entered into a Connection agreement with an entity that holds a transmission or distribution licence in respect of the power system over which the electricity will be wheeled; or
- b. the generation facility has a connection point to the grid but does not import or export any electricity onto or from the transmission or distribution power system.

Many energy policies support the transition from coal to clean energy and are part of the country's energy strategy. As part of the assessment, the following has been reviewed.

¹ <https://shorturl.at/dpBCK>

The South Africa Integrated Resource Plan was revised in 2019 (IRP), and the NDP emphasises the need to develop the electricity generation sector to support the growth of the national economy and reach its developmental objectives. The NDP recognises that the South African economy is “electricity-intensive”; consequently, increased generation capacity is essential for economic growth and development. Thus, the NDP aims to avoid economic crises, such as the energy crises experienced by the country since 2008, which have worsened, by developing new power generation capacity and involving independent power producers. Furthermore, managing the transition towards a low-carbon national economy is identified as one of the 9 key national challenges in the NDP.

The IRP 2019 allows for significant investment in distributed electricity technologies, typically where mines, farms, factories, and commercial operations invest in electricity generation capacity to secure reliable electricity supply, often at lower cost. Changes currently underway to promote such investment.

4.2.1 Energy Act (Act No 34 of 2008)

The National Energy Act, 2008 (Act 34 of 2008) ensures that diverse energy resources are available in sustainable quantities and at affordable prices in South Africa. In addition, the Act provides for the increased use of renewable energies, contingency energy supplies, the holding of strategic energy feedstock and carriers, and adequate investment in energy infrastructure.

4.2.2 White Paper on the Energy Policy, December 1998

The White Paper on the Energy Policy was developed to clarify government policy regarding the supply and consumption of energy for the next decade. It was intended to address all elements of the energy sector as practically as it could. This White Paper gives an overview of the South African energy sector’s contribution to GDP, employment, taxes and the balance of payments. The sector can significantly contribute to a successful and sustainable national growth and development strategy.

The main objectives of the White Paper are the following:-

- Increasing access to affordable energy services.
- Improving energy governance.
- Stimulating economic development.
- Managing energy-related environmental impacts.
- Securing supply through diversity

4.2.3 White Paper on Renewable Energy

The White Paper on Renewable Energy supplements the Government's overarching policy on energy as set out in its White Paper on the Energy Policy (as stated above), which pledges '*Government support for the development, demonstration, and implementation of renewable energy sources for both small and large-scale applications*'. This White Paper outlines the Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa. Additionally, it has the following two goals:

- to inform the public and the international community of the Government's goals, and how the Government intends to achieve them, and
- to inform government agencies and Organs of State of these goals and their roles in achieving them.

4.2.4 Integrated Energy Plan (2016)

The IRP is an electricity infrastructure development plan based on the least cost supply and demand balance, considering the security of supply and the environment (minimising harmful emissions and water usage). When the IRP 2010-2030 was promulgated in March 2011, it was envisaged that it would be revised frequently due to the increasing demand for electricity in South Africa. The IRP, together with Ministerial Determinations issued in terms of Section 34 of the Electricity Regulation Act No. 4 of 2006, help investors plan their investments in the country's energy sector and is used as a roadmap to meet the country's electricity demand. To update and address gaps in the assumptions made in the IRP2010-2030, the Department reviewed and updated the IRP and extended the review period to2050. The update process was mainly aimed at ensuring the security of the electricity supply, minimising the cost of electricity, minimising adverse environmental impact (emissions) and minimising water usage.

4.2.5 Integrated Resource Plan

The integrated resource plan (IRP) is an electricity capacity plan that aims to indicate the country's electricity demand, how it will be supplied, and what it will cost. On 6 May 2011, the Department of Energy (DoE) released the Integrated Resource Plan 2010-2030 (IRP 2010) concerning South Africa's forecasted energy demand for the 20 years from 2010 to 2030. The IRP 2010 was intended to be a 'living plan' periodically revised by the DoE. However, this was never done, and it resulted in an energy mix that failed to adequately meet the constantly changing supply and demand scenarios in South Africa. It also did not reflect global technological advancements in the efficient and responsible generation of energy.

Following a lengthy public participation and consultation process, the Integrated Resource Plan 2019 (IRP 2019) was gazetted on 18 October 2019, updating the energy forecast for

South Africa from the current period to the year 2030. The IRP is an electricity capacity plan that indicates the country's electricity demand, how it will be supplied, and what it will cost.

Since the promulgated IRP 2010, the following capacity developments have taken place. 6 422MW under the government-led Renewable Energy Independent Power Producers Programme (RE IPP Procurement Programme) has been procured, with 3 876MW currently operational and made available to the grid. In addition, IPPs have commissioned 1 005MW from two Open Cycle Gas Turbine (OCGT) peaking plants. Under the Eskom build programme, the following capacity has been commissioned: 1 332MW of Ingula pumped storage, 1 588MW of Medupi, 800MW of Kusile and 100MW of Sere Wind Farm. In total, 18 000MW of new generation capacity has been committed to.

4.2.6 The National Climate Change Response White Paper

outlines the national response to the impacts of climate change, as well as the domestic contribution to international efforts to mitigate greenhouse gas emissions. As part of the global commitment, South Africa targets an emissions trajectory that peaks at 34% below a “business as usual” case in 2020, 42% below in 2025 and from 2035 declines in absolute terms. The emission reductions between March 2018 and 2019 are estimated to be 10.9 million tonnes of CO₂. This represents 53% of the total projected annual emission reductions achieved with only partial operation. Since the operation, the IPPs have generated 35 699 GWh, resulting in 36.2 Mton of CO₂ Wagt PV1 SEF.

4.3 Key Driver for the Khanyazwe Flexpower Project

4.3.1 The Demand for Renewable Energy in South Africa

The Khanyazwe Flexpower Project is driven by a combination of crucial factors highlighting the urgent need to enhance South Africa's energy infrastructure while promoting sustainable development. Addressing the country's energy security and reliability issues is at the forefront, as frequent power outages and load shedding have severely impacted economic activities and daily life.

The project aims to diversify energy sources and integrate natural gas into the energy mix, thereby enhancing the stability and reliability of the national grid. Furthermore, it supports local economic development by creating substantial employment opportunities during construction and operation, stimulating local businesses, and reducing unemployment in the Malelane area. The project is also pivotal in South Africa's transition to cleaner energy, utilising natural gas as a cleaner alternative to coal, thus aligning with global and national efforts to reduce

greenhouse gas emissions and promote environmental sustainability. The project aims to achieve higher efficiency and lower emissions by implementing advanced gas turbine technologies, contributing to long-term resource optimisation and cost reduction. Additionally, the project strategically leverages existing infrastructure, such as the ROMPCO pipeline and the Eskom Khanyazwe substation, to reduce costs and environmental impacts.

The project supports regional development goals by enhancing energy infrastructure in Mpumalanga, promoting equitable economic growth, and aligning with regulatory requirements, including South Africa's environmental, social, and energy policies and international standards like the IFC Performance Standards. The Khanyazwe Flexpower Project also complements the integration of renewable energy sources into the grid, providing a flexible and reliable power source that supports the resilience and sustainability of the energy system. Through proactive environmental and social risk management and leveraging its strategic location, the project aims to build community trust and support, ensuring long-term success and contributing significantly to the region's economic revitalization and environmental stewardship.

4.3.2 The business case for the Khanyazwe Flexpower Project

The Khanyazwe Flexpower Project offers a compelling business case driven by the urgent need to enhance South Africa's energy security and reliability amidst frequent power outages and load shedding. Located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, this project aims to provide a stable and reliable power supply by establishing an up to 800MW natural gas-fired power plant. This initiative addresses the immediate need for a more resilient national grid and supports economic development through substantial job creation during the construction and operational phases. By stimulating local businesses and fostering economic growth in the region, the project aligns with broader national goals of reducing unemployment and promoting inclusive economic development.

Environmental sustainability is a key driver, as the project leverages natural gas, a cleaner alternative to coal, significantly reducing greenhouse gas emissions and supporting South Africa's climate commitments. The strategic use of existing infrastructure, such as the ROMPCO gas pipeline and the Eskom Khanyazwe substation, enhances cost efficiency and facilitates rapid project deployment, minimising environmental impact and operational costs. The project also plays a crucial role in the country's energy transition by complementing renewable energy sources and ensuring a continuous and balanced energy supply, vital for integrating renewables into the national grid.

Furthermore, the Khanyazwe Flexpower Project is strategically positioned to drive regional development, improve local infrastructure, and boost the regional economy. Compliance with international standards, including the IFC Performance Standards, ensures the project's credibility and attractiveness to investors, while effective risk management practices mitigate potential environmental and social impacts. Overall, the project meets the growing demand for reliable power and contributes to sustainable development, making it a valuable and forward-thinking investment for stakeholders.

4.4 National Development Plan

The National Development Plan (NDP) is a comprehensive roadmap to eradicate poverty and diminish inequality in South Africa by 2030. Within this ambitious Framework, the NDP identifies nine key challenges and proposes corresponding remedial plans. Among these challenges, the imperative to navigate the transition towards a low-carbon national economy stands out prominently. Recognising the importance of addressing environmental concerns and fostering sustainability, the NDP emphasises effectively managing this transition.

As a strategy within this overarching goal, the expansion and acceleration of commercial renewable energy take centre stage. The NDP underscores the critical role of renewable energy in steering the nation towards a more sustainable and environmentally friendly trajectory. By prioritising developing and integrating renewable energy sources into the national energy mix, South Africa aims to meet its developmental objectives and contribute to global efforts in mitigating climate change.

The NDP's focus on managing the transition towards a low-carbon national economy and a commitment to expanding commercial renewable energy reflects a visionary approach. This approach aligns with global sustainability goals and positions South Africa as a proactive participant in the international movement towards a greener and more equitable future.

4.5 The New Growth Path Framework

The New Economic Growth Path Framework is designed to boost growth, create employment, and promote equity in South Africa. At the core of this Framework lies a substantial commitment to investing in infrastructure, recognising it as a catalyst for job creation across diverse sectors of the economy. This strategic emphasis on infrastructure investment is a crucial driver for economic development.

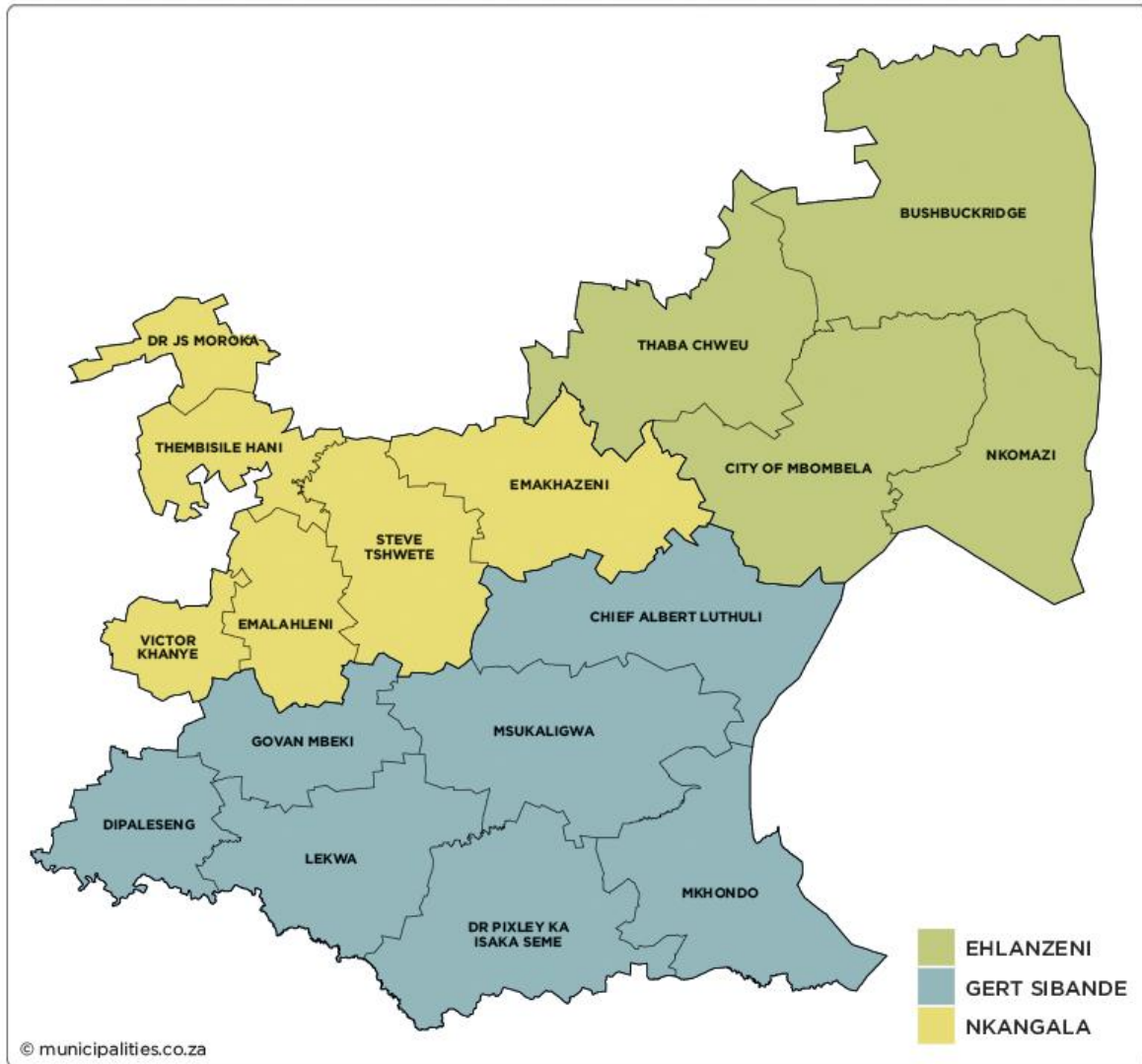
The Framework specifies five crucial areas for targeted investments: energy, transport, communication, water, and housing. These sectors are essential pillars for sustained economic growth and employment generation. The New Growth Path Framework seeks to address critical developmental needs, create jobs, and enhance the economic landscape by channelling significant resources into these areas.

Furthermore, the New Growth Path Framework identifies five additional priority areas through collaborative initiatives between the Government and the private sector. Notably, the Green Economy stands out as one of these priority areas, underscoring its significance in job creation. The Green Economy initiative aims to stimulate employment by expanding construction activities and producing cutting-edge solar, wind, and biofuel technologies. Clean manufacturing and environmental services are anticipated to be significant contributors, with a projected creation of 300,000 jobs over the next decade.

The New Growth Path Framework reflects a comprehensive and strategic approach to economic development, intertwining infrastructure investment with targeted initiatives in critical sectors. By prioritising the Green Economy, the Framework aligns with global sustainability goals and positions South Africa to harness economic growth while promoting environmental stewardship and job creation in the emerging green industries.

5. Description of the Demographic Population

This section presents the socio-economic aspects of the Mpumalanga province and Nkomazi Local Municipality within the proposed study area.



5.1 Provincial Description of the Proposed Study Area- Mpumalanga Provinces²

The Khanyazwe Flexpower Project is situated in Mpumalanga Province, known for its natural resources, agricultural productivity, and strategic importance within South Africa's spatial development framework. Mpumalanga, "the place where the sun rises," plays a role in the country's economy due to its coal reserves, agricultural activities, and tourism attractions, including the Kruger National Park. The province's Spatial Development Framework (SDF) emphasises development, economic diversification, and infrastructure to enhance regional connectivity and quality of life for its inhabitants.

² Limpopo Spatial Development Framework, July 2022

Mpumalanga's SDF identifies several development corridors, with the province being a link between South Africa and neighbouring countries, particularly Mozambique and Swaziland. The proposed study area for the Khanyazwe Flexpower Project is located in the Nkomazi Local Municipality, an area within the province's eastern development corridor. This corridor targets infrastructure improvements and economic development, aiming to boost agricultural output, enhance trade and tourism, and foster industrial growth.

The Nkomazi Local Municipality, where the project site is located, is characterized by its agricultural landscapes and proximity to major transport routes, including the N4 national highway, part of the Maputo Development Corridor. This corridor is crucial for regional integration and economic development, facilitating the movement of goods and people between South Africa and Mozambique. The SDF for Mpumalanga prioritises enhancing such corridors to support economic activities and regional development.

In alignment with the province's spatial development objectives, the Khanyazwe Flexpower Project is poised to contribute significantly to the region's growth by providing a reliable energy source supporting local industries and the national grid. The project's location near the town of Malelane places it within an agricultural and economic hub, offering opportunities for job creation and economic stimulation in accordance with Mpumalanga's development goals. By leveraging existing infrastructure and aligning with provincial planning strategies, the project aims to enhance the region's economic resilience and sustainability while addressing critical energy needs to support the overall vision of the province's Spatial Development Framework.

5.2 Malelane Demographic



The demographic profile of the population in the Khanyazwe Flexpower Project area, located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, reflects a diverse and youthful community with significant economic potential. The region has a population of approximately 400,000, characterized by moderate population density with higher concentrations in urban centres like Malelane and lower densities in the surrounding rural areas. The demographic structure is predominantly youthful, with a large proportion of individuals under 35, indicating a robust potential labour force and a need for employment opportunities and educational resources. Gender composition is relatively balanced, with women making up about 52% of the population, emphasizing the importance of gender-sensitive approaches in community engagement and workforce development.

The area is ethnically diverse, with most residents belonging to the Swazi, Tsonga, and Zulu ethnic groups. This diversity underscores the importance of cultural sensitivity and the need to respect and incorporate local traditions and practices into the project's planning and implementation. The main languages spoken include Swazi, Tsonga, and Zulu, with English as a secondary language in business and education contexts. Educational attainment varies, with many individuals having completed primary and secondary education but fewer holding tertiary qualifications, highlighting a need for skills development initiatives.

Economically, the region mainly depends on agriculture, with key activities including crop production and livestock farming, supplemented by tourism due to its proximity to the Kruger National Park. Despite these activities, the area faces high unemployment rates, particularly among those engaged in informal or subsistence farming. This presents an opportunity for the Khanyazwe Flexpower Project to drive economic diversification and create formal employment, thereby enhancing local livelihoods and reducing poverty.

Healthcare and social services are primary, with better access in urban areas than rural ones, indicating improved health infrastructure and services need. Housing ranges from formal urban structures to informal or traditional rural dwellings, with varying access to essential services like clean water and sanitation. The project has the potential to impact these living conditions through targeted community development initiatives positively.

Social cohesion is strong, with tight-knit community structures and significant involvement of local leaders in decision-making processes. Effective community engagement will require collaboration with these leaders to build trust and ensure the project is inclusive and beneficial to the local population. Overall, understanding the population's demographic characteristics is essential for the Khanyazwe Flexpower Project to effectively meet the community's needs and foster sustainable development and economic growth in the region.

5.3.1 Municipal IDP Plan Alignment with the Proposed Development

The Khanyazwe Flexpower Project aligns closely with the Nkomazi Local Municipality's Integrated Development Plan (IDP), addressing several critical regional growth and

sustainability priorities. Situated in Malelane, the project aims to provide a reliable energy source, significantly enhancing the local and regional energy infrastructure. This directly supports the IDP's focus on economic development and job creation, as the project will generate substantial employment opportunities during its construction and operational phases, boosting local businesses and reducing poverty. The IDP also emphasises the importance of improving infrastructure and service delivery, goals which the Khanyazwe Flexpower Project addresses by facilitating better electricity access, which is crucial for supporting economic activities and improving the quality of life for residents.

Regarding environmental sustainability, the project's use of natural gas as a cleaner alternative to coal aligns with the IDP's objectives of promoting sustainable practices and reducing environmental impacts. The project's commitment to comprehensive environmental management further supports the municipality's aim to protect natural resources and ensure long-term sustainability. The project's emphasis on social development and community engagement also resonates with the IDP's focus on improving access to services, education, and healthcare and ensuring that community voices are included in development processes. Enhancing local infrastructure contributes to regional integration and development, positioning the Nkomazi Local Municipality as a critical energy hub within Mpumalanga and supporting broader economic cooperation through strategic development corridors.

Overall, the Khanyazwe Flexpower Project aligns with and actively supports the Nkomazi Local Municipality's IDP by addressing critical challenges such as unemployment, inadequate infrastructure, and unreliable energy supply. Through its comprehensive approach to sustainable development and community engagement, the project aims to foster a more prosperous and inclusive future for the Nkomazi region, enhancing regional connectivity and economic resilience.

5.3.2 Land Capabilities and Use

The Khanyazwe Flexpower Project is set in a region with diverse land capabilities, reflective of Malelane's agricultural strength and strategic importance within the Nkomazi Local Municipality of Mpumalanga Province. This area is predominantly characterized by fertile agricultural land that supports extensive crop production, including sugarcane and citrus, and livestock farming. These activities are vital to the local economy, providing livelihoods for many residents. The proximity to the Crocodile River enhances the region's irrigation potential, further boosting agricultural productivity. In addition to agricultural uses, the area includes residential settlements and commercial activities centred around Malelane, where local businesses, retail outlets, and services cater to residents and tourists. The presence of such commercial activities underscores the importance of maintaining robust economic and social infrastructure.

The region also hosts industrial activities related to agriculture, such as processing plants for local crops, and is seeing a growing interest in energy projects like the Khanyazwe Flexpower Project, which aims to diversify the local energy supply and support regional economic development. Natural reserves and recreational areas, including the nearby Kruger National Park, add ecological and recreational value to the region, attracting tourists and supporting conservation efforts. The area's infrastructure, including significant transport routes like the N4 highway, provides essential connectivity for economic activities and access to broader markets. The project's integration into this landscape emphasises the need for sustainable development practices that support the local economy, respect residential and commercial land uses, and protect the region's natural and recreational resources.

5.3.3 Economic Landscape

The economic landscape surrounding the Khanyazwe Flexpower Project, located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, is characterised by diverse economic activities crucial for local and regional development. This economic profile highlights the region's strengths, opportunities, and challenges, providing a comprehensive understanding of the area's economic dynamics.

a. Agricultural Sector

The agricultural sector is the cornerstone of the local economy, with Malelane and its surrounding areas being renowned for their fertile soils and favourable climatic conditions. Agriculture here is diverse, encompassing crop production and livestock farming, providing employment and sustaining local livelihoods. The primary crops include sugarcane and citrus, vital for local consumption and export and contribute to the area's economic stability. The region's agricultural output is supported by irrigation from the Crocodile River, which enhances productivity and enables cultivating high-value crops. This robust agricultural base provides agro-processing and value-added activities opportunities, further stimulating economic growth and diversification.

b. Commercial and Retail Activities

Malelane serves as a commercial hub within the Nkomazi Local Municipality, supporting various businesses and services that cater to the local population and tourists. The town's commercial sector includes retail stores, markets, hospitality services, and financial institutions, which together form the backbone of the local economy. These businesses provide essential goods and services and create employment opportunities for residents. The Kruger National Park nearby attracts a steady stream of tourists, boosting demand for hospitality and recreational services and significantly contributing to the local economy. The

commercial vitality of Malelane is thus integral to the region's economic well-being and presents opportunities for further growth, particularly in the tourism and service sectors.

c. Industrial and Energy Sector

The industrial sector in the region is closely linked to agriculture, with processing facilities for sugarcane and citrus playing a crucial role in adding value to local produce and supporting the agricultural economy. The emerging energy sector, highlighted by the Khanyazwe Flexpower Project, represents a key area for economic diversification. The project will enhance the local energy infrastructure by providing a stable and reliable electricity supply, essential for supporting industrial activities and fostering economic growth. The development of the energy sector addresses the region's energy needs and opens up new opportunities for investment in industrial activities that rely on a consistent power supply. Integrating energy projects into the local economy can thus catalyse broader economic development and diversification, reducing the region's dependence on traditional agricultural activities.

d. Employment and Workforce Dynamics

Employment in the Nkomazi Local Municipality is heavily influenced by the agricultural sector, which remains the largest employer. However, high levels of unemployment and underemployment, particularly in rural areas, present significant challenges. The development of infrastructure projects like the Khanyazwe Flexpower Project is expected to create substantial employment opportunities, both during the construction and operational phases. These jobs will provide much-needed income and stimulate economic activity, contributing to poverty alleviation and improving residents' living standards. Additionally, the project will likely foster skills development and capacity building, enhancing the employability of the local workforce and supporting long-term economic resilience.

e. Infrastructure and Connectivity

The region benefits from a well-developed infrastructure network that supports economic activities and connects local communities to broader markets. Key transport routes, including the N4 highway, are critical for facilitating the movement of goods and people, enhancing economic integration with other regions. The existing energy infrastructure, which the Khanyazwe Flexpower Project will bolster, is crucial for supporting industrial and commercial activities. Access to reliable electricity and efficient transport networks underpins the region's economic development by enabling the efficient operation of businesses and supporting the growth of new economic sectors.

f. Tourism and Natural Resources

Tourism is a vital component of the local economy, driven by the region's natural attractions, such as the Kruger National Park. The park attracts many visitors annually, creating demand for tourism-related services, including accommodation, tours, and recreational activities. This influx of tourists supports a variety of businesses and generates substantial revenue for the local economy. Therefore, the conservation and sustainable use of natural resources are integral to maintaining and enhancing the tourism sector's contribution to the economy. The proximity of the Khanyazwe Flexpower Project to these natural attractions necessitates careful planning to ensure that development activities do not adversely impact the tourism industry or the region's ecological assets.

g. Economic Challenges and Opportunities

The region faces several economic challenges, including high unemployment rates, economic dependence on agriculture, and limited industrial diversification. However, there are significant opportunities for growth, particularly in expanding the energy and tourism sectors, enhancing agricultural value chains, and developing infrastructure. The Khanyazwe Flexpower Project represents an opportunity to address these challenges by providing reliable energy, creating jobs, and stimulating economic diversification. By leveraging the region's natural resources and strategic location, the project can contribute to sustainable economic development and improve the quality of life for local communities.

6. Socio-Economic Assessment

6.1 International Standards

The assessment of the Khanyazwe Flexpower Project in alignment with the International Finance Corporation (IFC) and Equator Principles marks a pivotal step in ensuring the sustainable and responsible development of renewable energy infrastructure. As the world embraces the imperative of transitioning towards cleaner and more sustainable energy sources, the Khanyazwe Flexpower Project promises to contribute significantly to South Africa's energy landscape. This assessment seeks to evaluate the Project's adherence to the IFC's stringent environmental and social standards and the Equator Principles, which serve as a benchmark for responsible financing in large-scale projects. By examining the Project through the lenses of these globally recognised frameworks, we aim to ascertain the potential positive and negative impacts on the environment, local communities, and the overall socio-economic fabric. The commitment to aligning with these principles underscores the Project's dedication to achieving energy diversification and reliability, environmental sustainability, and social responsibility. Through this assessment, we endeavour to foster transparency, accountability, and the

integration of best practices, ensuring that the Khanyazwe Flexpower Project stands as a model for responsible and sustainable renewable energy development.

6.1.1 IFC Performance Requirements

The IFC Sustainability Framework articulates the IFC's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Framework incorporates the IFC's Policy, Performance Standards and Access to Information Policy. Alongside the Performance Standards is a companion set of Guidance Notes, guiding clients in meeting the Performance Standards. The Framework was adopted in 2006 and updated in 2012 following an 18-month consultation with stakeholders worldwide.

The Performance Standards are directed towards clients, guiding the identification of risks and impacts. They are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business sustainably. These include stakeholder engagement and disclosure obligations of the client concerning project-level activities." IFC Performance Standards 2012."

6.1.2 Equator Principles

The Equator Principles are a set of environmental and social risk management guidelines adopted by financial institutions to assess and manage the environmental and social risks associated with project financing. While traditionally applied to various sectors, aligning the Equator Principles with renewable energy projects is crucial for ensuring sustainable and responsible practices in developing and financing clean energy initiatives.

Renewable energy projects should conduct thorough Environmental and Social Impact Assessments (ESIA) to evaluate impacts on biodiversity, ecosystems, and communities, ensuring alignment with the Equator Principles. Engaging stakeholders, including local communities and indigenous groups, is crucial to address concerns and share benefits equitably. Projects must prioritise biodiversity conservation and highlight contributions to climate change mitigation. Ensuring community health and safety, managing supply chain risks responsibly, and respecting human rights are fundamental. Financial institutions should integrate the Equator Principles into their funding decisions to uphold environmental and social responsibilities.

6.2 Identification and Measure of Social Impacts

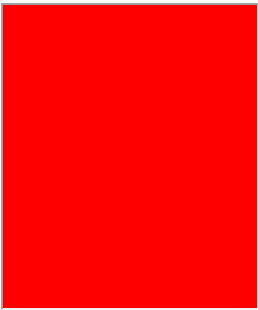
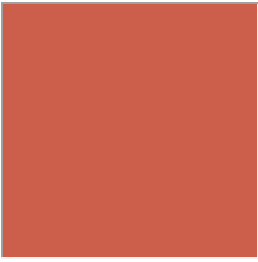

The assessment criteria have been developed following the Environmental and Social Standards of the World Bank's Environmental and Social Framework (ESF) and relevant

national and provincial legislation. Identifying and measuring social impacts is essential for understanding how projects affect communities. Key focus areas include employment opportunities, income levels, access to healthcare, educational outcomes, and infrastructure availability. Both quantitative indicators, such as employment rates and income statistics, and qualitative methods, like community surveys and interviews, are used. Comparative analysis and longitudinal studies help track changes over time. Regular reporting ensures transparency and mitigation strategies are developed to enhance and address adverse impacts. This comprehensive approach enables stakeholders to make informed decisions and promote sustainable community development.

The main objective of the Social Impact Assessment process is to identify and highlight the environmental and social issues that need to be considered in all phases of project implementation. This process lays the groundwork for further reports that may be required to ensure compliance with the Environmental Management Act and World Bank safeguards. The aim is to support the sustainable implementation of the planned project, with the Social Impact Assessment carried out at an early stage (i.e., pre-feasibility). The assessment results may indicate whether a full Social Impact Assessment is required, along with implementing mitigation measures, or if no additional social work is needed due to the absence of adverse social impacts.

6.2.1 Project Risk Rating

Definition of significance rating

LEGEND		Definition
Very High Sensitivity		The area is rated extremely sensitive to the negative impact of electricity grid infrastructure development. As a result, the area will either have very high conservation value, very high existing/ potential socio-economic value or hold legal protection status.
High Sensitivity		The area is rated highly sensitive to the negative impact of electricity grid infrastructure development. As a result, the area will either have high conservation value or existing/potential socio-economic value.
Medium Sensitivity		The area is rated as being of medium sensitivity to the negative impact of electricity grid infrastructure development. As a result, the area

		will either have medium levels of conservation value and/or medium levels of existing/potential socio-economic value.
Low Sensitivity		The area is considered to have low sensitivity levels in the context of electricity grid infrastructure.

Assessment Technique

This section represents the methodology used and adopted in assessing the identified or anticipated impact on the proposed mixed-use development environment. Guidelines and formulas have been developed to determine or measure anticipated effects on a given development's receiving environment.

The assessment criteria used in evaluating the impacts of the proposed development are as follows:

- (a) The significance of the impacts assessed in line with the following descriptors:

Nature of the impact		
Positive	+	The impact will be beneficial to the environment (a benefit).
Negative	-	The impact will not be beneficial to the environment (a cost).
Neutral	0	Where a negative impact is offset by a positive impact or mitigation measures to have no overall effect.

Intensity (Magnitude)		
Minor	2	Negligible effects on biophysical or social functions/processes. This includes areas / environmental aspects altered significantly and has little to no conservation importance (negligible sensitivity*).
Low	4	Minimal effects on biophysical or social functions / processes. This includes areas / environmental aspects primarily modified and / or have low conservation importance (low sensitivity*).
Moderate	6	Notable effects on biophysical or social functions / processes. This includes areas / environmental aspects that have already been moderately modified and are of medium conservation importance (medium sensitivity*).
High	8	Considerable effects on biophysical or social functions / processes. Includes areas / environmental aspects which have been slightly modified and have a high conservation importance (high sensitivity*).
Very high	10	Severe effects on biophysical or social functions / processes. Includes areas / environmental aspects which have not previously been impacted upon and are pristine, thus of very high conservation importance (very high sensitivity*).
Extent		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3-5 km of the site.
Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.
Duration		
Immediate	1	Effect occurs periodically throughout the life of the activity.
Short term	2	Effect lasts for a period 0 to 5 years.
Medium term	3	Effect continues for a period between 5 and 15 years.
Long term	4	Effect will cease after the operational life of the activity either because of natural process or by human intervention.
Permanent	5	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time that the impact can be considered transient.

Probability of occurrence		
Improbable	1	Less than 30% chance of occurrence.
Low	2	Between 30 and 50% chance of occurrence.
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless or despite any mitigation measures.

Once the impact criteria have been ranked for each impact, the significance of the effects will be calculated using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Extent}) \times \text{Probability}$$

The significance of the impacts is therefore calculated by multiplying the severity rating with the probability rating. The maximum value reached through this impact evaluation process is 100 SP (points). The significance for each impact is rated as High (SP≥60), Medium (SP = 31-60) and Low (SP<30) significance as shown in Table 1 below.

(b) Definition of significance rating

Significance of predicted NEGATIVE impacts		
No significance		the impacts do not influence the proposed development and/or environment in any way.
Low	0-30	Where the impact will have a relatively small effect on the environment and will require minimal or no mitigation and as such have a limited influence on the decision
Moderate	31-60	Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated.
High	61-100	Where the impact will influence the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation.

Significance of predicted POSITIVE impacts		
Low	0-30	Where the impact will have a relatively small positive effect on the environment.
Moderate	31-60	Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment.
High	61-100	Where the positive impact will improve the environment relative to baseline conditions.

The assessment of impact will indicate their degree of confidence in the predictions based on the availability of information and specialist knowledge. Other aspects that should be taken into consideration are:

- Impacts should be described before and after implementing the proposed mitigation and management measures.
- All impacts should be evaluated for their full life cycle for the proposed development, including construction and operational phases.
- The impact evaluation should consider the cumulative effects of other activities which have occurred or are in the process of occurring within the study area; and
- Legal requirements- Specialists should identify and list the specific legal and permit requirements that could be relevant to the proposed project.

Key Principles of Assessment

Considering the following is essential when conducting and reviewing SIA:

- a) Matching the scale and focus of an SIA with the characteristics of the proposed development and the concerns of responsible authorities and potentially affected communities and individuals.
- b) Minimising adverse impacts while enhancing beneficial impacts.
- c) Using the "Precautionary Principle" and other internationally recognised SIA principles.
- d) Focusing on impacts that are at least partially attributable to the proposed development.
- e) Involving various potentially affected communities in the SIA early and extensively.
- f) Conducting long-range, forward-looking studies that rely on the insight of past experiences.

6.3 Discussion on the Social Impacts

Given the alignment between the IFC and Equator Principles, the primary guidelines will be the IFC standards concerning Equator Principles. This strategic approach ensures comprehensive adherence to both principles, leveraging the strengths of the IFC standards while incorporating the specific considerations outlined in the Equator Principles. This dual application aims to enhance the Project's overall sustainability and responsible implementation, aligning with globally recognised best practices in environmental and social risk management.

The proposed Khanyazwe Flexpower Project site is an active sugarcane farm employing about 80 farm workers. The project's development will necessitate repurposing this agricultural land, leading to the loss of these jobs. A strategy should be developed to mitigate the impact, including re-employment opportunities within the project, training programs for new roles, and compensation packages. Engaging with the affected workers is essential to address their concerns and explore alternative employment opportunities, ensuring their continued economic stability and contribution to the local community.

The impact of the below was assessed on the project.

Focus Areas	rating
<p>Economic Benefits and Opportunitites</p> <p>The Khanyazwe Flexpower Project offers numerous economic benefits and opportunities that are poised to drive substantial growth and development in the local and regional economies of Malelane, the Nkomazi Local Municipality, and the broader Mpumalanga Province. By creating jobs, bolstering local enterprises, enhancing infrastructure, and encouraging economic diversification, the project is set to foster a more prosperous and resilient community. The project aligns with broader regional and national development goals by stimulating economic growth, improving infrastructure, and promoting environmental sustainability. Its comprehensive approach to economic and social development ensures that the benefits are widely shared, paving the way for a more prosperous, resilient, and inclusive future for the local community and the broader region.</p>	

a. Job Creation

The project is expected to generate substantial employment opportunities during the construction and operational phases. The workforce demands span roles in engineering, construction, operations, and support services, contributing to a noteworthy surge in local employment rates.

It is anticipated that the job will be created as follows:

- **Direct Employment:** The construction phase will create thousands of jobs, offering immediate employment for skilled and unskilled workers. Once operational, the power plant will require a permanent workforce, including technical, administrative, and maintenance roles.
- **Indirect Employment:** The project will also generate indirect employment opportunities through the demand for goods and services related to the construction and maintenance of the power plant, benefiting local businesses and service providers.
- **Skills Development:** Training and capacity-building programs associated with the project will enhance the local workforce's skills, improving employability and supporting long-term economic resilience. This focus on skills development aligns with broader regional goals of enhancing human capital and reducing poverty.

The proposed Khanyazwe Flexpower Project site is an active sugarcane farm employing about 80 farm workers. The project's development will necessitate repurposing this agricultural land, leading to the loss of these jobs. A strategy should be developed to mitigate the impact, including re-employment opportunities within the project, training programs for new roles, and compensation packages. Engaging with the affected workers is essential to address their concerns and explore alternative employment opportunities, ensuring their continued economic stability and contribution to the local community.

The project also manages local communities' expectations regarding job opportunities, ensuring transparency and inclusivity throughout employment. Recognising the importance of community engagement and the high demand for local jobs, the project actively communicates the nature, scope, and timeline of employment opportunities to the residents. This involves setting realistic expectations about the types of jobs available, the skills

required, and the duration of employment, whether during the construction or operational phases.

Economic Growth and Diversification

The project implementation will stimulate local and regional economies by diversifying the economic base, thereby reducing the heavy dependence on traditional sectors such as agriculture.

The project presents significant opportunities for local businesses, suppliers, and service providers by actively involving them in its development and operational processes. This engagement can transform the project into a catalyst for economic growth, fostering a dynamic and prosperous business ecosystem in the surrounding area as part of an enterprise and supply development initiative.

The critical contribution will include:

- **Economic Stimulation:** The project’s investment in local infrastructure and energy production will stimulate economic activity, attract further investments, and encourage the development of new businesses in the region.
- **Diversification:** By adding a significant energy component to the local economy, the project reduces dependence on agriculture and boosts industrial activities. This diversification is crucial for enhancing economic stability and creating a more resilient economic environment.
- **Local Business Support:** Increased economic activity will benefit local businesses, from construction firms to suppliers and service providers, driving growth across various sectors and fostering a more dynamic regional economy.

Impacts on Agriculture

The Khanyazwe Flexpower Project, located in Malelane within the Nkomazi Local Municipality of Mpumalanga Province, will significantly impact local agriculture. The project site is currently used for sugarcane farming, and its development will bring about changes that can affect both the local agricultural economy and the livelihoods of those involved in farming activities.

This will include the following.

- a. **Displacement of Agricultural Activities-** The project site's current use as an active sugarcane farm means that its development into a power plant will displace existing agricultural activities. This displacement will directly affect the cultivation of crops and the associated economic activities that support the local farming community. This will contribute to, amongst others
 - **Job Loss:** The cessation of farming activities will result in the loss of agricultural jobs, impacting approximately 80 farmworkers who rely on these positions for their livelihoods.
 - **Economic Disruption:** The local economy, which benefits from the sale and processing of sugarcane, will experience a disruption, potentially leading to decreased economic activity in the agricultural sector.
- b. **Loss of Agricultural Land:** The conversion of agricultural land for industrial use will reduce the available farmland, which could impact local food production and the region's agricultural output. Although sugarcane is not a staple food, reducing agricultural land could have broader implications for food security if it leads to a shift in land use priorities away from food crops.
- c. **Economic Diversification and Support for Agri-Business-** The project provides an opportunity to diversify the local economy by introducing industrial activities alongside traditional agriculture. This can reduce the region's economic dependence on agriculture and create new economic opportunities.
- d. **Socio-Economic Impact on Farming Communities—The project may have a socio-economic impact on farming communities,** including shifts in employment patterns and changes in land use.

The anticipated effect of the proposed project on local employment is expected to be negligible, as it is unlikely to destabilise the existing workforce. While the job opportunities created by this project are mainly temporary, they are anticipated to contribute positively to the local economy. However, as with any development initiative, there may be community demands for the project to provide job and business opportunities for residents. The enduring benefits of a project of this calibre are predominantly realised at the national and regional levels, where they serve as catalysts for economic growth.

Mitigation Measures

- Engage with local communities and stakeholders throughout the project's development to gather input, address concerns, and ensure the project aligns with community needs and priorities.
- Implement policies prioritising hiring local residents for construction and operational roles.
- Establish training programs to equip local workers with the skills needed for the project.
- Develop procurement policies that prioritise sourcing goods and services from local suppliers.
- Work with local suppliers to build their capacity to meet the project's needs.
- Create programs that offer alternative livelihoods for individuals affected by the displacement of agricultural activities, such as training in new skills and support for starting new businesses.

Community Health and safety

The construction and operation of Flexipower can pose potential risks to community health and safety, especially concerning the transport, storage, use, and disposal of hazardous materials. Understanding and assessing these concerns, our approach incorporates stringent safety standards and health protocols to mitigate risks, ensuring that the community's well-being remains a priority.

Construction-Related Risks

- The construction phase of the Khanyazwe Flexpower Project is likely to pose several health risks to the local community. These risks include exposure to dust, noise pollution, and potential contaminants from construction materials and activities. This will include
 - Increased dust and particulate matter can lead to respiratory problems, particularly in vulnerable populations such as children and older people.
 - Elevated noise levels from machinery and construction activities can cause stress, hearing loss, and sleep disturbances.
 - Potential exposure to hazardous chemicals used in construction
- The influx of construction vehicles and increased traffic around the project site can lead to higher risks of road accidents and pose safety concerns for residents and other motorists, especially on the N4.

- The construction process may disrupt essential services like water and electricity.

Operational Safety

- Natural gas is highly flammable, and leaks or uncontrolled releases can lead to fires or explosions. This poses significant risks to plant personnel and surrounding communities. The following safety measures should be in place.
 - Install advanced gas leak detection systems that continuously monitor for the presence of gas and automatically shut down equipment if a leak is detected.
 - Equip the plant with fire suppression systems, such as water sprinklers, foam systems, and fire extinguishers, strategically placed throughout the facility.
 - Develop and regularly update an emergency response plan that includes evacuation procedures, emergency contact information, and drills to ensure readiness in case of an incident.
- Gas power plants often require storing and handling hazardous materials, such as natural gas, chemicals for water treatment, and lubricants.
 - Store hazardous materials in designated, well-ventilated areas with secondary containment to prevent leaks and spills
 - Maintain updated MSDS for all hazardous materials on-site and ensure that all personnel know the safe handling procedures.
 - Equip the plant with spill response kits and train staff to use them effectively to contain and clean up hazardous material spills.
- Gas power plants operate under high pressures, particularly in boilers and turbines. A failure in these systems can result in dangerous explosions or equipment damage.
 - Pressure relief valves should be installed to prevent over-pressurization and safely vent excess pressure.
 - Conduct routine inspections and maintenance of high-pressure systems to identify and address potential issues

<p>before they become critical.</p> <ul style="list-style-type: none"> ○ Use real-time monitoring systems to track pressure levels and other critical parameters, enabling prompt response to any abnormalities. <ul style="list-style-type: none"> ● The generation and transmission involve high voltages, which pose risks of electrical shock, arc flashes, and fires. <ul style="list-style-type: none"> ○ Implement a Lockout/Tagout (LOTO) program to ensure equipment is de-energized and cannot be accidentally restarted during maintenance. ○ Equip workers with arc flash protective gear and ensure that electrical systems are designed and maintained to minimise the risk of arc flashes. <p>Ensure all electrical equipment is properly grounded and bonded to prevent electrical shocks and fires.</p>	
<p>Potential increased health risks</p> <p>Due to the influx of workers and changes in population dynamics, large-scale construction projects can increase the risk of infectious diseases.</p> <p>Contagious Infections (HIV/AIDS)</p> <ul style="list-style-type: none"> ● The influx of construction workers and the establishment of temporary worker camps can lead to increased interactions with local populations, raising the risk of spreading contagious infections such as HIV/AIDS. 	
<p>Handling and Storage of Hazardous Materials</p> <p>The project poses potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during construction, operation, and decommissioning.</p> <p>Physical Hazards</p> <ul style="list-style-type: none"> ● Using cranes, excavators, and other heavy machinery increases the risk of accidents such as crush injuries, falls, and equipment-related incidents. ● High noise levels from machinery can lead to hearing loss, while vibration can cause hand-arm vibration syndrome (HAVS) and other musculoskeletal disorders. <p>Chemical Hazards</p> <ul style="list-style-type: none"> ● Workers may be exposed to hazardous chemicals, which can cause respiratory issues, skin irritation, and long-term health problems. 	

- Construction activities generate dust and particulates that can lead to respiratory diseases, including silicosis and chronic obstructive pulmonary disease (COPD).

Biological Hazard

- Construction sites can be breeding grounds for infectious diseases, especially in crowded worker camps with poor sanitation. Risks include water-borne diseases and contagious infections like tuberculosis.

Security Personnel

The project could engage security personnel who pose risks to community health and safety if they lack proper training or accountability. Inadequate training can lead to excessive use of force and cultural insensitivity, causing physical harm and community tension. Security personnel might abuse their power without clear accountability, leading to human rights violations and unreported incidents. This can result in fear and distrust among residents, damaging the project's relationship with the community and making residents feel unsafe. Proper training, cultural sensitivity, and robust accountability measures are essential to mitigate these risks.

The appointment of security personnel for the powerline project aims to minimise the impact of crime in South Africa by deterring criminal activities, protecting valuable equipment and infrastructure, and ensuring the safety of workers and residents. A visible security presence, regular patrols, and constant monitoring help prevent theft, vandalism, and other crimes. Effective communication and engagement with local communities build trust and cooperation, while professional training and advanced technologies enhance security measures.

By addressing these considerations and implementing these measures, the project can ensure respectful and equitable access to private properties, minimising disruptions and maintaining positive relationships with property owners.

Adherence to Occupational Health and Safety standards involves implementing robust safety measures, providing necessary training, and establishing protocols to prevent accidents and injuries. This includes ensuring the availability of personal protective equipment (PPE), conducting regular safety assessments, and promoting a culture of safety awareness among all workers.

Mitigation Measure

- Providing adequate training and safety equipment for all construction workers.

- Establishing clear communication channels with local communities to inform them of potential risks and disruptions.
- Implementing traffic management plans to minimise the impact of construction vehicles.
- Implement measures to control dust, noise, and emissions from construction activities, such as using dust suppressants and noise barriers.
- Monitor air and noise pollution levels and take steps to reduce them.
- Ensuring construction sites are secure and safe for workers and nearby residents
- Establish a grievance mechanism for property owners to raise concerns or complaints about access and compensation.
- Develop a health and safety management system for the construction and operational phases.

Land Use and Involuntary Resettlement

The development of the Khanyazwe Flexpower Project entails certain land-use restrictions and may necessitate involuntary resettlement, which can significantly impact the farming community.

- The project site is currently used for agricultural purposes, specifically sugarcane farming. Repurposing this land for industrial use will restrict its use, disrupting agricultural activities and affecting those who rely on it for their livelihoods. The potential impact will be;
 - The conversion of farmland into an industrial site for the power plant will reduce the area available for agriculture, potentially impacting local food production and agricultural income.
 - The project may lead to changes in land zoning regulations and restrict access to the land for former users, impacting their ability to continue agricultural activities or access adjacent properties.

Involuntary Resettlement

Involuntary resettlement involves relocating people from their homes and land to make way for the project. This will impact farm workers working and residing in the proposed erf.

- Resettlement can lead to the loss of homes, disruption of social networks, and challenges in adjusting to new environments, affecting the overall well-being of displaced individuals.

- People will lose access to their sources of income, such as agricultural land or local employment, leading to financial instability and increased vulnerability.

Economic Opportunities

- Local employment opportunities tied to businesses or agricultural activities within the area might be reduced or lost, leading to job displacement.
- Displacement might disrupt access to local markets, affecting sellers and buyers and leading to economic losses for small businesses and vendors.

Land Claim

This involves an in-depth examination of historical land ownership and any existing or potential claims from communities or individuals who may assert rights over the project area. Adhering to legal frameworks and procedures related to land claims is crucial to ensuring a fair and transparent process that appropriately addresses historical injustices and compensates rightful claimants. This assessment aims to prevent legal disputes and foster a responsible land use and development approach.

Implementing comprehensive mitigation measures is essential to effectively address the potential economic displacement resulting from the proposed powerline project. These measures aim to minimise the adverse impacts on affected individuals and communities, ensuring they can maintain their livelihoods and access to resources. By providing fair compensation, economic support, and robust community engagement, the project can foster resilience and promote sustainable development for displaced people.

- Engage with affected communities to understand their needs and concerns. Involve them in the planning and decision-making process to develop tailored solutions.

Infrastructure Development

The Project has the potential to contribute to community infrastructure, including enhancements to roads, schools, and healthcare facilities through socio-economic development contributions. This contribution is envisioned to result in improved living conditions and increased access to essential services for the local population. This will include

- **Energy Infrastructure:** Constructing a modern natural gas-fired power plant will enhance the reliability and stability of the local electricity supply, supporting residential, commercial, and industrial energy needs.
- **Transport Infrastructure:** Improvements in transport infrastructure, such as roads and access routes to the project site, will facilitate better connectivity and support economic activities by reducing transportation costs and travel times.
- **Utilities:** The project's development will likely include water and sanitation infrastructure upgrades, which will benefit local communities and ensure that essential services are accessible and reliable.

Energy Access and Affordability

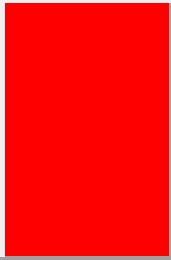

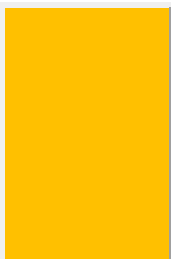

The Khanyazwe Flexpower Project is poised to significantly improve energy access and affordability in Malelane, the Nkomazi Local Municipality, and the broader Mpumalanga Province. The project addresses critical energy challenges by developing a reliable and cost-effective natural gas-fired power plant, ensuring that more residents and businesses benefit from stable and affordable electricity.

Regional Integration and Development

The proposed project will contribute to regional integration and development by enhancing energy security in the Nkomazi Local Municipality and establishing it as a key energy hub. It will also boost regional trade and investment by improving infrastructure along strategic routes like the Maputo Development Corridor, promoting economic growth and cooperation. Its impact extends beyond local benefits, fostering interconnected economies and supporting broader socio-economic development goals across Mpumalanga Province and beyond.

7. Screening and Risk Rating

7.1 Risk Rating Definition of significance rating

LEGEND		Definition
Very High Sensitivity		The identified issue is susceptible to a negative impact on project development. As a result, the area will either have very high conservation value, very high existing/potential socioeconomic value or hold legal protection status.
High Sensitivity		The area is rated highly sensitive to the negative impact on project development. As a result, the area will either have high conservation value or existing/potential socioeconomic value.
Medium Sensitivity		The area is rated as being of medium sensitivity to the negative impact on project development. As a result, the area will either have medium levels of conservation value and medium levels of existing/potential socioeconomic value.
Low Sensitivity		The area is considered to have low sensitivity levels in project Development.

6.2 Screening Sensitivity Results

The assessment, conducted across three areas in Makhado, revealed various social issues and opportunities tied to the proposed site and project location. Key constraints include potential impacts on residential areas, the loss of agricultural land, effects of mining activities, alterations due to road construction, risks of employment and income loss, the need for resettlement, the imperative of robust community engagement, and challenges related to land claims. Conversely, the project presents several opportunities, notably the creation of employment opportunities, enhanced access to electricity, and the potential for stimulating local economic development. Addressing these challenges while leveraging the opportunities requires careful planning, inclusive community involvement, and targeted mitigation strategies to ensure the project benefits the local population and environment. The table below presents a summary of the impact of each proposed array :

Constraints	Impact
Residential	
Loss of agriculture for farming and Grazing	
Road	
Loss of Employment/income	
Resettlement	
Community Engagement	
Land Claim	
Opportunities	
Employment opportunities	
Increases access to Electricity	
Local Economic Development	

7. Conclusion and Recommendation

The Khanyazwe Flexpower Project offers significant economic growth and development potential in the Malelane area, the Nkomazi Local Municipality, and the broader Mpumalanga Province. While the project promises numerous benefits, including job creation, infrastructure improvements, and economic diversification, it also presents challenges, particularly regarding land use restrictions and involuntary resettlement. The project's impact on agriculture, community health and safety, and local livelihoods necessitates careful planning and management to ensure sustainable and inclusive outcomes.

Effective stakeholder engagement and comprehensive mitigation strategies are critical to addressing the potential negative impacts on the local community. The project must prioritise transparency, fair compensation, and support for displaced individuals to foster a positive relationship with the community and promote long-term socio-economic stability. By aligning with national and international standards, the Khanyazwe Flexpower Project can serve as a model for responsible development that balances economic benefits with social and environmental considerations.

Recommendation

Focus area	Propose Recommendation
Stakeholder Engagement:	<ul style="list-style-type: none"> • Establish a continuous dialogue with local communities and stakeholders to gather input, address concerns, and build trust. • Ensure community members are involved in decision-making, particularly land use changes and resettlement planning.
Fair Compensation and Support for Displaced Individuals:	<ul style="list-style-type: none"> • Develop and implement a resettlement action plan that includes adequate compensation, relocation assistance, and support services for affected individuals. • Provide financial and logistical support to help displaced individuals secure new housing and rebuild their livelihoods.
Enhance Local Employment and Skills Development:	<ul style="list-style-type: none"> • Prioritise hiring locals for construction and operational roles and provide training programs to equip them with the necessary skills. • Partner with local educational institutions to develop training modules and vocational programs that align with the project's needs and promote long-term employability.
Support Local Businesses and Economic Diversification:	<ul style="list-style-type: none"> • Implement local procurement policies to support local businesses and create a resilient supply chain. • Invest in economic diversification initiatives, such as supporting the development of agri-business, tourism, and renewable energy projects.
Enhance Community Health and Safety:	<ul style="list-style-type: none"> • Develop and enforce health and safety protocols to protect workers and the community from construction and operational risks. • Provide access to healthcare and support services for individuals and monitor public health impacts to ensure community well-being.
Monitor and Evaluate Impacts:	<ul style="list-style-type: none"> • Implement a robust monitoring and evaluation framework to assess the project's social, economic,

	<p>and environmental impacts and ensure effective mitigation measures.</p> <ul style="list-style-type: none">• Regularly review and update the project's plans and strategies to adapt to changing circumstances and community needs.• Establish grievance mechanisms to allow affected individuals to raise concerns and seek redress for any issues related to the project.
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