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SOCIAL IMPACT ASSESSMENT REPORT

THE PROPOSED GLENCORE LYDENBURG SOLAR PHOTOVOLTAIC
FACILITY AT THE LYDENBURG SMELTER, MPUMALANGA
PROVINCETLE OF PROJECT





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Table of Contents

1	Executive summary	4
2	Introduction	7
2.1	Need and Desirability of Photovoltaic Facility Project	8
3	Scope of Work.....	9
4	Methodology.....	9
4.1	Information base	10
4.2	Assumptions and limitations	10
4.3	Social Impact Assessment Model	10
5	Legislative Framework	12
5.1	National Energy Act (Act No 34 of 2008)	12
5.2	White Paper on the Energy Policy of the Republic of South Africa	12
5.3	White Paper on Renewable Energy.....	13
5.4	Integrated Energy Plan (2016)	14
5.5	Integrated Resource Plan (2019).....	15
5.6	National Development Plan	15
5.7	Sustainable Development Goals	16
5.8	National Infrastructure Plan (2050)	16
6	International Standards	16
6.1	International Social Performance Standards/Initiatives	17
6.2	International Principles for SIA	17
7	Description of the Receiving Environment	19
7.1	Description of the Project Area.....	19
7.2	Description of Population	21
7.2.1	Population and Household size.....	21
7.2.2	Population Composition, Age, Gender and Home language	22
7.2.3	Education Indicators	24
7.2.4	Employment Indicators.....	25
7.2.5	Housing	26
7.2.6	Access to Basic Services	28
7.2.7	Crime.....	30
8	Stakeholder Identification	34
8.1	Approach	34
8.2	List of Stakeholders	1
9	Social Impact Assessment	3
9.1	Impact Rating Criteria	3
9.2	Description of Potential Social Impacts.....	6
9.2.1	Existing and Cumulative Impacts	6



9.2.2	Community Health and Safety	7
9.2.3	Infrastructure and Services	10
9.2.4	Economic and Material Well-Being Impacts	11
9.2.5	Impacts on Socio-Cultural Networks	13
9.2.6	Impacts on Cultural Heritage	14
9.2.7	Institutional, Legal, Political, and Equity Impacts	15
10	Social No-go Option	16
11	Social Management Plan	3
12	Conclusion and Recommendation	1
13	References	3

List of Figures

Figure 1: Layout Map of the Proposed PV Facility	8
Figure 2: Project Area Locality Map	19
Figure 3: Thaba Chweu Unemployment Rate (Source: <i>Thaba Chweu LM, IDP, 2023</i>)	25
Figure 4: Thaba Chweu LM Employment by Sector (Source: <i>Mpumalanga Department of Economic Development & Tourism, 2020</i>).	26

List of Tables

Table 1: Major components of the solar photovoltaic system	7
Table 2: Population growth rate and percentage (Source: Statistics South Africa Census, 2022, 2011)	22
Table 3: Total household and average household size (Source: Statistics South Africa Census, 2022, 2011)	22
Table 4: Population by gender composition (Source: Statistics South Africa Census, 2022, 2011)	22
Table 5: Population by race composition (Source: Statistics South Africa Census, 2022, 2011)	23
Table 6: Language distribution (Source: Statistics South Africa Census, 2022, 2011)	24
Table 7: Number of School Attendance Age (5 – 24 Years) (Source: Statistics South Africa Census, 2022)	24
Table 8: Type of Dwelling (Source: Statistics South Africa Census, 2011, 2022)	27
Table 9: Tenure Status (shown in numbers Source: Statistics South Africa Census, 2022)	27
Table 11: Access to piped water (Source: Statistics South Africa Census, 2022, 2011)	28
Table 12: Access to sanitation (Source: Statistics South Africa Census, 2022, 2011)	28
Table 13: Energy for Lighting (Source: Statistics South Africa Census, 2022, 2011)	29
Table 14: Distribution of households by type of refuse removal (Source: Statistics South Africa Census, 2022, 2011)	30
Table 15: Lydenburg Crime Statistics (Crime Stats South Africa, 2024)	30
Table 16: Criteria for Determining Impact Consequences	3
Table 17: Probability Rating	4



Table 18: Criteria for Determining Prioritisation.	4
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1 EXECUTIVE SUMMARY

The purpose of this document is to provide a social baseline study and to identify social impacts associated with the development of the proposed Solar Photovoltaic (PV) Energy Generation Facility at the Lydenburg Smelter.

The proposed Solar PV facility is located in Ward 12 and 13 of Thaba Chweu Local Municipality (LM) in Ehlanzeni District Municipality, Mpumalanga Province. Thaba Chweu LM is one of the four municipalities of the Ehlanzeni District Municipality (EDM) of Mpumalanga province. Thaba Chweu LM is located in the far north-eastern part of the district municipality. It shares its northern boundaries with the Limpopo province. Ward 12 and 13 share a border and are adjacent to each other, close to Mashishing township.

The baseline population description is presented at three levels: provincial, district, and local. A comprehensive understanding of the impacts requires an analysis of the differences and similarities across these levels. The baseline description focuses primarily on Mpumalanga Province, Ehlanzeni District Municipality, Thaba Chweu Local Municipality, and Ward 12 and 13 of Thaba Chweu Local Municipality.

The relationship between communities and the mine, as well as between some community groups are strained in some cases. The community has a distrust towards the mine stemming from past neglect and failure of the mine to include the community in decision-making processes. The community desires more meaningful engagement regarding developments commissioned by the mine including the Solar PV project.

The scope of work for this Social Impact Assessment (SIA) included the following key components:

- A comprehensive review of existing literature and data on the Lydenburg Smelter and its surrounding community, including demographic information, economic conditions, and community concerns. This was done to establish an understanding of the baseline social and socio-economic conditions in the project area.
- On-site field visits to collect qualitative data through key stakeholder interviews with landowners and local residents.
- An in-depth analysis of the potential social impacts - both positive and negative of the solar PV facility - focusing on effects on land use, household structure and safety, employment, economic activity, and the environment.
- The identification of mitigation measures for negative impacts, along with recommendations for enhancing the positive outcomes of the port's expansion for the community.
- Preparation of a Social Impact Assessment Report that details the findings, recommendations, and conclusions from the assessment.

Given that Glencore Lydenburg Smelter is an existing smelter and that the Solar PV facility will be constructed adjacent to the Lydenburg Smelter site, it must be considered that many of the impacts are existing impacts. When considering existing impacts, the complexity of the social environment must be contemplated. The activities taking place in the area surrounding the project site have also caused a number of impacts. From a social perspective, it is not possible to pinpoint which percentage of any given impact results from a specific activity or proponent.

The following impacts have been identified in relation to the project. Most of these impacts are already experienced in the community. The concern is that these impacts might escalate as a result of the project and pose different implications on various phases of the project development.

Community Health and Safety

- Health Implications
 - The impact of social ills on the health of the community
 - Psychological impact due to poverty and lack of opportunities



- Physical impacts on road safety
- Health impacts due to dust
- Potential Increase in Crime/And Community Unrest
 - Impact on the safety of property and equipment
 - Impact on personal safety and security
 - Impact on personal safety and security
 - Increase in community unrest
 - Increase in social ills
- Infrastructure and Services
 - Increased Pressure on Infrastructure and Services
 - Generation of Renewable Energy
- Economic Impacts and Material Well-Being
 - Creation of Employment Opportunities
 - Skill Development
 - Knock-On Effects for Local Businesses
- Impacts on Socio-Cultural Networks

Concerns About Social Disturbances

 - Potential for social unrest
 - Competition for jobs
 - Influx of non-local jobseekers
- Impacts on Cultural Heritage
 - Impacts on Cultural Heritage, Spirit and Sense of Place
- Institutional, Legal, Political, Equity Impacts
 - Impacts on Community Participation in Decision-Making

The Solar PV project, despite these impacts, provides an opportunity for Glencore to address some of the socio-economic issues faced in the area and to develop a progressive relationship with the community. The project will create employment opportunities, with more jobs created during the construction phase and add to cleaner energy production, reduce the load on that national power grid, and pave the way towards just transition, which are positive impacts. However, this will require a comprehensive and transparent approach to community engagement, ensuring that the local population is not just consulted but actively included in decision-making processes.

From a SIA perspective the project is unlikely to introduce significant new impacts, as many of the concerns raised are issues already being experienced by the community. The majority of impacts are expected to occur during the construction phase, which will be relatively brief.

To mitigate the negative impacts and enhance the positive impacts, the following recommendations are made:

- Glencore must maintain continuous dialogue with local communities through regular public meetings and consultations.
- Ensure transparency in procurement and recruitment processes, in conjunction with community leaders in decision-making to prevent social unrest.



- Create or update clear channels for grievance reporting and feedback to address community concerns promptly.

Glencore should revisit and update its skills development plan to develop skills in the community to enable sourcing a greater portion of local labour.

- Glencore should install high-level security measures to protect the Solar PV infrastructure from theft, including fencing, 24/7 surveillance, and collaboration with local law enforcement and private security companies.
- A Community Liaison Officer who is trusted by the community and has the necessary skills and education must be appointed before construction commences.

At this stage, none of the identified social impacts are so severe that they warrant halting the project, and most of the impacts can be mitigated. It is therefore recommended that the proposed project be approved, provided that the enhancement and mitigation measures outlined in the report, particularly those addressing negative impacts on Socio-Cultural Networks and Community Health and Safety are addressed. The approval should also occur on the condition that Glencore enhance and update its existing grievance mechanism and community engagement plan before the project commences.



2 INTRODUCTION

Glencore (Pty) Ltd (the applicant) is one of the world's largest natural resource companies. Glencore's four coal operations are located in Mpumalanga, while ferroalloys mines and smelters can be found across the northern part of South Africa, in the North West Province and Limpopo.

Glencore proposes the development of a Solar Photovoltaic (PV) Energy Generation Facility at the Lydenburg Smelter. The generation capacity will be a maximum of 300MW. The electricity generated from the facility will be used at the Lydenburg smelter or will be transmitted to other Glencore operations. The proposed PV facility is located in Thaba Chweu Local Municipality (Ward 12 and 13), Ehlanzeni District Municipality, Mpumalanga Province.

A PV plant is designed to produce bulk electrical power from solar radiation. The solar power plant uses solar energy to produce electrical power. Therefore, it is a conventional power plant. Solar energy can be used directly to produce electrical energy using solar PV panels or alternatively using concentrated solar energy. When using concentrated solar energy, the radiation energy of solar is first converted into heat (thermal energy) and the heat is used to drive a conventional generator. This method is difficult and inefficient to produce electrical power on a large scale. Hence, to produce electrical power on a large scale, solar PV panels are used, similar to the design of the proposed PV Facility. The major components of the solar photovoltaic system are listed and discussed in **Table 1** and the Layout Map for the proposed project is shown in Figure 2.

Table 1: Major components of the solar photovoltaic system.

Component	Description
Photovoltaic (PV) panel	A PV system consists of PV panels that encase the solar cells. PV panels or Photovoltaic panels are the most important component of a solar power plant. It is made up of small solar cells. This is a device that is used to convert solar photon energy into electrical energy. Generally, silicon is used as a semiconductor material in solar cells. The typical rating of silicon solar cells is 0.5 V and 6 Amp and it is equivalent to 3 W power. The number of cells is connected in series or parallel and makes a solar module.
Inverter	The output of the solar panel is in the form of Direct Current (DC). The most of load connected to the power system network is in the form of Alternating Current (AC). Therefore, an inverter is used to convert DC output power into AC power in solar power plants
Energy storage devices	Various types of energy storage devices are available i.e. Mechanical, electromagnetic, electrochemical and thermal. These systems are used to store energy generated by the solar power plants to be used at a later stage. The storage components need to meet the demand and variation of the load. This component is used especially when the sunshine is not available. These devices are managed with an energy management system to enable maximum effective utilisation of the available energy.
System balancing component	It is a set of components used to control, protect and distribute power in the system. These devices ensure that the system working in proper condition and utilize energy in the proper direction. And it ensures maximum output and security of other components of a solar power plant.

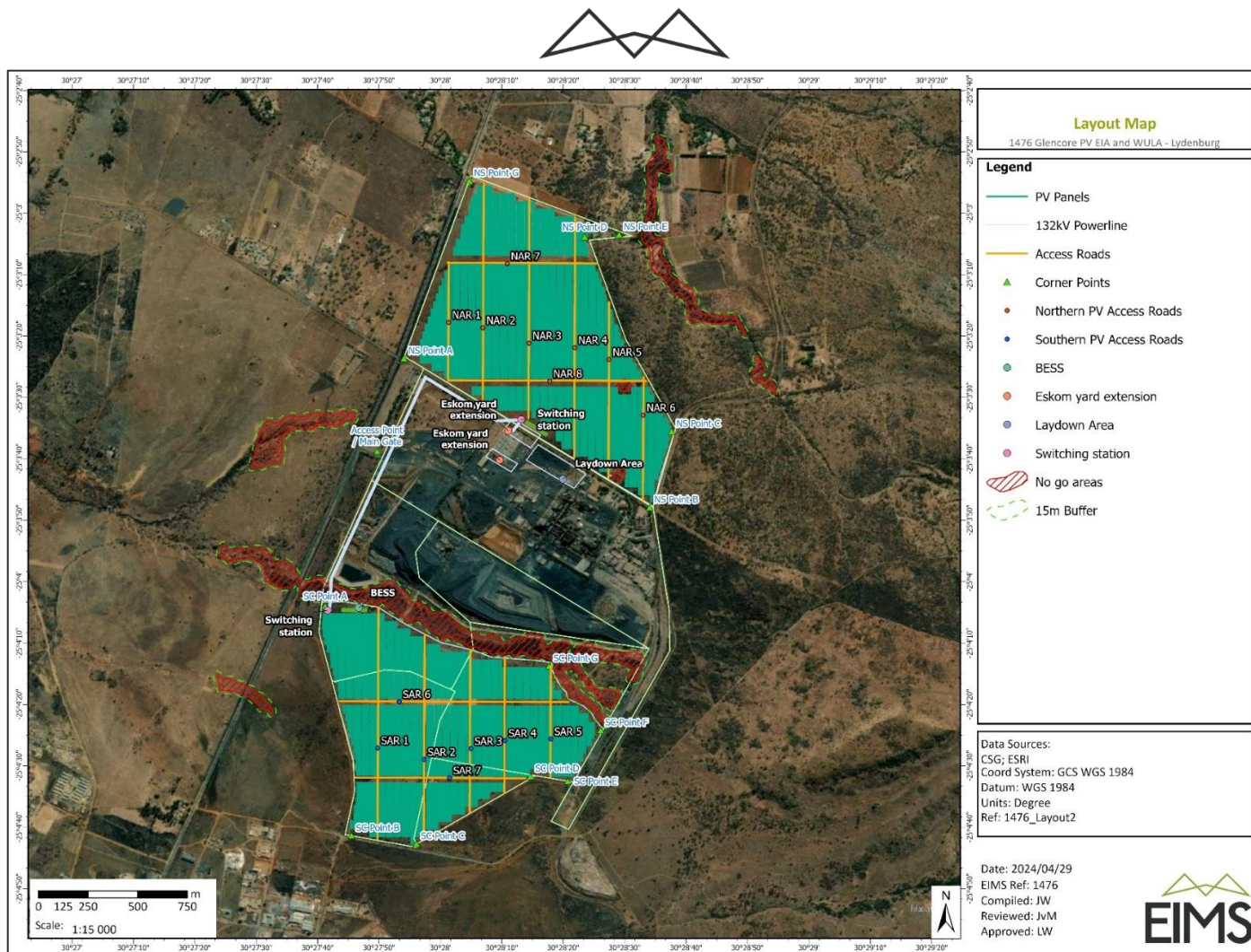


Figure 1: Layout Map of the Proposed PV Facility

The purpose of this report is to provide, identify, describe, and analyse the anticipated positive and negative impacts (during the different phases of the project – planning and design, construction, operational, and decommissioning phases) that the proposed 300MW Solar Photovoltaic (PV) Energy Generation Facility could have on the socio-economic environment and communities within the surrounding area. This will guide decision-makers to identify opportunities for the project to contribute positively to local development and propose measures to mitigate the negative impacts.

A Social Impact Assessment (SIA) is therefore imperative to predict the potential social risk and impacts before the onset of the development. It aims to identify how the project will affect the local communities, including social structures, employment, livelihoods, and well-being of people. A SIA will also ensure that affected communities and stakeholders are consulted and their concerns are considered in the project's planning and decision-making process.

Environmental Impact Management Services was appointed by the applicant to manage the Environmental Impact Assessment and Water Use License for the project. EIMS appointed Equispectives Research and Consulting Services to perform a Social Impact Assessment for the proposed project.

2.1 Need and Desirability of Photovoltaic Facility Project

The proposed PV facility will allow for favourable economic impacts on the local economy. The construction phase will create approximately 200 (20 skilled and 180 unskilled) new employment opportunities (excluding indirect opportunities). Around 20 unskilled opportunities will be created in the operational phase with 10 skilled employees to be recruited.



The main aim of the proposed PV facility is to enable the applicant to provide electricity for their own use at the smelter as well as allowing them to reduce their carbon footprint. Based on the analysis provided, it can be concluded that the proposed PV facility is in accordance with the national energy planning policy with respect to renewable energy which has links to climate change, environmental impact and energy security/flexibility considerations. Moreover, the concept of a solar energy project is in line with local economic planning documents. Considered as a whole, the IDP and SDF recognise the importance of integrated and diversified development.

Current energy supply in South Africa is primarily coal-based and, although these resources will last for more than a century if used at current rates, large power plants will need to be replaced over the next 30 years. Coal and other fossil fuels, including oil, produce carbon dioxide when burned to produce energy. It is now widely accepted that climate change, partially caused by human-generated carbon dioxide, is to blame for the higher-than-usual incidence of extreme weather events (e.g., storms, droughts, melting polar ice caps). Local air pollution is strongly related to energy supply options, with coal and oil products being major contributors to urban and rural air pollution. One of the primary reasons for promoting renewable energy developments is the desire to make South Africa compliant with international treaties regarding climate-change effects. Renewable energy options are a sustainable energy supply option that can significantly reduce reliance on fossil fuels. Other advantages include employment creation, proximity to point-of-use, minimal demand for water and less reliance on concentrated sources of energy. Greater use of renewable energy would also reduce South Africa's economic vulnerability to the variable costs of imported fuels. International and local communities are increasingly trying to find ways to shift economies towards greater reliance on renewable energy. Greater uptake of renewable energy would furthermore reduce the global risk of climate change, one of the factors taken into account in designing the conservation network in South Africa.

3 SCOPE OF WORK

The scope of work for this Social Impact Assessment included the following key components:

- A comprehensive review of existing literature and data on the Lydenburg Smelter and its surrounding community, including demographic information, economic conditions, and community concerns. This was done to establish an understanding of the baseline social and socio-economic conditions in the project area.
- Field visit to collect qualitative data through key stakeholder interviews with landowners and local residents.
- An in-depth analysis of the potential social impacts - both positive and negative of the solar PV facility - focusing on effects on land use, household structure and safety, employment, economic activity, and the environment.
- The identification of mitigation measures for negative impacts, along with recommendations for enhancing the positive outcomes of the port's expansion for the community.
- Preparation of a Social Impact Assessment Report that details the findings, recommendations, and conclusions from the assessment.

4 METHODOLOGY

The scientific method, as applied to social sciences, includes a variety of research approaches, tools, and techniques, for collecting and analysing qualitative or quantitative data. Qualitative and quantitative data collection and analysis techniques were applied (using primary and secondary data sources) to successfully undertake the SIA. Qualitative methods were utilised to collect primary data through interviews with key stakeholders consultation and quantitative methods were used for secondary data collection. This section will start with a brief explanation of the processes that have been used in this study.



4.1 INFORMATION BASE

The information used in this study was based on the following:

- A literature review (see list provided in the References);
- Professional judgement based on experience gained with similar projects; and
- Interviews meetings with affected community groups and stakeholders.

4.2 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations were relevant:

- Not every individual in the community could be interviewed therefore only key people in the community were approached for discussion during the impact assessment phase. Additional information was obtained using existing data.
- Due to the volatile relationship between the communities and the mines in the area, community consultation had to be approached in a cautious and sensitive manner.
- The social environment constantly changes and adapts to change, and external factors outside the scope of the project can offset social changes, for example changes in local political leadership, droughts, or economic conditions. It is therefore difficult to predict all impacts to a high level of accuracy, although care has been taken to identify and address the most likely impacts in the most appropriate way for the current local context within the limitations. In addition, it is also important to manage social impacts for the life of the project, especially in the light of the changing social environment.
- Social impacts can be felt on an actual or perceptual level, and therefore it is not always straightforward to measure the impacts in a quantitative manner.
- Social impacts commence when the project enters the public domain. Some of these impacts will occur irrespective of whether the project continues or not, and other impacts have already started. These impacts are difficult to mitigate and some would require immediate action to minimise the risk.
- There are different groups with different interests in the community, and what one group may experience as a positive social impact, another group may experience as a negative impact. This duality will be pointed out in the impact assessment section of the report.
- Social impacts are not site-specific, but take place in the communities surrounding the proposed development.

4.3 SOCIAL IMPACT ASSESSMENT MODEL

The purpose of an impact assessment is to identify and evaluate the likely significance of potential impacts on specific receptors and resources, using defined assessment criteria. The assessment should also describe measures to avoid, minimise, reduce, or compensate for any adverse environmental effects, and report on the significance of residual impacts that remain after mitigation efforts have been taken.

The theoretical model used for this impact assessment was developed by Sloodweg, Vanclay and Van Schooten and presented in the International Handbook of Social Impact Assessment (Vanclay & Becker, 2003). This model identifies pathways by which social impacts may result from proposed projects. The model differentiates between social change processes and social impacts, where the social change process is the pathway leading to the social impact. Detail of how the model works is not relevant to this study, but it is important to understand the key concepts, which will be explained in the following paragraphs.



Social Change Process: Social change processes are set in motion by project activities or policies. A social change process is a discreet, observable, and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts (Vanclay, 2003). If managed properly, however, these changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place (Vanclay, 2003). Social change processes can be measured objectively, independent of the local context. Examples of social change processes are an increase in the population, relocation, or the presence of temporary workers.

For the purpose of this report, the following social change process categories were considered:

- Demographic processes;
- Economic processes;
- Geographic processes;
- Institutional and legal processes;
- Emancipatory and empowerment processes;
- Socio-cultural processes; and
- Other relevant processes.

Social Impact Assessment: According to (Vanclay, 2002) a Social Impact Assessment (SIA) is defined as “*the process of analysing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment*”. The primary goal of a Social Impact Assessment (SIA) is to provide an opportunity for Interested and Affected Parties — such as government bodies, developers, local communities, NGOs, and civil society groups, to gain a clear understanding of the project and to identify potential social impacts that may result from it (DEADP, 2007).

A social impact is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Therefore, two types of social impacts can be distinguished:

Objective social impacts – i.e. impacts that can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety.

Subjective social impacts – i.e. impacts that occur “in the heads” or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life.

It is important to include subjective social impacts, as these can have far-reaching consequences in the form of opposition to, and social mobilisation against the project (Du Preez & Perold, 2005).

For the purpose of this SIA, the following Social Impact Assessment categories were investigated:

- Health and social well-being;
- Quality of the living environment;
- Economic impacts and material well-being;
- Cultural impacts;
- Family and community impacts;
- Institutional, legal, political and equity impacts; and



- Gender impacts.

Relevant criteria for selecting significant social impacts included the following:

- Probability of the event occurring;
- Number of people that will be affected;
- Duration of the impact;
- Value of the benefits or costs to the impacted group;
- Extent to which identified social impacts are reversible or can be mitigated;
- Likelihood that an identified impact will lead to secondary or cumulative impacts;
- Relevance for present and future policy decisions;
- Uncertainty over possible effects; and
- Presence or absence of controversy over the issue.

For the purpose of this study, the model was adapted to suit the South African context, and where processes and impacts were not relevant to the study, it was omitted. Each category has a number of sub-categories, which also have been investigated. The Equator Principles, International Finance Corporation Performance Standards and World Bank Environmental, Health and Safety guidelines were consulted in the writing of this report and the mitigation suggested adheres to these requirements.

5 LEGISLATIVE FRAMEWORK

Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development.

Policy review provides an insight into government socio-economic objectives, plans, and applicable legislature. This assists in determining the importance and alignment of the project regarding the developmental objectives of various government spheres.

5.1 NATIONAL ENERGY ACT (ACT NO 34 OF 2008)

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

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

5.2 WHITE PAPER ON THE ENERGY POLICY OF THE REPUBLIC OF SOUTH AFRICA

Investment in renewable energy initiatives is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard the document notes:

“Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential”.

“Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future”.



The support for renewable energy policy is guided by a rationale that South Africa has a range of renewable resources, particularly solar and wind. In addition, renewable applications are the cheapest energy service in many cases; more so when social and environmental costs are considered.

Government policy on renewable energy is concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential, and compared to investments in other energy supply options; and
- Addressing constraints on the development of the renewable industry.

The White Paper acknowledges that South Africa has neglected the development and implementation of renewable energy applications, even though the country's renewable energy resource base is extensive, and many appropriate applications exist. The White Paper further notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:

- Minimal environmental impacts in operation in comparison with traditional supply technologies; and
- Generally lower running costs, and high labour intensities.

Disadvantages include:

1. Higher capital costs in some cases.
2. Lower energy densities; and
3. Lower levels of availability, depending on specific conditions, especially with sun and wind-based systems.

5.3 WHITE PAPER ON RENEWABLE ENERGY

The White Paper on Renewable Energy (November 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa. The White Paper notes that while South Africa is well endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol, Government is resolute to realise the country's commitment to reducing greenhouse gas emissions¹. Therefore, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate. South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National

¹ The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (https://unfccc.int/kyoto_protocol/.)



Energy Act). Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels.

5.4 INTEGRATED ENERGY PLAN (2016)

The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives were identified, namely:

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

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

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

The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of renewable energy, the document refers to wind and solar energy. The document does, however, appear to support solar over wind noting that solar PV and CSP with storage present excellent opportunities to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Solar technologies also present the greatest potential for job creation and localisation. Incentive programmes and special focused programmes to promote further development in the technology, as well as solar roll-out programmes, should be pursued.

The IEP notes that a diversified energy mix with a reduced reliance on a single or a few primary energy sources should be pursued. In terms of renewable energy, wind and solar are identified as the key options.



5.5 INTEGRATED RESOURCE PLAN (2019)

The NDP envisages that, by 2030, South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates, is socially equitable through expanded access to energy at affordable tariffs and that is environmentally sustainable through reduced pollution.

The Integrated Resource Plan (IRP) 2010–2030, promulgated in March 2011, updated in October 2019, represents an electricity infrastructure development plan for South Africa based on least-cost supply and demand balance considering security of supply and the environment (minimize negative emissions and water usage). Since the promulgated IRP 2010–2030 in 2011, a total 6 422MW under the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has been procured, with 3 272MW operational and made available to the grid. At the time of promulgation, it was envisaged that the IRP would be a “living plan” to be revised by the then Department of Energy (DoE) frequently. Since the promulgation of the IRP in March 2011 several assumptions have changed, including electricity demand projection, Eskom’s existing plant performance, as well as new technology costs. The 2019 IRP notes that the Gross Domestic Product (GDP) for the period 2010–2016 was significantly lower than the GDP projections assumed in the promulgated IRP 2010–2030. The expected electricity demand as forecasted in the promulgated IRP 2010–2030 did therefore not materialise and the forecast was updated accordingly to reflect this. In so doing the 2019 IRP assesses the electricity demand for the period 2017–2050. Three demand scenarios were assessed, namely an upper, median, and lower forecast based on varying GDP growth rates. The median scenario also considered the assumed change in the structure of the economy where energy-intensive industries make way for less intensive industries. The lower scenario considered lower economic growth linked to possible downgrading decisions by rating agencies. The 2019 IRP also considered the externality costs associated with Green House Gas (GHG) emissions, specifically the negative externalities-related air pollution caused by pollutants such as nitrogen oxide (NO_x), sulphur oxide (SO_x), particulate matter (PM) and mercury (Hg). These externality costs reflect the cost to society because of the activities of a third party resulting in social, health, environmental, degradation or other costs.

The scenarios were analysed in three timeframes, namely 2017–2030, 2031–2040 and 2041–2050. The period 2021–2030 is termed a “medium-to-high” period of certainty, with new capacity requirements driven by the decommissioning of old Eskom power plants and marginal demand growth. While demand and technology costs are likely to change, the decommissioning of old plants will result in the requirements for additional capacity.

The period 2031–2040 is termed an “indicative period”, as the uncertainty regarding the assumptions begins to increase. The output for this period is relevant to the investment decisions of the 2021–2030 period because it provides information needed to understand various future energy mix paths and how they may be impacted by the decisions made today. The period 2041–2050 is even more uncertain than the period before 2040.

The IRP 2019 Report concludes that based on the findings of the scenario’s analysis, the scenario of RE without annual build limits provides the least-cost path up to 2050. The document notes that a detailed analysis of the appropriate level of penetration of RE in the South African national grid is required to better understand the technical risks and mitigations required to ensure security of supply is maintained during the transition to a low-carbon future.

5.6 NATIONAL DEVELOPMENT PLAN

On 11 November 2011 the National Planning Commission released the National Development Plan: Vision for 2030 (NPC, 2012) for South Africa and it was adopted as government policy in August 2012. The National Development Plan (NDP) was undertaken to envision what South Africa should look like in 2030 and what action steps should be taken to achieve this (RSA, 2013). The aim of the NDP is to eliminate poverty and reduce inequality by 2030.

The NDP identifies nine key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the nine key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.



5.7 SUSTAINABLE DEVELOPMENT GOALS

All 189 Members States of the United Nations, including South Africa, adopted the United Nations Millennium Declaration in September 2000 (UN, 2000). The commitments made by the Millennium Declaration are known as the Millennium Development Goals (MDGs), and 2015 was targeted as the year to achieve these goals. The United Nations Open Working Group of the General Assembly identified seventeen sustainable development goals, built on the foundation of the MDGs as the next global development target (UN, 2014).

The sustainable development goals include aspects such as ending poverty, addressing food security, promoting health, wellbeing and education, gender equality, water and sanitation, economic growth and employment creation, sustainable infrastructure, reducing inequality, creating sustainable cities and human settlements, and addressing challenges in the physical environment such as climate change and environmental resources (UN, 2014). These aspects are included in the NPD, and it can therefore be assumed that South Africa's development path is aligned with the international development agenda regarding renewable energy.

5.8 NATIONAL INFRASTRUCTURE PLAN (2050)

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The plan also supports the integration of African economies. The Government plan to invest significantly in infrastructure development in South Africa. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing, and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools, and dams will contribute to improved economic growth.

South Africa's energy demand is projected to more than double by 2050, requiring the installed generation capacity to be expanded from 53 GW (as of 2018) to between 133 GW and 174 GW by 2050. Part of the strategy for achieving this includes transitioning away from fossil fuels, with new installed capacity primarily consisting of wind and solar. The transition away from fossil fuels needs to be done in a measurable, just and sustained manner that ensures that stakeholders (business, workers or communities etc.) involved in fossil fuels are supported through the transition. As part of the National Infrastructure Plan, 18 strategic integrated projects (SIPs) were identified. These SIPs cover social and economic infrastructure across all nine provinces. Four of the SIPs relate to energy, namely:

1. SIP 8, which includes green energy projects, including procurement of renewable energy under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).
2. SIP 9, which includes the expansion of electricity generation capacity, with attention to reducing the carbon footprint being given.
3. SIP 10, which includes the expansion of electricity transmission and distribution network; and,
4. SIP no 20, which includes the Emergency or Risk Mitigation Power Purchase Procurement Programme
5. and the Embedded Generation Investment Programme (EGIP) (400 MW).

6 INTERNATIONAL STANDARDS

International industry standards aimed at sustainable development and social justice specifically have become abundant in the last decade. Many industries use these standards as indicators for best practice. The discussion below highlights only a few of these standards.



6.1 INTERNATIONAL SOCIAL PERFORMANCE STANDARDS/INITIATIVES

There is a profusion of global initiatives aiming at assisting companies to make their operations more sustainable. Human rights, environmental protection and social justice are gaining support from industry.

Many of the multi-lateral funding agencies such as the World Bank have social standards that they must uphold. The standards relevant to the social environment are the following:

1. Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
2. Environmental and Social Standard 2: Labour and Working Conditions
3. Environmental and Social Standard 4: Community Health and Safety
4. Environmental and Social Standard 5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
5. Environmental and Social Standard 8: Cultural Heritage
6. Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure (World Bank, 2016)

Issues such as gender, climate change, water, and human rights are addressed across the standards. Environmental and social risks and impacts must be managed by using an Environmental and Social Management System. The standard applies to all the activities funded by the World Bank for the duration of the loan period.

6.2 INTERNATIONAL PRINCIPLES FOR SIA

The practice of SIA is guided by a set of *International Principles* that defines the core values, fundamental principles for development and principles specific to SIA practice (Vanclay, 2003). When the *International Principles* are considered, it is clear that SIA aspires to more than just assessing the impact of development on people and includes sustainable outcomes. The following specific principles refer to these sustainable outcomes (Vanclay, 2003):

1. Development projects should be broadly acceptable to the members of those communities likely to benefit from, or be affected by, the planned intervention.
2. The primary focus of all developments should be positive outcomes, such as capacity building, empowerment, and the realisation of human and social capital.
3. The term “environment” should be defined broadly to include social and human dimensions, and in such inclusion, care must be taken to ensure that adequate attention is given to the realm of the social.
4. Equity considerations should be a fundamental element of impact assessment and of development planning.
5. There should be a focus on socially sustainable development, with the SIA contributing to the determination of best development alternative(s) – SIA (and EIA) has more to offer than just being an arbiter between economic benefit and social cost.
6. In all planned interventions and their assessments, avenues should be developed to build the social and human capital of local communities and to strengthen democratic processes.
7. Local knowledge, experience and acknowledgement of different cultural values should be incorporated in any assessment.
8. Development processes that infringe the human rights of any section of society should not be accepted.

In addition to the *International Principles*, the international SIA community produced a document titled: *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects* (Vanclay, Esteves, Aucamp & Franks,



2015) in April 2015. The purpose of this document is to provide advice to various stakeholders (including proponents) about good practice SIA and social impact management (Vanclay et al., 2015). This document aspires to provide a much-needed benchmark for SIA practice across the globe.



7 DESCRIPTION OF THE RECEIVING ENVIRONMENT

7.1 DESCRIPTION OF THE PROJECT AREA

The proposed Solar PV facility is located in Wards 12 and 13 of Thaba Chweu Local Municipality (LM) in Ehlanzeni District Municipality, Mpumalanga Province. Thaba Chweu LM is one of the four municipalities of the Ehlanzeni District Municipality (EDM) of Mpumalanga province. Thaba Chweu LM is located on the far north-eastern part of the district municipality. It shares its northern boundaries with the Limpopo province. Ward 12 and 13 share a border and are adjacent to each other, close to Mashishing township (See the Locality Map in Figure 2 below). For the baseline description of the area, data from Census 2011, Community Survey 2016, Census 2022, municipal IDP, and websites were used. As the 2022 Census data for Ward profiles is not yet available, the report relied on the 2011 Census data to analyse and provide context for Ward-specific information.

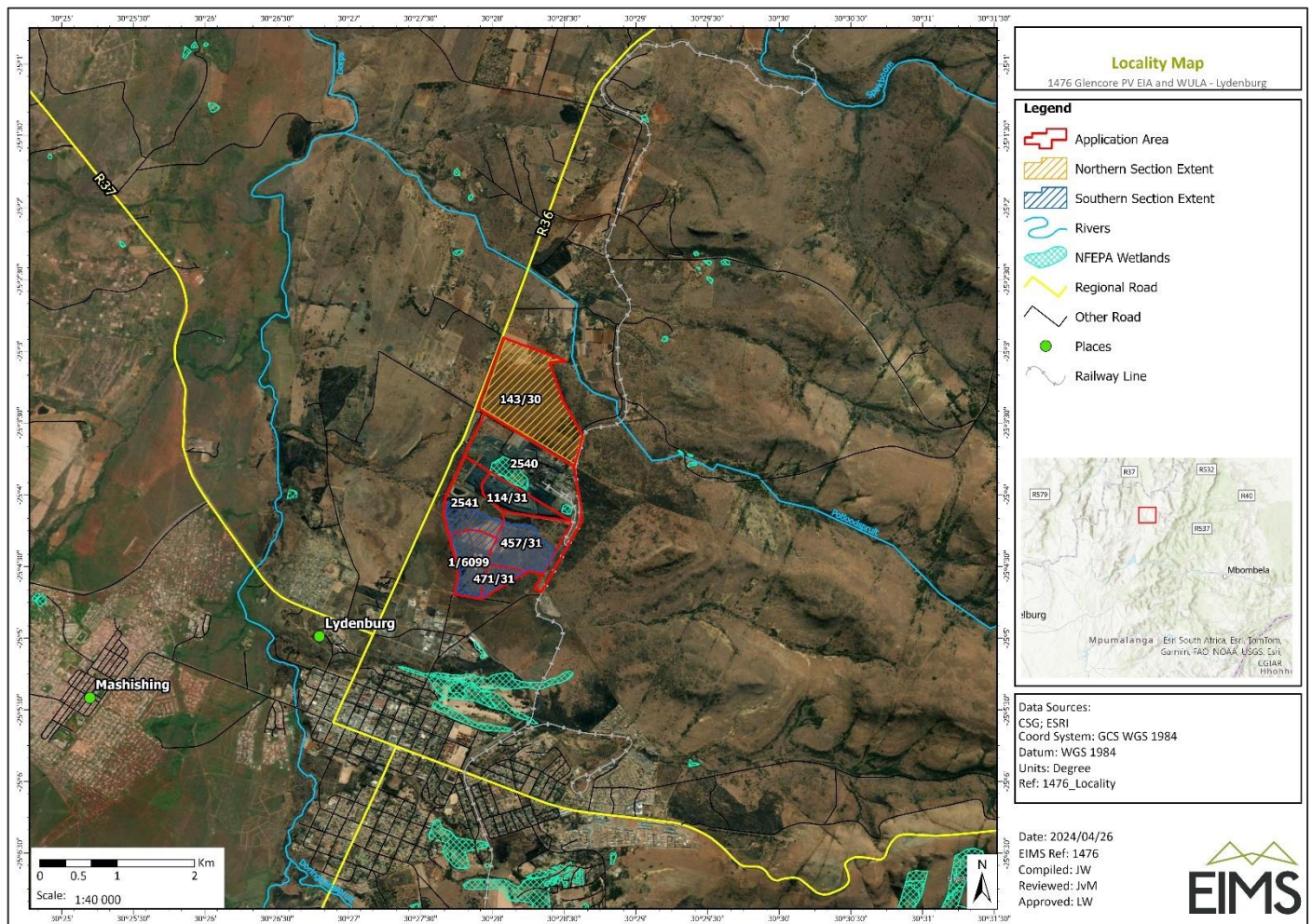


Figure 2: Project Area Locality Map

Mpumalanga Province

The project area is situated in Mpumalanga Province, which derives its name from the Zulu word meaning “place where the sun rises.” Mpumalanga is the second-smallest province in South Africa, covering a geographical area of approximately 76,544.3 km², accounting for 1.4% of the country's total land surface. Positioned in the north-eastern region of South Africa, Mpumalanga shares its eastern borders with the Kingdom of Eswatini (formerly Swaziland) and Mozambique. Despite its relatively small size, Mpumalanga plays a significant role in the country's economic and environmental landscape.



Mpumalanga Province is administratively divided into three district municipalities. These districts are further subdivided into 17 local municipalities. The City of Mbombela serves as the provincial capital and functions as the administrative and economic hub of the Lowveld region. Other key cities and towns within Mpumalanga include eMalahleni (formerly known as Witbank), Middelburg, Standerton, eMkhondo (formerly Piet Retief), Malalane, Ermelo, Barberton, and Sabie. The province shares its eastern borders with both Swaziland and Mozambique. The primary economic sectors in the region encompass mining, manufacturing, energy, and agriculture. Tourism and agri-processing are identified as potential growth sectors with significant development opportunities. The province has an abundance of coal reserves and harbours several major coal-fired power stations in South Africa. Mpumalanga Province is home to a well-established heavy industrial sector, which forms a key component of the long-standing Highveld industrial complex. The province has a robust commercial agricultural sector. Together, these industries have been significant drivers of economic growth in the region since 2011.

Ehlanzeni District Municipality

Ehlanzeni District Municipality (EDM) is situated in the northeastern region of Mpumalanga Province, and it is one of the province's three district municipalities. It is bordered to the east by Mozambique and Swaziland, to the south by Gert Sibande District, to the north by Mopani and Sekhukhune Districts of Limpopo, and to the southwest by Nkangala District Municipality. EDM make up a third of the provinces geographical area. The EDM includes four local municipalities namely Bushbuckridge, City of Mbombela, Nkomazi and Thaba Chweu. The district municipality covers an area of 27 895km². The district is strategically situated with three border gates connecting to Swaziland and Mozambique - Matsamo, Komatipoort, and Mananga. This connectivity facilitates significant movement of people between the neighbouring countries and Gauteng, thereby serving as a catalyst for the district's and provinces economic activity (www.municipalities.co.za). The existing spatial development initiatives within the EDM that are of regional and local significance consist of the Maputo Development Corridor Spatial Initiative, the Nelspruit-Phalaborwa Spatial Development Initiative (SDI), the Tourism and Biodiversity Corridor, and the Limpopo Transfrontier Park.

The Ehlanzeni District Municipality (EDM) stands out as a premier tourist destination, offering renowned attractions such as God's Window, Mac Mac Falls, Bourke's Luck Potholes, and the Kruger National Park. The district also features a rich historical heritage, with sites, villages, old wagon routes, and monuments that commemorate significant events and notable figures who once journeyed through the area in pursuit of adventure and fortune (Corporate Governance & Traditional Affairs).

Thaba Chweu Local Municipality

Thaba Chweu Local Municipality is one of the four municipalities of the Ehlanzeni District Municipality. Thaba Chweu LM is located in the far north-eastern part of the district municipality. Its northern boundaries are shared with the province of Limpopo. The municipality is situated on the Lowveld escarpment of the Mpumalanga Province at an average elevation of 1400m above sea level. The terrain features altitudes ranging from 600 to 2,100 meters. The Thaba Chweu LM borders with Bushbuckridge Local Municipality on the eastern part, Greater Tubatse Local Municipality on the northern part, and Mbombela Local Municipality on the Southern part. The Local Municipality is made up of 14 wards and the prominent towns within the municipality are Mashishing (previously Lydenburg) the oldest town in the province, Graskop, and Sabie.

Ward 12 and 13

Wards 12 and 13 of the Thaba Chweu Municipality are situated adjacent to each other, with the proposed development located closer to Ward 12, where the town of Lydenburg is found. Ward 12 lies along the Sterkspruit River and serves as a gateway to the Drakensberg Mountains' escarpment. Its strategic location connects major routes between the Lowveld and Highveld regions. Historically, both wards have thrived on agriculture, particularly the production of livestock, maize, and vegetables, with agriculture continuing to play a role in the local economy. However, Ward 12 has experienced significant economic growth due to mining activities, particularly in platinum,



chrome, and gold, which have spurred rapid urbanization and industrial development. In contrast, Ward 13 remains more rural, characterized by a larger number of farm portions and less urbanisation. It is the least populated of the two wards, with much of the land likely still dedicated to agricultural use (Statistics South Africa, 2011).

7.2 DESCRIPTION OF POPULATION

The baseline population description is presented at three levels: provincial, district, and local. A comprehensive understanding of the impacts requires an analysis of the differences and similarities across these levels. The baseline description will focus primarily on Mpumalanga Province, Ehlanzeni District Municipality, Thaba Chweu Local Municipality, and Wards 12 and 13 of Thaba Chweu Local Municipality.

The census in South Africa is conducted as a de facto census which entails that individuals are counted according to the location where they were situated on the census reference night. The baseline socio-economic description will use data from 2022 Census, 2016 Community Survey and 2011 Census. The 2022 Census and 2011 Census data are both de facto census. For Census 2022, the reference night was 2 February 2022, while for Census 2011, it was 9 October 2011. The data presented should be regarded as indicative of the population characteristics within the area and not as definitive or absolute figures.

The 2022 Census data, released by Statistics South Africa (Stats SA) on 10 October 2023, is limited in scope, providing information only up to the local municipality level, without details at the ward level. As a result, the socio-economic description will be supplemented with data from the 2011 Census and the 2016 Community Survey to ensure a more comprehensive understanding.

One of the most significant findings of Census 2022 is the unusually high undercount, with 31% of individuals and 30% of households not captured. While census undercounts are generally expected, an acceptable margin being around 5% - the extent of this undercount could potentially set a new international record (www.wits.ac.za). Although the census data remains reliable at the aggregate level, there may be limitations in its accuracy at sub-national and particularly sub-provincial levels.

7.2.1 POPULATION AND HOUSEHOLD SIZE

The 2022 Census report indicates that the population of South Africa is currently recorded to be 62 027 503 showing an increase of about 19.8% since 2011 with a 1.8% growth rate. The population composition by sex indicates the population is composed of 51.5% females and 48.5% males making it a relatively female-dominant population. The average household size in South Africa is estimated to be about 3.5, a slight drop from 3.6 in 2011. The transition to smaller families could be linked to economic pressure and factors, such as higher costs of living or unemployment, which could influence family members to split into smaller households, reducing the average size.

The population of Mpumalanga province has increased from 4 039 939 in 2011 to 5 143 324 in 2022. This shows that the population increased by approximately 27.3% between 2011 and 2022, with an average 2.2% annual growth rate. Ehlanzeni District population increased from 1 688 615 in 2011 to 2 270 897 people in 2022, an increase of over half a million people. This population increase translates to a growth rate of 2.96 % between the two time periods. The Ehlanzeni DM population increase was recorded as the largest increase in population among Mpumalanga districts and increased since 2011 to 44.2% of the entire province's population in 2022. The population of Thaba Chweu LM also steadily increased from 98 387 in 2011 to 109 223 in 2022. This means the population of Thaba Chweu LM grew by approximately 11% between 2011 and 2022, with an average annual rate of about 1.0% per year from 2011 to 2022. Thaba Chweu LM is considered the least populous local municipality in the Ehlanzeni DM, with the City of Mbombela remaining the most populous. See **Table 2** for population growth and percentage.



Table 2: Population growth rate and percentage (Source: Statistics South Africa Census, 2022, 2011)

Area	Population (2011)	Population (2022)	Growth Percentage	Annual Growth Rate (%)
Mpumalanga Province	4 039 939	5 143 324	27.3%	2.2%
Ehlanzeni DM	1 688 615	2 270 897	34.6%	2.9%
Thaba Chweu LM	98 387	109 223	11.02%	1.0%

The number of households in the project areas has increased from all geographical areas of interest. The number of households in Ehlanzeni District increased from 445 079 in 2011 to 560 370 in 2022, reflecting a growth of 115 291 households and an average annual growth rate of 2.2%. The Thaba Chweu LM's average household size declined from 2.9 people per household recorded in the 2011 Census to 2.5 in 2022 (

). This decrease in average household size may indicate out-migration in Thaba Chweu as people might be relocating to other economically active, urbanised districts or provinces in search of employment opportunities. In Mpumalanga Province, data shows a significant increase in the total number of households between 2011 and 2022, increasing g from 1 075 466 to 1 421 721. Despite this growth, the average household size decreased from 3.8 members to 3.6 members during the same period, which means there are more households, but with fewer members.

Table 3: Total household and average household size (Source: Statistics South Africa Census, 2022, 2011)

Area	Households (2011)	Households (2022)	Household Growth	Average Household Size (2011)	Average Household Size (2022)
Mpumalanga Province	1 075 466	1 421 721	346 255	3.8	3.6
Ehlanzeni DM	445 079	560 370	115 291	3.8	4.1
Thaba Chweu LM	33 352	43 295	9 943	2.9	2.5

7.2.2 POPULATION COMPOSITION, AGE, GENDER AND HOME LANGUAGE

The age-sex composition of a population is essential for understanding the distribution of different age groups, such as children, youth, adults, and the elderly, as well as the gender balance within the population. This information plays a pivotal role in the formulation of policies and the planning of programs. Having an insight into age-sex composition of the project area is critical also assessing dependency ratios, forecasting future demographic trends, and identifying potential needs for targeted services. This demographic insight is crucial for developing strategies that address the specific requirements of different age groups and genders, ensuring equitable resource allocation and informed decision-making.

The gender composition across the provincial, district, and local municipality levels, shows that the female population is greater than the male population (**Table 4**). However, there are distinct sex ratio variations on the ward level. The sex ratio is a measure that shows the number of males compared to females in a population, it is expressed as the number of males for every 100 females. Ward 12 has an equal distribution of male and female population, while Ward 13 has a male-biased population. A male-biased population is commonly influenced by the presence industries or economies that require physical labour such as mining and infrastructure sectors which are likely to employ more men hence drawing a higher male population into the Ward. The 2022 Census has not yet released gender composition



on a Ward level. The data presented on the Ward level might have changed due to the influence of socio-economic factors such temporary closure of the Lydenburg Smelter and the COVID-19 pandemic.

Table 4: Population by gender composition (Source: Statistics South Africa Census, 2022, 2011)

Area	Census Year	Male Population	Female Population	Total Population	Sex Ratio
Mpumalanga Province	2011	1 974 055	2 065 883	4 039 938	95.6
	2022	2 469 794	2 673 530	5,143,324	92.4
Ehlanzeni DM	2011	803 403	885 212	1 688 615	90.8
	2022	1 071 299	1 199 598	2 270 897	89.3
Thaba Chweu LM	2011	50 415	47 972	98 387	105.1
	2022	54 093	55 129	109 222	98.1
Ward 12	2011*	4 147	4 147	8 294	100
Ward 13	2011*	1 421	1 163	2 584	122.2

Table 5 presents the project's area population by age group. The age distribution analysis of the areas under investigation indicates a significant predominance of youth, specifically individuals aged 15 to 34. This demographic has exhibited consistent growth across all evaluated levels. Notably, the population within the 15 to 34 age bracket has remained relatively stable between the 2011 and 2022 Census at the local municipality level. In contrast, the 35 to 59 age group has demonstrated a substantial increase across all levels of analysis. The increase in the 35 to 59 age group may reflect, migration trends, where individuals in this age range move to the area for job opportunities or family-related reasons, contributing to population growth.

Table 5: Thaba Chweu Population growth by age group (Source: Statistics South Africa, 2022, 2011)

Area	Census 2011					Census 2022				
	0 - 4	5 - 14	15 - 34	35 - 59	60+	0 - 4	5 - 14	15 - 34	35 - 59	60+
Mpumalanga	461 559	799 119	1 542 477	952 672	284 156	542 593	917 607	1 846 671	1 417 275	418 859
Ehlanzeni	202 259	356 206	658 250	360 713	111 188	257 432	428 044	814 308	606 101	164 972
Thaba Chweu	9 600	15 163	37 896	28 402	7 327	10 387	18 254	37 817	33 924	8 840

According to the 2022 Census data, the Ehlanzeni DM population is predominantly composed of individuals identifying as Black (African), who represent 94% of the total population. The second largest demographic group is White, accounting for 2.5% of the population. At the ward level, Ward 12 is predominantly composed of the White population, while Ward 13 has a significant Black African population. In the absence of the 2022 Census on race composition from a ward level, the 2011 data was utilised (**Table 5**).

Table 5: Population by race composition (Source: Statistics South Africa Census, 2022, 2011)

Area	Black African	Coloured	Indian/Asian	White
Mpumalanga Province	96.73%	0.84%	0.78%	4.9%
Ehlanzeni DM	94%	1.78%	0.60%	9.9%
Thaba Chweu LM	78%	2%	1%	9%
Ward 12	24%	3%	1	73%
Ward 13	85%	1%	0%	13%



The number of people speaking English and Afrikaans across the province has seen a significant decline, while speakers of African languages have increased. Between 2011 and 2022, English speakers decreased from 124 646 to 73 959, and Afrikaans speakers dropped from 289 446 to 160 938 as indicated in **Table 6**. This trend may reflect shifts in migration patterns, both inward and outward, among these language groups in the province.

Siswati is the most widely spoken language at a provincial and district level. Within the project area, in Ward 12 – Afrikaans has been indicated as the home language for the majority of the population, while Sepedi is the dominant language in Ward 3. In communication with local communities, consideration should be given to the predominant home languages spoken within the area. Based on the linguistic profile of the region, it is recommended that communication be conducted in both Afrikaans and Sepedi to ensure inclusivity and effective engagement.

Table 6: Language distribution (Source: Statistics South Africa Census, 2022, 2011)

Language	Afrikaans	English	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga	Other
Area	2011											
Mpumalanga	289 446	124 646	403 678	48 993	965 253	372 392	138 559	71 713	1 106 588	12 140	416 746	39 639
Ehlanzeni DM	66 298	42 712	4 191	2 830	37 199	171 686	45 773	4 299	911 230	4 004	364 706	14 063
Thaba Chweu	14 510	4 069	2 238	524	7 288	34 425	6 911	847	16 982	386	5 213	1 546
Ward 12	3 105	270	24	13	361	182	39	43	43	4	30	55
Ward 13	298	111	7	5	123	1 055	384	14	346	10	190	5
	2022											
Language	Afrikaans	English	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga	Other
Mpumalanga	160 938	73 959	490 865	48 249	1 382 007	511 428	114 287	78 557	1 518 217	9 333	527 964	15 155
Ehlanzeni DM	41 154	29 181	3 231	3 260	47 113	237 507	42 360	2 830	1 286 775	2 660	476 320	6 797
Thaba Chweu	10 267	3 484	1 555	564	10 330	49 703	2 995	668	19 104	254	3 516	305
Ward 12	-	-	-	-	-	-	-	-	-	-	-	-
Ward 13	-	-	-	-	-	-	-	-	-	-	-	-

7.2.3 EDUCATION INDICATORS

The proportion of primary school attendance is high on both provincial and municipal levels as shown in **Table 7**. The proportion of secondary school attendance does not match that of primary school attendance which is indicative of high dropouts or students not attending secondary school

Table 7: Number of School Attendance Age (5 – 24 Years) (Source: Statistics South Africa Census, 2022)

Province, District and Municipality	Primary School (Grade R to 7)	Secondary School (Grade 8 to 12)	Tertiary/Post Matric (including University/University of Technology and Private Higher Education Institution)	Training College	Do not know	No schooling
Mpumalanga	731 642	607 666	46 788	12 162	56 805	427 599
Ehlanzeni	339 895	283 555	23 157	5 823	30 477	223 642
Thaba Chweu Local Municipality	14 413	10 967	758	131	1 127	5 227

The Table above indicates that a significant number of individuals have attempted to attend secondary school across all levels, but only a few have pursued a post-matric qualification. This indicates that the majority of the population in in project area lacks the skills required to participate in the skilled labour market.



7.2.4 EMPLOYMENT INDICATORS

Since the 2011 census, unemployment in the Thaba Chweu area has been on a consistent upward trend (meaning it has been negative). In 2011, the unemployment rate was recorded at 20.49%. By 2016, this figure had risen to 24.2%, and in 2020, it reached 30.9%, as shown in **Figure 3** below. It is important to consider the influence of COVID-19 pandemic on the surge in unemployment in 2020. This significant increase in unemployment suggests that the proposed Solar PV development is likely to be met with substantial interest from the local community, driven by the expectation that the project will create much-needed employment opportunities.

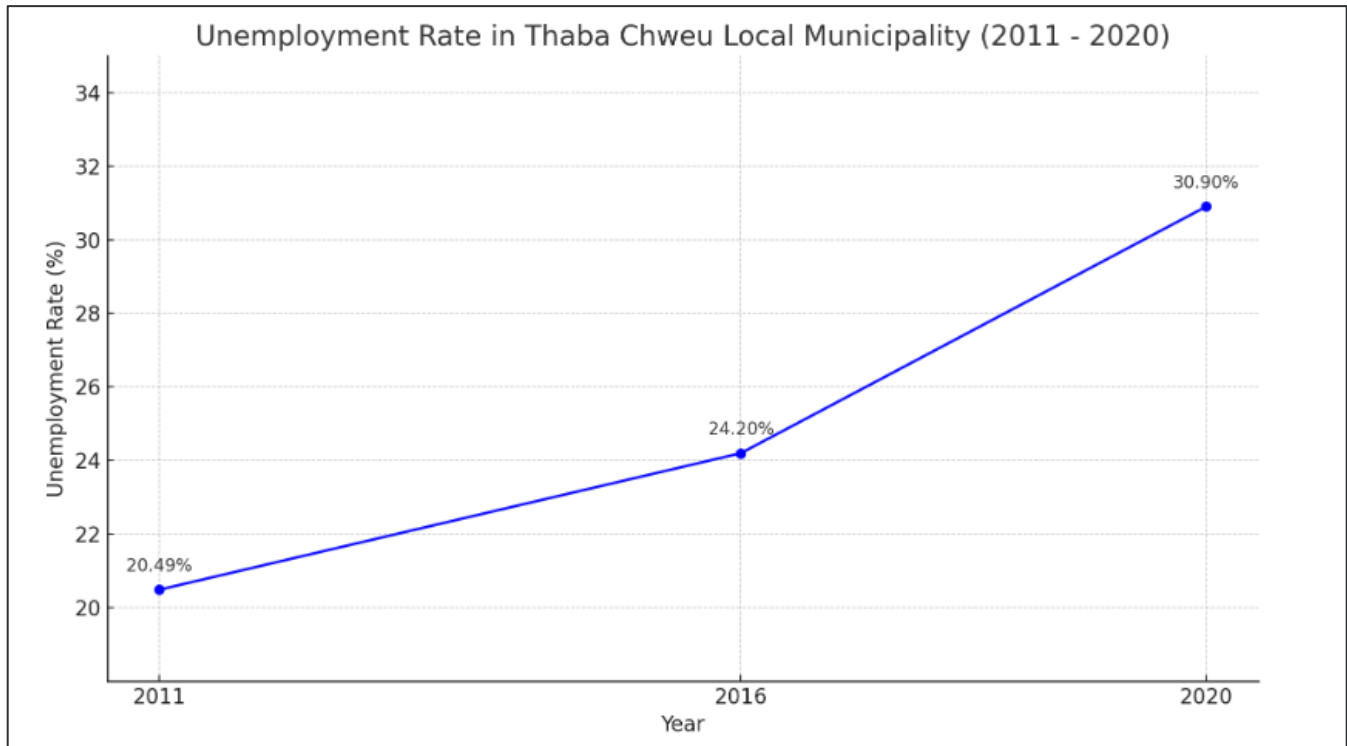


Figure 3: Thaba Chweu Unemployment Rate (Source:Thaba Chweu LM, IDP, 2023)

The figure below indicates that a significant portion of employment opportunities in the Thaba Chweu LM originates from the trade industry, with community services ranking second and agriculture third. The finance sector and private households also rank among the top five employers of local residents. The mining sector is amongst the lowest contributors to employment, despite the common belief that proximity to mining operations in Thaba Chweu would result in more job prospects.

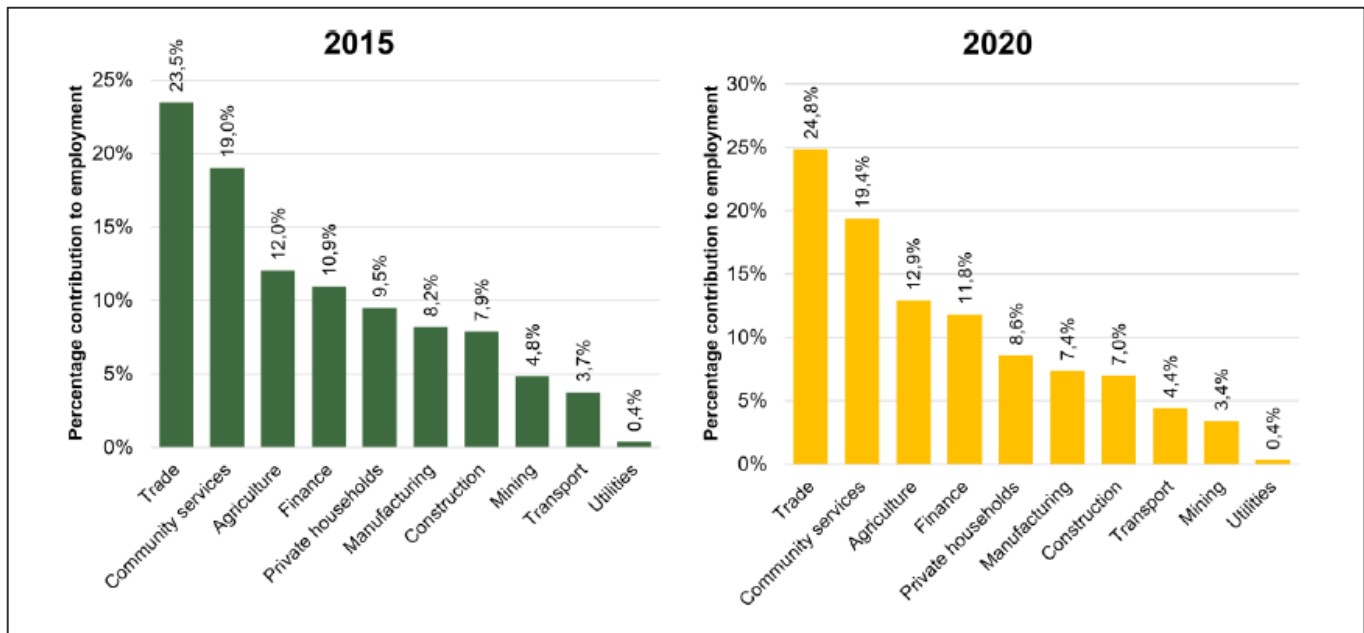


Figure 4: Thaba Chweu LM Employment by Sector (Source: Mpumalanga Department of Economic Development & Tourism, 2020)

Poverty is a multifaceted issue that extends beyond mere economic indicators, encompassing social and political dimensions as well. Defining poverty solely through measures such as income or expenditure risks oversimplifying its complexity. Those experiencing poverty often describe it as a multidimensional condition. The South African Multidimensional Poverty Index (SAMPI) (Statistics South Africa, 2014) captures this complexity by assessing poverty across multiple dimensions, including health, education, standard of living, and economic activity. It employs indicators such as child mortality, years of schooling, school attendance, access to heating, lighting, and cooking fuel, water availability, sanitation, housing quality, asset ownership, and unemployment to provide a comprehensive understanding of poverty. Census 2022 has not yet released data on poverty.

The Mpumalanga provincial poverty rate stood at 50.2% in 2020 (Ehlanzeni DM, IDP, 2023), within the same year the share of population in Ehlanzeni DM below the lower bound poverty line (LBPL) increased from 49.8% in 2016 to 55.2% in 2020. The lower-bound poverty line represents a stringent threshold, where individuals must make difficult choices between essential food and critical non-food items (Ehlanzeni DM, IDP, 2023). Ehlanzeni DM had the highest proportion of the population living below the LBPL compared to the other two districts in Mpumalanga. The recorded poverty might be propelled by the unemployment rate of the economically active group in Thaba Chweu LM.

7.2.5 HOUSING

On a local municipal level, most households live in formal dwellings, followed by informal dwellings; the least is traditional dwellings. The number of traditional dwellings has reduced both in Ehlanzeni DM and Thaba Chweu LM from the 2011 census records to the 2022 census records as indicated in the **Error! Reference source not found.** below highlighting that these areas becoming more urbanised. Both Ward 12 and 13 are characterised more by formal dwellings.



Table 8: Type of Dwelling (Source: Statistics South Africa Census, 2011, 2022)

2011											
Type of dwelling	House or brick/concrete block structure	Traditional dwelling/hut/structure	Flat or apartment in block of flats	Cluster house in complex	Townhouse (semi-detached house in complex)	Semi-detached house	Informal dwelling (shack; in backyard)	Informal dwelling (shack; not in backyard)	Room/flatlet on a property or larger dwelling	Caravan/tent	Other
Mpumalanga	847 708	48 526	17 506	3 773	5 812	3 495	38 274	78 532	8 757	1 144	7 555
Ehlanzeni	392 253	12 495	5 671	1 642	1 618	862	8 916	12 441	3 028	390	2 382
Thaba Chweu	22 830	1 316	563	81	148	254	3 247	3 543	576	44	321
Ward 12	839	5	19	13	16	41	6	3	3	0	7
Ward 13	802	68	16	3	4	11	57	146	28	8	24
2022											
Type of main dwelling	House or brick/concrete block structure	Traditional dwelling/hut/structure	Flat or apartment in a block of flats	Cluster house in complex	Townhouse (semi-detached house in complex)	Semi-detached house	Informal dwelling/shack in backyard	Informal dwelling/shack not in backyard (squatter/informal settlement)	Caravan/tent	Other	
Mpumalanga	1 257 238	25 109	11 556	1 414	2 921	4 492	31 823	50 605	221	3 322	
Ehlanzeni	519 792	6 910	3 889	750	797	1 157	5 885	9 460	100	1 218	
Thaba Chweu LM	33 598	324	912	79	110	57	1 229	2 448	14	112	-

The 2011 Census shows that most households in Ward 12 and 13 rented their houses (Table 9). The number of those who owned and fully paid their houses has gradually increased across all levels as indicated in the 2022 Census data.

Table 9: Tenure Status (shown in numbers Source: Statistics South Africa Census, 2022)

2011								
Area		Rented		Owned but not yet paid off	Occupied rent-free		Owned and fully paid off	Other
Mpumalanga		218 275		80 963	186 002		558 785	31 463
Ehlanzeni DM		63 098		22 823	79 335		268 257	11 574
Thaba Chweu LM		15 137		1 715	4 511		10 756	1 233
Ward 12		511		165	11		252	19
Ward 13		781		41	92		183	80
2022								
Area	Rented from private individual	Rented from other (including municipality and social housing	Owned but not yet paid off	Owned and fully paid off	Occupied rent-free	Other	Do not know	Unspecified



Mpumalanga	146 849	54 593	42 689	619 338	277 136	21 821	7 965	251 329
Ehlanzeni DM	41 582	9 104	15 501	294 340	101 422	8 993	2 981	86 447
Thaba Chweu LM	7 874	2 845	1 591	10 818	8 945	487	86	10 649

7.2.6 ACCESS TO BASIC SERVICES

At the municipal level, the majority of households within the Thaba Chweu Local Municipality obtain their water from regional or local water schemes (Table 10). However, the number of those with no piped water has increased on a local municipality level. Ward 12 and 13 Census 2011 data shows that the majority of households in the wards have access to piped water inside their dwelling.

Table 10: Access to piped water (Source: Statistics South Africa Census, 2022, 2011)

2011						2022		
Area	Mpumalanga	Ehlanzeni LM	Thaba Chweu LM	Ward 12	Ward 13	Mpumalanga	Ehlanzeni DM	Thaba Chweu LM
Piped (tap) water inside dwelling/institution	383 603	117 557	12 932	866	580	668 249	196 992	24 363
Piped (tap) water inside yard	387 166	139 558	13 672	85	342	456 444	200 320	12 336
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	98 808	57 949	3 594	1	162	68 762	31 913	1 961
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	35 565	20 545	841	3	26	23 126	13 948	1 010
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	13 285	10 438	236	1	3	11 029	7 157	401
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	21 859	14 326	348	0	6	8 571	5 683	336
No access to piped (tap) water	135 200	84 715	1 730	1	58	185 540	104 357	2 888

The 2011 Census data reveals that, at the ward level, the majority of households had access to flush toilets connected to a sewerage system as shown in Table 11. By 2022, Census data indicates a significant increase in access to flush toilets connected to a sewerage system across provincial, district, and local levels.

Table 11: Access to sanitation (Source: Statistics South Africa Census, 2022, 2011)

2011 Census						2022 Census			
	Mpumalanga	Ehlanzeni	Thaba Chweu	Ward 12	Ward 13		Mpumalanga	Ehlanzeni DM	Thaba Chweu LM
Flush toilet (connected to sewerage system)	444,741	95,856	21,421	943	843	Flush toilet connected to a public sewerage system	746,736	183,691	30,332



Flush toilet (with septic tank)	26,378	12,848	1,377	12	76	Flush toilet connected to a septic tank or conservancy tank	33,786	20,459	471
Chemical toilet	14,672	7,749	147	0	7	Chemical toilet	33,448	17,899	502
Pit toilet with ventilation (VIP)	129,656	63,478	1,653	1	31	Pit latrine/toilet with ventilation pipe (VIP)	152,037	89,291	2,694
Pit toilet without ventilation	364,208	210,985	7,135	0	157	Pit latrine/toilet without ventilation pipe	396,379	221,084	8,049
Bucket toilet	9,365	2,655	180	0	4	Bucket toilet (collected by municipality)	2,712	569	14
Other	18,518	6,229	459	0	7	None	24,026	12,151	748
None	67,949	45,287	980	1	53	Other	10,241	5,761	152
						Bucket toilet (emptied by household)	14,294	6,824	323
						Ecological toilet (e.g. urine diversion, enviroloo, etc)	8,061	2,642	10

Access to electricity is an indicator for assessing the proportion of households with energy services. It also serves as a measure to evaluate levels of poverty and vulnerability, as impoverished households often lack access to electricity. The majority of the households in Wards 12 and 13 had electricity as the preferred source of lighting in 2011. Ward 13 data indicates that candles are the second most used energy source for lighting as indicated in Table 12. According to the 2022 Census, the proportion of households using electricity as their primary source of lighting has increased across provincial, district, and local levels since 2011.

Table 12: Energy for Lighting(Source: Statistics South Africa Census, 2022, 2011)

2011 Census						2022 Census			
Energy Source	Mpumalanga	Ehlanzeni DM	Thaba Chweu LM	Ward 12	Ward 13	Energy Source	Mpumalanga	Ehlanzeni	Thaba Chweu LM
Electricity	929 372	395 514	28 117	941	996	Electricity from mains	132 6575	539 449	37 546
						Other Sources of Electricity	5 16 2	2158	118
Gas	3 019	1317	85	3	7	Gas	6 218	1 669	58
Candles	125 997	40 640	4 399	5	151	Candles	61 047	12 349	4 462
Paraffin	11 278	4 969	513	0	21	Paraffin	7 189	1 429	421
Solar	2 619	1 191	102	7	2	Solar	11 125	1 027	593
None	3 203	1 455	136	2	1	None	2 780	1 551	67
						Other	1 624	739	30

The 2011 Census reported that most households in Wards 12 and 13 had their refuse collected by a local authority or private company at least once a week. According to the 2022 Census, the number of households receiving weekly refuse collection has increased. However, there has also been a rise in households resorting to their own refuse dumps across all levels. A There is a significant number of households in 2022 that dispose of rubbish haphazardly, without



access to proper waste disposal services shown in Table 13. Dumping or leaving rubbish anywhere indicates gaps in refuse collection, heightening the community's vulnerability to diseases such as malaria and cholera.

Table 13: Distribution of households by type of refuse removal (Source: Statistics South Africa Census, 2022, 2011)

2011						2022			
Refuse Disposal	Mpumalanga	Ehlanzeni LM	Thaba Chweu LM	Ward 12	Ward 13	Refuse Disposal	Mpumalanga	Ehlanzeni	Thaba Chweu LM
Removed by local authority/private company at least once a week	456 137	109 794	19 550	886	790	Removed by local authority/private company/community members at least once a week	734 510	193 136	28 773
Removed by local authority/private company less often	13 998	6 331	1 940	57	109	Removed by local authority/private company/community members less often	17 347	5 071	592
Communal refuse dump	25 477	7 749	388	4	16	Communal refuse dump	289 48	11 374	254
No rubbish disposal	84 979	40 865	1 770	5	39	Communal container/central collection point	26 314	10 943	960
Own refuse dump	486 180	275 780	9 427	3	213	Own refuse dump	531 442	310 014	10 251
Other	8 717	4 567	277	2	11	Dump or leave rubbish anywhere (no rubbish disposal)	74 384	24 960	2 126
						Other	8 775	4 872	340

7.2.7 CRIME

Crime statistics play a crucial role in analysing the crime dynamics within and surrounding the project area. They also offer valuable insights into the underlying socio-economic factors that may contribute to fluctuations in crime rates, whether increases or declines. The proposed project is located in the precinct of the Lydenburg Police Station. Table 14 shows crime statistics for the Lydenburg area over a five (5) year period. The South African Police Service (SAPS) releases its annual crime statistics in the final quarter of each year. These annual statistics cover the period from May of the previous year to April of the current year. Additionally, SAPS publishes quarterly crime statistics at three-month intervals throughout the year. The highest total of serious community-reported crimes was recorded in the 2019/20 calendar, however, that number decreased drastically in 2021. This decrease might have been influenced by the COVID-19 lockdown which restricted the movement of people from either entering or leaving their place of residence resulting in limited interaction among people which ultimately led to reduced criminal activity. The crime statistics in the table below show that property-related crime is prevalent in project areas particularly burglary at residential premises. The contact-related crime has seen a 23% decrease, and though the crime statistics show fluctuating rates, it is still clear that contact-related crime is prevalent in the Lydenburg precinct.

Table 14: Lydenburg Crime Statistics (Crime Stats South Africa, 2024)

CRIME CATEGORY	May to April 2018/19	May to April 2019/20	May to April 2020/21	May to April 2021/22	May to April 2022/23	% Change
CONTACT CRIMES (CRIMES AGAINST THE PERSON)						
Murder	5	8	6	6	17	+100% increase



Sexual Offences	25	30	30	44	34	-22.7% decrease
Attempted murder	9	4	12	9	15	+66.6% increase
Assault with the intent to inflict grievous bodily harm	154	171	112	127	102	-19.6 % decrease
Common assault	206	172	169	145	129	-11% decrease
Common robbery	53	26	23	32	18	-43.7% decrease

CRIME CATEGORY	May to April 2018/19	May to April 2019/20	May to April 2020/21	May to April 2021/22	May to April 2022/23	% Change
Robbery with aggravating circumstances	27	44	43	56	65	-16% decrease
Total Contact Crimes (Crimes Against the Person)	479	455	395	419	380	-9.2% decrease
Total Sexual Offences						
Rape	17	21	16	34	28	-17% decrease
Sexual Assault	3	8	11	10	6	-40% decrease
Attempted sexual offences	5	0	1	0	0	No change
Contact sexual offences	0	1	2	0	0	No change
Total Sexual Offences	25	30	31	44	34	-22% decrease
SOME SUBCATEGORIES OF AGGRAVATED ROBBERY						
Carjacking	3	5	6	4	4	No change
Robbery at residential premises	3	9	8	4	19	+375 % increase
Truck hijacking	0	0	0	3	0	No change
Robbery at non-residential premises	14	16	10	17	18	+5.5% increase
Bank Robbery	0	0	0	0	0	No change
Robbery of cash in transit	0	0	0	0	0	No change
Total Subcategories of Aggravated Robbery Crimes	20	30	24	28	41	+50 increase
CONTACT-RELATED CRIMES						
Arson	8	7	4	8	4	-50%



						increase
Malicious damage to property	110	102	89	100	89	-11% decrease
Total Contact-related Crimes	118	109	83	108	83	-23% decrease
PROPERTY-RELATED CRIMES						
Burglary at non-residential premises	101	127	99	84	109	+29.7% increase
Burglary at residential premises	379	331	295	200	166	-17% decrease
Theft of motor vehicle and motorcycle	36	32	39	33	37	+12.1% increase
Theft out of or from motor vehicle	137	122	65	67	64	-4.4% decrease
Stock-theft	23	28	22	15	20	+33.3% increase
Total Property-Related Crimes	681	650	520	399	396	-0.7% decrease
All theft not mentioned elsewhere	335	423	273	262	297	+13.3% increase
Commercial crime	134	106	111	88	81	-7.5% decrease
Shoplifting	75	88	47	41	48	+17% increase
Total Community Reported Serious Crimes	1817	1841	1439	594	-	-57% decrease
CRIME DETECTED AS A RESULT OF POLICE ACTION						
CRIME CATEGORY	May to April 2018/19	May to April 2019/20	May to April 2020/21	May to April 2021/22	May to April 2022/23	% Change
Illegal possession of firearms and ammunition	17	7	1	4	4	No change
Drug-related crime	140	91	71	41	55	+34% increase
Driving under the influence of alcohol or drugs	98	124	65	84	30	-64% decrease
Sexual offences detected as a result of police action	0	1	0	1	0	100% decrease
Total Crime detected as a	255	223	137	130	89	-31.5% decrease



Result of Police Action						
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8 STAKEHOLDER IDENTIFICATION

8.1 APPROACH

Stakeholder analysis in the context of social impact assessment is a process used to identify, assess, and prioritise the individuals, groups, and organisations that may be affected by or have an interest in a proposed project, policy, or intervention. The goal is to understand the potential social, economic, and environmental impacts on these stakeholders and to ensure that their concerns, needs, and expectations are considered throughout the project's lifecycle.

The first step in stakeholder analysis is stakeholder identification, which involves mapping out all parties affected by the project, either directly or indirectly. These include local communities, businesses, NGOs, government agencies, and vulnerable or marginalised groups. These stakeholders are then grouped according to their impact on the proposed activity and the impact the proposed activity will have on them. This information is used to assess the social impacts on each stakeholder group. Each stakeholder group has unique interests, concerns, and expectations. Analysing these aspects helps in understanding how the project might impact them positively or negatively.

A stakeholder for this project is defined as any person or organisation that can be positively or negatively impacted on or causes an impact on the proposed project. Types of stakeholders are:

- **Primary stakeholders** - are those that are directly affected by the processes and outcomes of a project, either positively or negatively. These stakeholders have a vested interest in the project's success or failure and typically experience the most immediate and significant impacts e.g. local communities where a development project is taking place.
- **Secondary stakeholders** - the 'intermediaries', that is, persons or organisations indirectly affected by the proposed project. While they may not experience direct impacts, they still have an interest in the outcomes, often due to broader social, environmental, or economic considerations
- **Key stakeholders** (can also belong to the first two groups) – those have significant influence upon or importance within the proposed project. (Adapted from WWF, 2005 and Gawler, 2005).

The stakeholder analysis will help the project identify:

- The interests of all stakeholders who may affect or be affected by the project;
- Potential conflicts or risks that could jeopardise the initiative;
- Opportunities and relationships that can be built on during implementation;
- Groups that should be encouraged to participate in different stages of the project;
- Appropriate strategies and approaches for stakeholder engagement; and
- Ways to reduce negative impacts on vulnerable and disadvantaged groups (WWF, 2005).

Although the full participation of stakeholders in both project design and implementation is a key to successful project implementation, success cannot be guaranteed, as external aspects outside the control of the project team such as political will, the economic climate and other development also influence the social environment. Stakeholder participation:

- Gives people some say over how the project may affect their lives;
- Is essential for sustainability;
- Generates a sense of ownership if initiated early in the development process;



- Provides opportunities for learning for both the project team and stakeholders themselves; and
- Builds capacity and enhances responsibility (WWF, 2005).

Stakeholder participation should therefore be encouraged during the construction and operational phases of the proposed project.

The stakeholder consultation mainly involved two groups, that is the landowners and local community members. The majority of landowners in the areas surrounding the development site, particularly in Lydenburg, are predominantly White, while most community members living in nearby townships are Black African. The community members expressed their concerns regarding their longstanding grievances with the mining sector and local employers, which they feel have historically neglected their needs and concerns. The community members pointed to the lack of direct benefits from mining operations, highlighting the absence of local procurement, skills development, and job opportunities. They indicated that high unemployment rates and economic disparities worsen social challenges, leading to an increase in crime, substance abuse, and health issues. Residents also emphasised infrastructural problems, including inadequate healthcare services and poor educational standards. These challenges are aggravated by the influx of migrants from other provinces and neighbouring countries in search of job opportunities. This surge has resulted in illegal water and electricity connections within the township, further straining the already overburdened infrastructure services. Despite their frustrations, community members expressed a desire for inclusivity and skills development. They hope the solar project will offer job opportunities and facilitate community empowerment.

The landowners indicated several concerns regarding the Solar PV development. Their concerns revolved around construction timelines, security measures to prevent theft, potential job opportunities for local residents, and the environmental implications of the solar facility. The landowners shared their concerns regarding increase in crime such as cattle and cable theft. They enquired about the possibility of Solar PV to benefit the communities through the provision of energy or subsidise their energy utility costs. They were particularly interested in how the solar facility could support community initiatives and enhance local economic stability through local procurement. While they recognise the potential benefits of the solar facility, they also acknowledge the complexities and socio-political dynamics within the region, including community volatility and the need for sustainable relationships with local stakeholders.



8.2 LIST OF STAKEHOLDERS

The following stakeholders that may have an interest in or affected by the proposed project have been identified:

Governmental departments and directorates

- Department of Agriculture, Land Reform and Rural Development and Environment;
- Department of Agriculture, Land Reform and Rural Development;
- Department of Agriculture, Rural Development, Land & Environmental Affairs: Mpumalanga Provincial Government (DARDLEA);
- Department of Forestry, Fisheries and the Environment;
- Department of Mineral Resources and Energy (Mpumalanga Office);
- Department of Mineral Resources and Energy: Mpumalanga;
- Department of Mineral Resources and Energy;
- Department of Water and Sanitation (Limpopo Office);
- Ehlanzeni District Municipality;
- Mpumalanga Department of Co-operative Governance & Traditional Affairs;
- Mpumalanga Department of Economic Development, Environment and Tourism;
- Mpumalanga Department of Public Works, Roads and Transport;
- Mpumalanga Department of Social Development;
- Mpumalanga Economic Growth Agency, and
- Mpumalanga Provincial Heritage Resources Authority (MPHRA);
- South African Heritage Resources Agency (SAHRA);
- Thaba Chweu Local Municipality (Local Economic Development and Planning)

State-owned entities and regulators:

- Civil Aviation Authority
- Eskom Distribution
- Eskom Transmission

Local stakeholders:

- Community forums (e.g., employment, youth) including Thaba Chweu Social Labour Forum.
- Neighbouring landowners;
- Business owners;
- Educational and Training Institutions;
- Tourism groups;
- Non-Governmental Organisations;
- Vulnerable groups;
- Women groups;
- Local activists
- Other mines in the area

Interest groups

- Independent Power Producer Office
- South African National Energy Development Institute (SANEDI)
- South African Photovoltaic Industry Association (SAPVIA)





9 SOCIAL IMPACT ASSESSMENT

The following section of the report focuses on the identification and analysis of social impacts. Mitigation and management measures will also be discussed. It must be considered that most social impacts are of a cumulative nature, as many existing social challenges are present in the affected community.

9.1 IMPACT RATING CRITERIA

The impact tables and ratings were modified from frameworks used in environmental sciences. However, it is important to note that social impacts do not always lend themselves to strict categorisation. While efforts have been made to achieve consistency in this regard, such compartmentalisation is not inherently aligned with the principles of social sciences. Therefore, when interpreting the impact tables, it is crucial to consider the dynamic and evolving nature of social impacts.

Table 15: Criteria for Determining Impact Consequences.

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary)
	3	Local (i.e. the area within 5 km of the site)
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)
	4	Long term (15-65 years), the impact will cease after the operational life span of the project)
	5	Permanent (>65 years), no mitigation measure of natural process will reduce the impact after construction)
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)



	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way, moderate improvement for +ve impacts)
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease, high improvement for +ve impacts)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts)
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact.

Table 16: Probability Rating.

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

Table 17: Criteria for Determining Prioritisation.

Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.



	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).



9.2 DESCRIPTION OF POTENTIAL SOCIAL IMPACTS

This section outlines and evaluates the potential social impacts - both positive, negative, and cumulative, associated with the development of the Solar Photovoltaic (PV) Facility at the Lydenburg Smelter. The identified impacts are based on the current understanding of the project and the socio-economic context of the proposed development area.

Unlike environmental impacts, social impacts can occur before any physical work on site is done, and rumours of development are enough to set off some social change processes and social impacts. The social impacts and mitigation measures will be discussed in this section. When the mitigation and management of social impacts are considered, one must take into consideration that social impacts occur in communities surrounding the proposed projects, and although the project proponent may be the catalyst for some impacts, there may be external factors contributing to the impact. Many of these factors are outside the control of the project proponent. Many of the social impacts the Proponent cannot mitigate alone and partnerships with local government and Non-Profit Organisations are often required. Social impacts must be managed in the long term. This complex process requires insight into the social environment and community dynamics. The social environment adapts to change quickly, and social impacts therefore evolve and change throughout the project cycle. For the purpose of this report social impacts have been broken down into seven categories namely:

- Community Health and Safety
- Infrastructure and Services
- Economic and Material Well-being Impacts
- Impacts on Socio-Cultural Networks
- Impacts on Cultural Heritage
- Institutional, Legal, Political and Equity Impacts

Some of the social impacts listed above may fit under multiple categories; however, they will be discussed and contextualized within each relevant section. Impacts are expected to occur during all phases of the project, namely planning and design, construction, operation, and decommissioning, although the majority of impacts are anticipated to occur during the construction Phase. It is important to note that during the stakeholder consultations, some of the perspectives, concerns, and opportunities raised by local landowners regarding social impacts in the area differed from those expressed by community members residing in the townships.

9.2.1 EXISTING AND CUMULATIVE IMPACTS

Given that Glencore Lydenburg Smelter is an existing smelter and that the Solar PV facility will be constructed adjacent to the Lydenburg Smelter site, it must be considered that many of the impacts are existing impacts. When considering existing impacts, the complexity of the social environment must be contemplated. The activities taking place in the area surrounding the project site have also caused a number of impacts. From a social perspective, it is not possible to pinpoint which percentage of any given impact results from a specific activity or proponent. For example, mining, tourism, and manufacturing activities may cause an influx of people into an area due to the possibility of employment creation. It is not possible to say, for example, that 30% of people moving into the area looked for a mining job, 60% for a manufacturing job, and 10% for a tourism job. Some of the development might happen concurrently, therefore one cannot freely link the influx of people to a single cause. It can be argued that all these industries contributed to project-induced in-migration (where people move to the project area seeking employment or economic opportunities generated by the project), which in turn exacerbated unemployment in the area. Additionally, the closure of



Woodcreations, which employed a significant portion of the community, along with the shutdown of the Saint-Pie Factory and the temporary closure of the Lydenburg Smelter, has contributed to a rise in unemployment and social challenges in the area. Glencore Lydenburg Smelter and its activities are not the only responsible party for the existing social impacts in the area, but the smelter does contribute to these impacts and so will the proposed Solar PV facility. The importance of perceptions of the public should not be underestimated. Something perceived as a social impact should be dealt with as if it is a social impact because the affected party experiences it as an impact. The following existing impacts are experienced in the surrounding communities. The Solar PV project can lead to cumulative impacts, and there may also be some new impacts. The existing, cumulative and new impacts are discussed in Section 9.2.2 below.

9.2.2 COMMUNITY HEALTH AND SAFETY

9.2.2.1 HEALTH IMPLICATIONS

Health Implications in SIA studies are summed as the potential effects of a project on the physical, mental, and social well-being of the affected communities. These implications are analysed to understand how the project might influence public health during its various phases (planning, construction, operation, and decommissioning). This includes both direct and indirect impacts on health outcomes. Direct health impacts are immediate and linked to the project activities, such as dust from construction activities. Indirect health impacts are more subtle and arise from the broader social, environmental, or economic changes brought about by the project such as community members feel uncertain about job prospects, and population growth.

The impact of social ills on the health of the community: The community members report that there are high levels of HIV/AIDS and other sexual-health-related matters in the project area. Social issues such as poverty, prostitution, substance abuse, and in-migration are current challenges to the community, especially for vulnerable groups "Sugar daddies and mommies," "blessers,"² and early teenage pregnancies were specifically highlighted as prevalent in the area. The introduction of non-local workers can create social issues and opportunities to take advantage of vulnerable groups such as school children. This escalation of social ills negatively impacts the overall health of the community by increasing addiction rates, exposure to violence, and risks of sexually transmitted infections. The people living in informal settlements are especially vulnerable to exploitation and impacts of social ills on community health

The impact of social ills on community health is already a significant concern, though not directly caused by the mine or the proposed Solar PV development. These issues are pre-existing in the project area, and the proposed project may contribute to cumulative impacts, potentially exacerbating the situation.

Psychological impact due to poverty and lack of opportunities: The high unemployment rates, exacerbated by the closure of several local industries (smelter, factories), have left many in poverty, causing significant psychological stress. Many people are working in precarious, low-income jobs, such as contract work or informal labour. There is a perception that local people are excluded from existing and potential development opportunities. This has psychological impacts on communities. If the project prioritises hiring locals and invests in skill development, it could offer much-needed relief by

² In South Africa, the term "blesser" refers to a man, often wealthy or financially well-off, who provides financial support, gifts, or luxury items to a younger woman (sometimes referred to as a "blessee") in exchange for companionship, often involving romantic or sexual relationships.



creating job opportunities and reducing feelings of economic hopelessness. However, if local labour is not prioritised, the project could worsen the community's psychological strain.

Most community members are already experiencing significant frustration and stress due to the lack of employment opportunities, which has increased poverty in the township. The introduction of the Solar PV facility may further contribute to cumulative psychological impacts if the expectations of the community are not met as these issues are already prevalent within the local population.

Physical impacts on road safety: The majority of nearby communities, such as Mashishing, face challenges in affording transport costs, leading many residents to walk to their workplaces. Students often resort to hitchhiking to school. The poor road conditions, especially in townships, increase safety risks for both pedestrians and motorists. The added traffic from construction activities, combined with potential reckless driving on these deteriorating roads, raises concerns about the safety of pedestrians, particularly students who walk long distances. Addressing these risks is essential to ensure pedestrian safety during the project's construction phase.

Health impacts due to dust: Dust exposure is a key health concern raised during construction projects. The Solar PV Facility's construction could lead to increased dust, especially if roads are not paved or if construction sites are poorly managed. Dust particles can lead to respiratory problems, such as asthma or sinusitis.

Impact mitigation

- All works must be undertaken in accordance with the Occupational Health and Safety Act 85 of 1993.
- An HIV/AIDS awareness/education component should be included in the induction programme for all personnel working on the proposed project.
- Ensure there is easy access to HIV/AIDS-related information and condoms for all workers involved with the proposed project.
- Implement a workplace safety plan that promotes safe, respectful behaviour and educates workers on the consequences of inappropriate relationships with vulnerable community members.
- There is a need for long-term engagement, and mental health services, which could be part of broader community empowerment and support programs
- Dust management strategies must be implemented to minimise health risks. These could include water spraying, covering trucks carrying materials, and enforcing speed limits for construction vehicles to reduce dust on unpaved roads.
- Prioritise local hiring and upskilling to include community members in the project workforce.
- Engage in transparent dialogue with the community to manage expectations and reduce feelings of exclusion or neglect.
- No non-employees to be allowed on the construction site/construction camp without pre-authorisation.

9.2.2.2 POTENTIAL INCREASE IN CRIME/ AND COMMUNITY UNREST

The impacts discussed in this section reflect pre-existing societal issues within the area. The proposed project may either contribute to the cumulative impacts of these existing challenges or maintain the status quo, given its relatively small scale.

Impact on the safety of property and equipment: High unemployment rates and economic disparities have led to increased crime rates in the area. Theft, particularly of cattle, electrical cables, and other valuable materials, is a significant issue in the communities. It is often carried out at night, leading to



frequent power outages and damage to infrastructure. This poses a significant risk to infrastructure projects like the Solar PV facility, where expensive materials such as solar panels, electrical equipment, and cables may be targeted which might occur during the construction and operation phase of the project. During construction, the influx of valuable materials and equipment for construction may attract thieves and increase incidents of vandalism. Theft of construction materials or vandalism of installed equipment could lead to project delays, increased costs, and safety hazards for workers.

Impact on personal safety and security: With an influx of construction workers frequenting the construction site, nearby communities are concerned about a potential rise in crime, leading to heightened alertness. This heightened sense of insecurity could have psychological effects on local residents, who may feel that their personal safety is at greater risk. Additionally, awareness of the project might attract individuals seeking employment, some of whom, if unsuccessful, could resort to criminal activities. There is also the possibility that the project could draw individuals with pre-existing criminal intent. Criminal intents are commonly driven by a lack of local employment opportunities, which increases poverty-related crime. This can result in more opportunistic crimes such as burglaries and muggings. In addition, the presence of informal settlements without proper governance or infrastructure further compromises community security, creating spaces where crime can flourish.

Increase in community unrest: High unemployment, combined with the volatile social dynamics, has led to frequent protests, often about jobs. There is a perception that local communities are not prioritised for jobs happening in the area, leading to distrust towards large projects such as the development of a solar PV facility and companies like Glencore. Social unrest could increase during both the planning and construction phases if community expectations around local employment and procurement are not met. Crime could rise as people seek to exploit the project or protest perceived injustices. There is also a risk of road blockages or sabotage of the project's infrastructure if tensions escalate.

Increase in social ills: The arrival of a non-local construction workforce could exacerbate existing drug abuse issues and related social ills, such as prostitution and teenage pregnancies especially if workers are housed within or near vulnerable communities. Substance abuse can also contribute to increased crime rates and social disruption, affecting both the project and the broader community.

Impact mitigation

- The perimeter of the construction site should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be erected before construction commence and maintained throughout the construction period.
- Maintaining open and transparent communication with the community, ensuring that local job opportunities are visible and accessible, and including locals in the decision-making process will be essential. In addition, working closely with local community and labour forums and developing social investment programs (e.g., roads, community infrastructure) can help foster goodwill and reduce the potential for unrest.
- Strengthening partnerships with local security companies, implementing robust security protocols (CCTV, on-site guards), and potentially engaging with the community on crime prevention could help mitigate risks such as creating partnerships with the Community Police Forum and Partners in Policing.
- The project should prioritise hiring local workers as much as possible to reduce the need for immigration. If external workers are required, they should be housed in secure, designated areas (e.g., local lodges) to minimise their impact on the community. Investments in community safety initiatives and active engagement with local law enforcement can also help mitigate crime risks.



- All employees are required to have a form of identification and uniform.
- Glencore must meet with the adjacent landowners before the construction phase commence and formalise security arrangements.
- Security lighting should be implemented in such a way to minimise the impact of light pollution.
- Construction workers must stay in the closest town and be transported to work daily.
- To minimise the risk of petty crime and violent behaviour, the following procedures should be implemented:
 - Conduct pre-employment screenings, including checks for convictions related to assault, theft, vandalism, and other relevant offenses.
 - Contact previous employers for references.
 - Adhere to proper monitoring procedures throughout the employment phase. This includes ongoing performance reviews, routine security checks, and taking appropriate disciplinary action when necessary.

9.2.3 INFRASTRUCTURE AND SERVICES

9.2.3.1 INCREASED PRESSURE ON INFRASTRUCTURE AND SERVICES

During the stakeholder consultation, it was highlighted that the project area faces significant inadequacies in key physical infrastructure and essential services, including water supply, sewage disposal, roads, and healthcare. The project area is served by only one government hospital and a single clinic, which caters to around 15 000 people across five communities. Roads, particularly in the townships, are in poor condition.

The area is experiencing considerable in-migration, driven by high unemployment and the search for better opportunities. The construction phase of the project may intensify existing strains on infrastructure and services, as more people are likely to move to the area seeking employment. This influx could result in overcrowded facilities and increased pressure on local resources, including water, sanitation, healthcare, and other municipal services.

The demand for temporary housing and related services during construction from the influx of job seekers could overwhelm local infrastructure, potentially leading to sanitation and health concerns, especially in the event of emergencies or disease outbreaks. Informal settlements have already expanded in surrounding townships, with illegal connections to water and electricity which serves as further evidence of the current overburdening of municipal services.

Once the construction phase is complete the number of construction personnel and job seekers frequenting the site will be significantly reduced, which might also lead to some reduction in the pressure on already strained infrastructure and services

The project area is currently facing existing challenges related to infrastructure and services. Residents have noted that many people move into the area and choose to stay, often remaining unemployed. As a result, even after the construction phase of the project is completed, it is likely that the pressure on these resources will persist at similar levels.

Impact mitigation

- The project could contribute to local healthcare by investing in health facilities and services. This could include building temporary onsite clinics for workers, supporting local healthcare expansion, and implementing health education programs to alleviate occupational hazards and pressure on existing services. Health education programs could involve first aid skills development and employee wellness programs.



- Implement employee health screening and wellness programs to prevent disease spread.
- Prioritise local hiring to minimise influx outside job seekers.
- Ensure proper waste disposal and sanitation facilities onsite to prevent contamination of water sources. Collaborate with local authorities to address water shortages and improve infrastructure.

9.2.3.2 GENERATION OF RENEWABLE ENERGY

South Africa is under immense pressure nationally and internationally due to its carbon footprint. South Africa's carbon emissions are higher than those of most developed countries partly because of the energy-intensive sectors which rely heavily on low-quality coal. The use of low-quality coals is the main contributor to GHG emissions.

The use of solar radiation for power generation is considered a non-consumptive use of a natural resource which produces zero greenhouse gas emissions. The advancement of renewable energy is a priority for South Africa. The government considers the use of renewable energy as a contribution to sustainable development. The benefits of photovoltaics tend to far outweigh risks especially when compared to conventional fossil fuel technologies. Photovoltaics generate significantly fewer harmful air emissions per kilowatt-hour (kWh) than conventional fossil fuel-fired technologies. Furthermore, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future.

The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind, and that renewable applications are in fact the least cost energy service and mostly also better when social and environmental costs are considered.

National and International pressure regarding global warming and environmental impacts associated with 'dirty' fuels and energy security have elevated renewable energy solutions to a far more prominent position both within energy policy and in the economic development arena.

Nationally, the country is currently facing considerable constraints in the availability and stability of electricity supply. This is a consequence of South Africa's electricity generation and supply system being overstretched. The project therefore has the potential to contribute to greater energy supply stability and higher levels of energy security which will benefit electricity consumers. The proposed project will generate renewable energy that will reduce the load on the national electricity grid. This is in line with the National Development Plan and sustainable development. As such it is a positive impact.

Impact enhancement

- The Solar PV project can improve energy access for local communities, reducing reliance on expensive or unreliable sources of energy. This can lead to lower electricity costs and increased energy security. Local workers can receive training in renewable energy technologies, enhancing their skills and employability in the growing green energy sector.

9.2.4 ECONOMIC AND MATERIAL WELL-BEING IMPACTS

9.2.4.1 CREATION OF EMPLOYMENT OPPORTUNITIES

The development of the solar PV facility will create new opportunities for the local area and surrounding communities. The proposed PV facility will have positive economic impacts on the local economy. It is anticipated that the construction phase will create approximately 200 (20 skilled and



180 unskilled) new employment opportunities (excluding indirect opportunities). Around 20 unskilled opportunities will be created in the operational phase with 10 skilled employees to be recruited. The main aim of the proposed PV facility is to enable the applicant to provide electricity for their own use at the smelter. This might expedite the process of resuscitating the smelter which is currently under care and maintenance leading to more jobs being created. The establishment of the Solar PV facility presents a potential for job creation during both the construction and operational phases. Given the historical context of local unemployment intensified by the downsizing of the smelter and the closure of local factories, the solar project can offer immediate employment opportunities for local residents. By prioritising local hires for both skilled and unskilled labour, the project can alleviate some economic pressures in the community, providing residents with stable incomes and reducing reliance on informal and precarious employment

During the planning and design phase, several non-local consultants such as environmental practitioners, architects, engineers, heritage specialists, etc. have been employed to do preliminary assessments and planning for the proposed development but only for a short term during planning and construction.

Skills development: Though there are only a few job opportunities during the operation phase, the local residents might benefit through the inclusion of skills development during the construction and operation phases of the project. Training initiatives can be established to upskill local workers in solar technology, construction, solar PV maintenance, and safety protocols, which addresses the community's expressed need for skills development. This could provide pathways to permanent employment within the renewable energy sector or other related industries elsewhere.

Impact mitigation

- Local contractors, who are compliant with Broad-Based Black Economic Empowerment (BBBEE) criteria should be given preference.
- Gender equality must be promoted, in both the awarding of employment opportunities and remuneration.
- Provide training in solar technology and maintenance during both the construction and operational phases to empower local workers and increase employability.
- Partner with local training institutions to develop programs that equip residents with necessary solar energy skills such as Technical Vocational Education and Training (TVET) college. This can help to align the curriculum with industry needs, enhancing the relevance of educational programs.
- Develop a transparent communication strategy to keep the community informed about project developments and opportunities.

9.2.4.2 KNOCK-ON EFFECTS FOR LOCAL BUSINESSES

During the construction phase particularly, money will be spent on local goods and services by the project Proponent, their contractors, and their employees, resulting in indirect positive economic impacts for the local economy. These knock-on effects exclude the direct benefits received by locals employed as a result of the solar PV facility i.e. 200 jobs in construction and 30 in the operation phase, but do consider the money spent by locals employed, on goods and services which they may not have previously been able to spend. By prioritising local procurement for construction materials, services, and ongoing maintenance, the Solar PV facility can stimulate the local economy, create additional jobs, and support small businesses. This could encourage economic resilience and provide direct benefits to community members, enhancing their trust and relationship with the project.



The local service and hospitality sectors are expected to experience notable benefits as the Proponent will spend on a range of goods and services, including accommodation, food, transportation for personnel, fuel, and some construction materials. However, due to the specialised nature of the solar PV facility, much of the core infrastructure — such as solar panels and Battery Energy Storage Systems (BESS) — will need to be sourced from national or international suppliers. This limits the direct local economic benefits in terms of material and equipment supply.

Despite this, the overall local economic impact is anticipated to be significant. By prioritising the use of local service providers wherever feasible, the magnitude of these positive effects can be further enhanced, contributing more substantially to the local economy.

Impact mitigation/enhancement

- The applicant and contractors should prioritise the utilisation of local service providers, wherever feasible, for the procurement of building materials, accommodation, meals, fuel, and other relevant services. This approach supports local economic development and ensures broader community benefits from the project.
- Where possible, the applicant should assist local BBBEE-compliant companies with completing and submitting the required tender forms and associated information.
- The applicant should consult the Thaba Chweu Local Economic Development divisions on establishing a local database of service providers.

9.2.5 IMPACTS ON SOCIO-CULTURAL NETWORKS

9.2.5.1 CONCERNS ABOUT SOCIAL DISTURBANCES

Potential for social unrest: There is significant distrust towards the applicant and other mining companies around the project area. Communities feel that their concerns are ignored and that they are only engaged when it serves the companies' or mines' permitting processes. The failure to address local needs has led to several social unrest and protests in the area. Stakeholders have indicated that protests have become a common response to perceived negligence by companies. Therefore, if the project fails to engage local communities or does not deliver some of the expected benefits, such as job creation and skills training, it risks igniting social unrest.

Competition for jobs: There has also been competition for jobs and benefits which has led to division within the community, with some labour forums being perceived as pawns for the mines. This dynamic has created conflicts among community members, intensifying social issues. With the area's high unemployment rate, local residents are eager for work and will likely compete for positions related to the construction and operation of the Solar PV facility.

Influx of non-local jobseekers: People coming from outside the area to work on the solar project during the construction and operation phase may have an influence on social cohesion. Thus, the import of labour from outside the community, especially if local employment is not prioritised, could aggravate community divisions and unrest, as seen in past projects. Different value systems may lead to changes in behaviour, such as an increase in prostitution, substance abuse, teenage pregnancies, and sexual assaults. These aspects are probably already present in the community, but it must be acknowledged that these social ills are typically associated with an influx of people because of development. In-migration due to economic opportunities, including from other provinces and countries, has already placed strain on infrastructure, particularly in housing, water, and electricity services. Though a massive influx of job seekers is not expected to happen, since there should be some skilled labour in the area as a result of the Glencore Lydenburg Smelter. It should, however, be



acknowledged that tension might still be established between potential newcomers and residents, with unequal access to services and resources becoming a growing point of contention.

Impact mitigation

- The applicant and its contractors must develop an induction programme that includes a Code of Conduct for all workers (including sub-contractors). Any person that does work on site must sign the Code of Conduct and presented with a copy. The Code of Conduct must include the following aspects:
 - Respect for local residents, their customs and property;
 - Respect for farm infrastructure and agricultural activities;
 - Zero tolerance of illegal activities by construction personnel including: relationships with minors; prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting;
 - Compliance with the Traffic Management Plan and all road regulations; and
 - Description of disciplinary measures for violation of the Code of Conduct and company rules.
- If workers are found to be in contravention of the Code of Conduct, which they will be required to sign at the beginning of their contract, they will face disciplinary procedures that could result in dismissal. Poaching should be noted as a dismissible offence.
- The applicant must establish a grievance mechanism and appoint a community liaison person that the community can access easily, especially during the construction phase. The grievance mechanism must be communicated to the affected communities.
- Proactively engage the community through transparent communication and involvement in decision-making processes.
- Offer employment opportunities and training programs for local residents to create a sense of inclusion and trust.
- Develop a community relations strategy to build and maintain positive relationships with the communities.

9.2.6 IMPACTS ON CULTURAL HERITAGE

9.2.6.1 IMPACTS ON CULTURAL HERITAGE, SPIRIT, AND SENSE OF PLACE

Three (3) Iron Age/Agro-pastoral sites were located. These sites are linked to the Bokoni homestead which was a pre-colonial, agro-pastoral society found in northwestern and southern parts of Mpumalanga. The Bokoni stone ruins are considered one of the richest visible and enduring forms of heritage from any group of people living in South Africa before the beginning of colonial times (Delius et al., 2014). The Heritage Impact Assessment for the proposed project suggests that these sites should be avoided with a 30 meter buffer zone which is to be applied during the planning phase of the project. The possibility of stillborn burials around the structures must be considered. As per African custom stillborn children are buried against the outside wall/foundation or inside the house (PGS Heritage Impact Assessment Report, 2024). According to SAHRA guidelines, all burial sites and graves must be preserved and protected with a buffer zone of 30 meters. If preservation is not feasible, graves may be relocated following a comprehensive relocation process. This process must include extensive stakeholder consultation and comply with section 36 of the NHRA and its regulations, as well as the relevant provisions of the National Health Act and associated regulations. It is worth noting that the project area is considered to have high heritage sensitivity. A heritage impact assessment was conducted and the cultural heritage is discussed in detail in the report.



The "spirit of place" associated with an area plays a crucial role in attracting tourism and drawing people to local opportunities. Spirit of place refers to the unique, distinctive, and cherished aspects of a place. Whereas 'sense of place' is the personal feelings an individual has about a place, spirit of place refers to the inherent characteristics of the place (Vancley et al, 2015). In this case, the spirit of place includes the unique tangible and intangible heritage and biodiversity of the area.

Aspects that will impact the sense and spirit of place include an increase in noise and activity levels from construction activities, but this will be a temporary impact during the construction phase. The construction phase will see a total transformation from the current setting and landscape of the proposed site. Potential visual impacts caused by construction activities will include the visual changes brought about by clearance of vegetation for the solar arrays, ancillary buildings, and laydown areas; visual disturbance caused by construction of increased traffic (and number of large vehicles), worker presence and activity, and dust emissions. Visual impacts such as glare from the solar panels, buildings, power lines, lack of vegetation, and light at night will also impact the sense and spirit of place and will be an impact as long as the plant is operational. While visual impacts are a valid concern, particularly regarding the sense and spirit of place, these effects will be temporary during the construction phase. The glare from the solar panels during operation is manageable and can be adapted. As the community becomes accustomed to the presence of the solar panels, and with the added benefits of employment opportunities and renewable energy generation, the visual impacts will diminish in significance over time. A Visual Impact Assessment was conducted which discusses the visual impacts of the proposed development in detail.

Impact mitigation

- All mitigation measures contained in the Heritage Impact Assessment (PGS Heritage Impact Assessment , 2024) must be implemented.
- Dust suppression and noise monitoring measures must be implemented when required.
- Ensure that vegetation is not unnecessarily removed during the construction period.
- Plant trees, shrubs, and other vegetation around the solar installation to provide a natural barrier between facility and local roads.
- All mitigation measures in the Visual Impact Assessment must be adhered to.

9.2.7 INSTITUTIONAL, LEGAL, POLITICAL, AND EQUITY IMPACTS

9.2.7.1 IMPACT ON COMMUNITY PARTICIPATION IN DECISION-MAKING

Communities feel excluded from meaningful participation in decision-making processes, especially regarding issues that directly affect them. The perception is that they experience engagement only when companies need approvals to proceed with their development projects, rather than in an ongoing, transparent manner. This leads to a sense of neglect, mistrust, and disengagement. Communities are concerned that most skilled labour for the Solar PV project will be brought in from elsewhere due to a lack of local capacity. There is a demand for skills development to enable local participation, especially in sectors such as renewable energy where locals have little expertise. During the construction phase, local residents may be sceptical of employment promises and could protest if the jobs provided do not meet their expectations or if contractors are sourced from outside the region.

Communities have expressed that peaceful dialogue with companies has been ineffective in the past, leaving them to resort to protests (e.g., roadblocks) as the only way to get their issues addressed. This demonstrates a failure in public participation processes.

Multiple forums and groups exist in the area, often with conflicting interests. This fragmentation has resulted in unequal representation and voices being sidelined in favour of more influential groups.



Communities perceive that leadership positions are sometimes co-opted by companies for their own benefit, worsening community divisions. Therefore, during the planning and construction phase, it is key to ensure there is inclusive engagement as the selection of who to engage with could lead to conflicts within the community, with some feeling excluded or unrepresented.

Impact mitigation

- Establish a community engagement plan that ensures regular consultation with community members, community forums and set up a dedicated Community Liaison office for the Solar PV project to engage with communities on a continuous basis. Ensure that engagement happens early in project planning and continues through all phases, allowing community input on critical decisions.
- Facilitate neutral, inclusive platforms where all community stakeholders can discuss concerns and share input. Promote transparency around the selection of community representatives and ensure fair rotation.
- Prioritise local procurement from township-based businesses to stimulate economic development in the marginalised, underrepresented areas.
- Set up grievance mechanisms that are accessible and responsive to the community, providing an alternative to disruptive protests.

10 SOCIAL NO-GO OPTION

The impacts of pursuing the No-go Option are both positive and negative as follows:

- The benefits would be that there is no change in status quo in terms of the negative impacts described above during all project phases which would be experienced by neighbours, society, and the landscape – namely through disruption, noise, social unrest, road safety, and strain on municipal services. The negative impacts were highlighted as aspects that will increase the existing socio-economic challenges. The impact is therefore neutral.
- There would also be an opportunity loss in terms of job creation, skills development and associated economic multipliers for the local economy. The impact is therefore negative.
- There will be no development on the archaeological site and the grave will not be affected. There will be no new impacts and the status quo of the site will be maintained.

In summary, choosing the no-go development option would mean South Africa misses a valuable opportunity to address its energy demands through clean, renewable sources. As one of the highest per capita carbon emitters globally, this choice would carry a negative social cost. While it may not entirely hinder the growth of renewable energy projects in the country, it would result in the loss of socio-economic benefits that local communities could otherwise gain from the proposed solar PV facilities.



Impact	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score
Health Implication	Construction	-1	4	5	4	3	4	-16	-1	4	5	3	3	3	-11,25	High	3	2	1,38	-15,46875
Psychological impact due to poverty and lack of opportunities	Construction	-1	3	2	3	2	4	-10	-1	3	2	2	2	2	-4,5	High	2	2	1,25	-5,625
Physical impacts on road safety	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	3	3	-8,25	High	2	2	1,25	-10,3125
Health impacts due to dust	Construction	-1	2	2	3	2	4	-9	-1	2	2	2	2	3	-6	High	1	1	1,00	-6
Impact on the safety of property and equipment	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	2	3	-7,5	High	2	2	1,25	-9,375
Impact on the safety of property and equipment	Operation	-1	3	3	4	3	4	-13	-1	3	2	3	2	3	-7,5	High	2	2	1,25	-9,375
Impact on personal safety and security	Construction	-1	3	2	4	3	5	-15	-1	3	2	3	3	4	-11	High	2	2	1,25	-13,75
Increase in community unrest	Construction	-1	3	2	4	3	5	-15	-1	3	2	3	3	4	-11	High	2	2	1,25	-13,75
Increase in social ills	Construction	-1	3	2	4	2	4	-11	-1	3	2	3	2	3	-7,5	High	2	2	1,25	-9,375
Increased pressure on infrastructure and services	Construction	-1	3	2	4	4	4	-13	-1	3	2	3	3	3	-8,25	High	2	1	1,13	-9,28125
Generation of renewable energy	Operation	1	3	5	4	3	4	15	1	3	5	4	3	5	18,75	High	3	2	1,38	25,78125



Impact	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score
Creation of employment opportunities	Construction	1	3	2	3	2	4	10	1	3	2	4	5	5	17,5	High	3	2	1,38	24,0625
Creation of employment opportunities	Operation	1	3	4	3	2	4	12	1	3	4	4	2	5	16,25	High	2	1	1,13	18,28125
Reduced unemployment and social unrest rates	Construction	1	3	2	3	3	4	11	1	3	2	4	2	5	13,75	High	3	1	1,25	17,1875
Skills development	Construction	1	3	2	4	5	4	14	1	3	2	5	5	5	18,75	High	3	1	1,25	23,4375
Knock-On effect on local business	Construction	1	3	2	3	2	4	10	1	3	2	4	4	5	16,25	High	3	1	1,25	20,3125
Potential for social unrest	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	3	3	-8,25	High	2	2	1,25	-10,3125
competition for jobs	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	3	3	-8,25	High	2	1	1,13	-9,28125
Influx of non-local job seekers	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	2	3	-7,5	High	3	2	1,38	-10,3125
Impacts on cultural heritage, spirit, and sense of place	Planning	-1	3	2	4	3	4	-12	-1	3	2	3	2	3	-7,5	Medium	1	3	1,25	-9,375
Impacts on cultural heritage, spirit, and	Construction	-1	3	2	4	3	4	-12	-1	3	2	3	3	3	-8,25	Medium	2	3	1,38	-11,34375
Impact on community participation and decision-	Planning	-1	3	4	5	4	5	-20	-1	3	4	4	3	3	-10,5	High	3	2	1,38	-14,4375
Impact on community participation and decision-making	Construction	-1	3	4	4	4	5	-18,75	-1	3	4	4	3	3	-10,5	High	3	2	1,38	-14,4375



11 SOCIAL MANAGEMENT PLAN

The table below presents the social impact management plan that is suggested for the life of the project. The social impact management plan does not replace the social mitigation measures but must be implemented in addition to the suggested mitigation measures.

Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
Planning and Design Phase	Develop social impact management plan	As soon as the project enters public domain	Applicant	CLO <i>Internal once appointed</i> Social expert <i>External but not legally required</i>
	Appoint appropriately qualified Community Liaison Officer (CLO) to deal with social aspects of the project throughout the life of the project	Before consultation with stakeholders start (excluding EIA consultation)	Applicant Appointment for the life of the project	Not required apart from usual HR processes



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Develop a community engagement plan for effective engagement with the community.	Before consultation with stakeholders start (excluding EIA consultation)	Applicant Continued for the life of the project.	CLO <i>Internal (Once off)</i> <i>No external review required</i>
	Develop/update conflict policy and grievance mechanism.	In consultation with stakeholders	Applicant Continued for the life of the project.	CLO <i>Internal (Once off)</i> <i>No external review required</i>
	Develop a recruitment and procurement policy that prioritise local labour,	Before construction starts.	Applicant Continued for the life of the project	Human Resource manager, <i>Once a year or as required</i>
	Develop a skill development plan involving partnership with local technical education institutions.	Before construction starts.	Applicant (CLO), Management Continued for the life of project	CLO <i>Internal (Once off)</i> <i>No external review required</i>



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Develop a community relation strategy	Before consultation with stakeholders start (excluding EIA consultation)	Applicant Continued for the life of project	CLO <i>Internal (Once off)</i> <i>No external review required</i>
Construction Phase	Monitoring of social mitigation and management measures	Throughout construction	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required</i>
	Implementation of community relations strategy	Throughout construction	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required</i>
	Implementation of Occupational Health and Safety (OHS) orientation training for all new employees .	At the commencement and throughout the construction phase.	Applicant, Supervising Safety, Health and Environmental Officer	Management. CLO <i>Once a year or as required</i>



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Implementation of a public safety plan, conflict policy and grievance mechanism.	Throughout construction	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required during the construction phase.</i>
	Implementation of the recruitment and procurement policy that prioritise local labour.	Throughout the construction phase.	Applicant (CLO) Continued for the life of project	HR
	Implement a community engagement plan.	Throughout the construction phase.	Applicant (CLO) Continued for the life of project.	CLO <i>As required.</i>
	Implement and monitor dust management/suppression strategies	Throughout the construction phase.	Applicant (CLO) Continued for the life of project.	CLO Management <i>Once a month or as required</i>



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Develop and implement a waste management plan	Throughout the construction phase.	Applicant (CLO) Continued for the life of project.	Management <i>Once a year or as required during the construction phase</i>
	Implement skill development plan involving partnership with local technical education institutions.	Throughout the construction phase.	Applicant (CLO, Management) Continued for the life of project.	Management <i>Once a year or as required during the construction phase.</i>
Operation Phase	Monitoring of social mitigation and management measures	Throughout operation	Applicant (CLO) Continued for the life of project.	Management <i>Once a year or as required</i>
	Implementation of community relations strategy	Throughout operation	Applicant (CLO) Continued for the life of project.	Management <i>Once a year or as required</i>



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Implement an OHS plan, access protocols, grievance mechanism, and compensation policy	Throughout operation	Applicant (CLO) Continued for the life of the project.	Management <i>Once a year or as required</i>
	Implement a skill development plan involving partnerships with local technical education institutions.	Throughout operation	Applicant (CLO) Continued for the life of the project.	Management <i>Once a year or as required during the operation phase.</i>
	Implement a community engagement plan.	Throughout operation	Applicant (CLO) Continued for the life of the project.	Management <i>Once a year or as required during the operation phase.</i>
Decommissioning, Closure and Rehabilitation Phase	Implement a safety plan, access protocols, grievance mechanism and compensation policy	Throughout decommissioning until all rehabilitation activities have ceased	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required</i>



Phase	Management action	Timeframe for implementation	Responsible party for implementation (frequency)	Responsible party for monitor/audit/review (frequency)
	Continue community relations strategy until all activities on site cease and rehabilitation is completed	Throughout decommissioning until all rehabilitation activities have ceased	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required</i>
	Implement social mitigation for closure	Throughout decommissioning	Applicant (CLO) Continued for the life of project	Management <i>Once a year or as required</i>



12 CONCLUSION AND RECOMMENDATION

The development of the Solar Photovoltaic (PV) Energy Generation Facility commissioned by Glencore Lydenburg Smelter presents both challenges and opportunities for the community surrounding Thaba Chweu Local Municipality. While promising in terms of renewable energy generation and potential socio-economic benefits, the project poses challenges related to community health and safety, social unrest, crime, and pressure on infrastructure. As indicated in the report the community is already burdened by unemployment, high crime rates, deficiencies in infrastructure, and strained health services. There is a possibility that these issues could be intensified during the development of this project, particularly during the construction phase if not addressed appropriately. The relationship between the mine and the community has been challenging in some instances due to historical exclusion from decision-making processes and unmet expectations around local job creation. The influx of non-local workers, while necessary for the project, could strain the local healthcare, sanitation, and housing infrastructure and potentially increase crime and social unrest.

The Solar PV project provides an opportunity for Glencore to address some of the socio-economic issues faced in the area as well as to develop a progressive relationship with the community. The project will create significant employment opportunities and add to cleaner energy production, reduce the load on that national power grid, and pave the way towards a just transition, which are positive impacts. However, this will require a comprehensive and transparent approach to community engagement, ensuring that the local population is not just consulted but actively included in decision-making processes.

From a SIA perspective the project is unlikely to introduce significant new impacts, as many of the concerns raised are issues already being experienced by the community. The majority of impacts are expected to occur during the construction phase, which will be relatively brief.

To mitigate the negative impacts and enhance the positive impacts, the following recommendations are made:

- Glencore must maintain continuous dialogue with local communities through regular public meetings and consultations.
- Ensure transparency in procurement and recruitment processes, in conjunction with community leaders in decision-making to prevent social unrest.
- Create or update clear channels for grievance reporting and feedback to address community concerns promptly.
- Glencore should revisit and update their skills development plan to develop skills in the community to enable sourcing a greater portion of local labour.
- Glencore should install high-level security measures to protect the Solar PV infrastructure from theft, including fencing, 24/7 surveillance, and collaboration with local law enforcement and private security companies.
- A Community Liaison Officer who is trusted by the community and has the necessary skills and education must be appointed before construction commences.



At this stage, none of the identified social impacts are so severe that they warrant halting the project, and most of the impacts can be mitigated.. It is therefore recommended that the proposed project be approved, provided that the enhancement and mitigation measures outlined in the report, particularly those addressing negative impacts on Socio-Cultural Networks and Community Health and Safety are addressed. The approval should also occur on the condition that Glencore enhance and update its existing grievance mechanism and community engagement plan before the project commences.



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forestry, fisheries & the environment

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SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Click or tap here to enter text.

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.dffe.gov.za/documents/forms>.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with 'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020', where applicable.

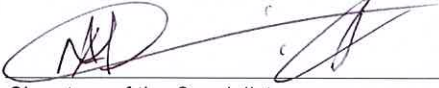
1. SPECIALIST INFORMATION

Title of Specialist Assessment	Social Impact Assessment
Specialist Company Name	Environmental Impact Management Services
Specialist Name	Alexander
Specialist Identity Number	G 474598
Specialist Qualifications:	Master's Social Work
Professional affiliation/registration:	SACSSP: 10-56744
Physical address:	8 Dalmeny Road, Pine Park, Randburg, 2194
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Telephone	0117897170
Cell phone	0840769135
E-mail	Alex@eims.co.za

SPECIALIST DECLARATION FORM – AUGUST 2023

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Alexander Msipa_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



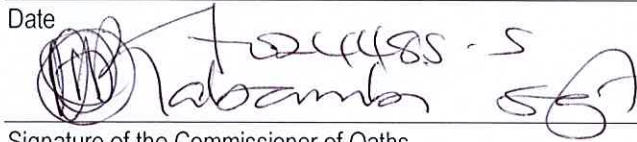
Signature of the Specialist

Environmental Impact Management Services

Name of Company

30 Sep 2024

Date



Signature of the Commissioner of Oaths

30 Sep 2024

Date



SPECIALIST DECLARATION FORM – AUGUST 2023

2. DECLARATION BY THE SPECIALIST

I, Alexander Msipa declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority; and;
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.



Signature of the Specialist

Environmental Impact Management Services

Name of Company:

30 Sep 2024

Date