SOCIO-ECONOMIC SCOPING ASSESSMENT

PROPOSED ERGO MINING SOLAR (PV) ENERGY: PHASE 2 (40MW)

July 2021
FINAL

Prepared for:

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EXECUTIVE SUMMARY

Tshedza 3 Investments (Pty) Ltd proposes to construct a Photovoltaic (PV) facility capable of generating up to 40 MW, namely the Ergo Mining Solar (PV) Energy: Phase 2 (proposed project) as assessed through this scoping report. The aim of the proposed project is to add onto the Phase 1 project[1] (19.9 MW PV, substation and 100MWh battery storage system, and 22kV overhead powerline) to generate up to 59.9MW of energy in total to supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with stable electricity during grid curtailments and outages through embedded generation. It is intended that excess energy produced by the facility will be fed back into the grid.

Envital Consulting was appointed to undertake a Socio-economic Impact Assessment (SIA) in support of the environmental authorisation process for the development and operation of the proposed project. This report comprises the scoping phase of the socio-economic assessment.

The proposed project site is located in Brakpan on the East Rand of Gauteng, spanning across in Wards 74, 82 and 99 of the City of Ekurhuleni metropolitan area. This area is within an urban area, but is characterised by peri-urban development, and comprises a combination of agricultural smallholdings, mining, and industrial land use.

Communities within the study area (within 1 km of the site) comprise a mix of income groups and activities, including middle- and low-income households, small-scale agriculture, and small or home-based businesses. There are also a number of mining-related and industrial activities in the immediate areas, which influence the local socio-economic landscape through economic contributions, as well as shaping the aesthetic and sense of place of the area.

The anticipated socio-economic impacts are likely to vary from local to the regional level, as the macro-economic benefits are likely to be realised on a regional level, while most of the negative impacts are anticipated to be localised. The area of direct impact of the proposed project is anticipated to be primarily within the smallholdings of Withok Estates Agricultural Holdings (AH), with immediately surrounding communities receiving indirect impacts.

The key area of impact is anticipated to be within 500 m of the proposed project. The following key potential impacts were identified and assessed (with mitigation):

Construction Phase

- Increased temporary local employment opportunities
- Increased local economic development opportunities
- Reduced access to livelihood resources
- Reduced public safety
- Increased nuisance, disruption and indirect costs

Operational Phase

- Increased employment opportunities
- Increased local economic stimulation opportunities
- Increased nuisance, disruption and indirect costs
- Reduced access to livelihood resources
- Reduced public safety and security
- Change in sense of place

The scoping assessment did not identify any immediate fatal flaws in terms of potential socio-economic impacts. There is, however, the potential for certain residential properties, specifically within Withok Estates and suburbs of Brakpan (namely Minnebron) to be negatively affected by the proposed project in terms of change in visual landscape and sense of place due to the construction and operation of the proposed PV plant. It is therefore recommended that a detailed socio-economic impact assessment study should be undertaken during the Environmental Impact Assessment phase.

[1] *Previously assessed through a separate Basic Assessment Process.*

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TABLES

ACRONYMS

AH	Agricultural Holdings
EIA	Environmental Impact Assessment
EMA	Environmental Management Assistance (Pty) Ltd
IDP	Integrated Development Plan
NEMA	National Environmental Management Act (107 of 1998)
SDF	Spatial Development Framework
SIA	Socio-economic Impact Assessment

1 INTRODUCTION

Tshedza 3 Investments (Pty) Ltd (the proponent) proposes to construct and operate a photovoltaic (PV) plant capable of generation up to 40 MW of energy within the Withok Estates Agricultural Holdings, and portions of farms Witpoortje and Withok within the area of Brakpan, Gauteng (proposed project).

The proposed project forms the second phase of a 59.9MW PV solar energy facility development to be developed in a phased approach. Phase 1 (previously underwent a Basic Assessment process and is awaiting the outcome of an environmental authorisation[2]) included up to 19.9 MW of solar (PV) energy generation, 11 km of 22 kV overhead transmission lines, substation, and 100MWh battery storage and energy systems. Phase 2 (the proposed project) aims to expand the PV solar production by an additional 40 MW but will make use of the Phase 1 infrastructure where possible which has been designed for the total generation capacity (59.9 MW).

In order to commence with the construction and operation of the proposed project, the proponent is required to apply for environmental authorisation in terms of the National Environmental Management Act (107 of 1998) and the Environmental Impact Assessment (EIA) regulations (2014, as amended). Phase 2 of the project requires a full Scoping and EIA process to be carried out.

Envital Consulting was appointed by Environmental Management Assistance (Pty) Ltd (EMA) to undertake a Socio-economic Impact Assessment (SIA) as part of the regulatory environmental authorisation process. SIA is an independent specialist study that focusses on the interrelation between social, economic, and biophysical environments, specifically the economic and social change process that can be induced by a particular activity or development. This report constitutes the scoping phase for the proposed project.

1.1 PROJECT LOCATION

The proposed project will be situated within the Withok Agricultural Holdings (AH), and on portions of farms Witpoortje and Withok within the area of Brakpan within the City of Ekurhuleni Metropolitan Municipality, Gauteng Province (**Figure 1**).

A total of 32 properties are under consideration for the PV arrays and associated infrastructure for the scoping phase. A list of these properties is provided in **Table 1** and mapped in **Figure 2**.

Table 1 Properties identified for PV array

PROPERTIES	Erf number						Zoning
WITHOK ESTATES	203	240	296	300	348	352	Agricultural (small holdings)
	204	241	297	301	349	353	
	205	242	298	302	350	354	
	206	243	299	303	351	355	
	207	244					
	208	245					
WITPOORTJE 117 IR	R/183/117-IR						Mining
	272/117-IR						Agriculture
	283/117-IR						Mining
WITHOK 131 IR	R/9/131-IR						Agriculture

[2] *In terms of the EIA regulations (2014, as amended) under the National Environmental Management Act (107 of 1998).*

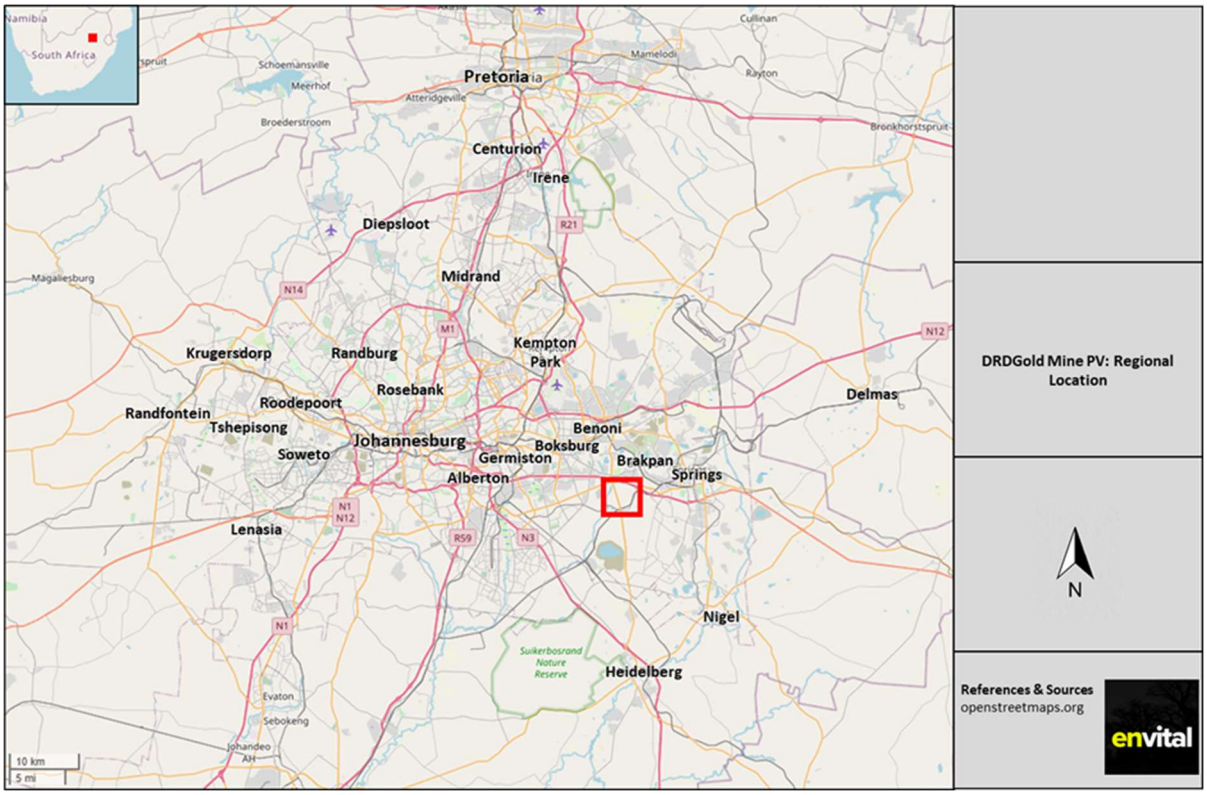


Figure 1 Location of proposed project site

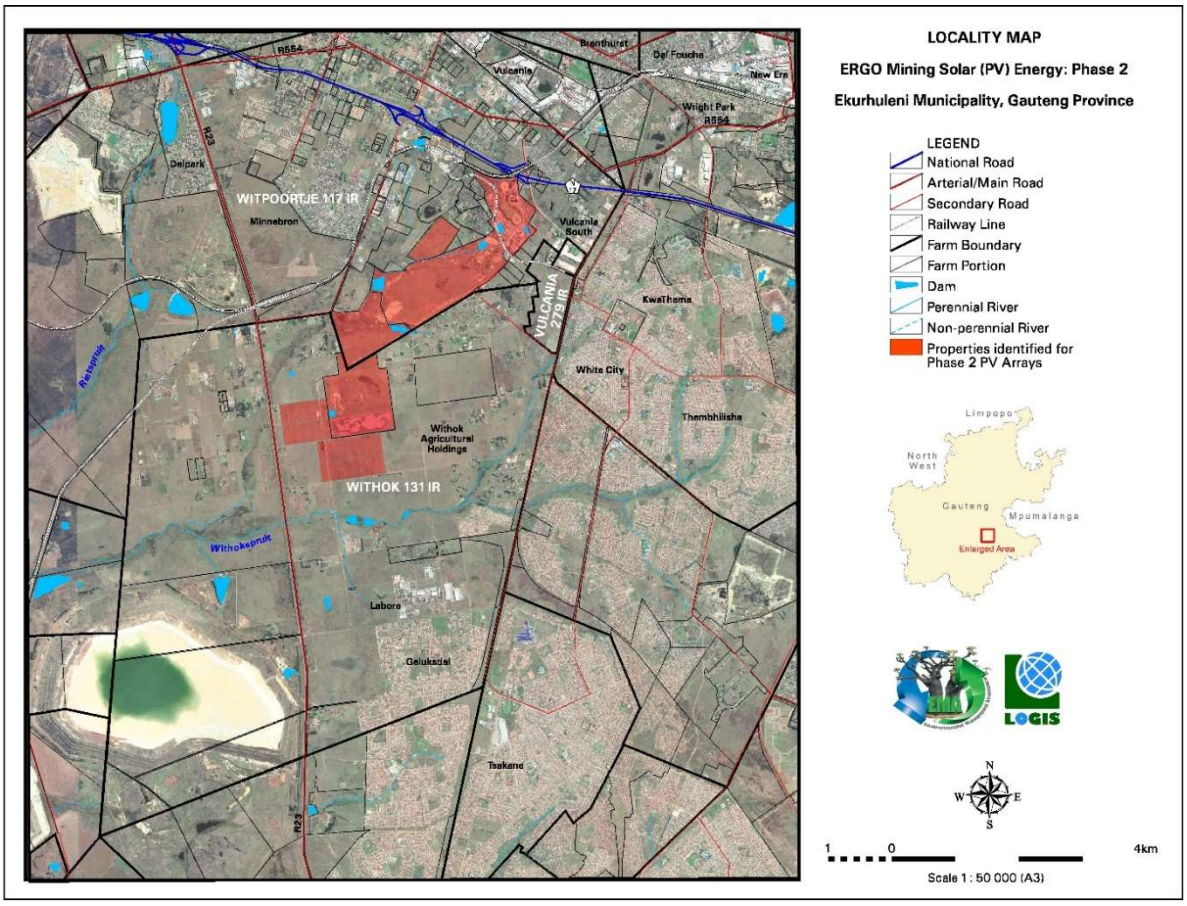


Figure 2 Properties identified for PV arrays and associated infrastructure

1.2 PROJECT OVERVIEW

The purpose of the proposed project will be to secure energy supply for the Ergo Mining Plant and the Brakpan/Withok Tailings Dam facility. The energy for these facilities is currently supplied by Eskom via existing grid infrastructure, including overhead lines and substations in the immediate vicinity of these two facilities.

The proposed project (Phase 2) will tie into the existing infrastructure, but supply energy to a purpose-built energy supply storage or battery system (Phase 1). This energy can then be used by the facilities in the event of grid curtailment or outages. In addition, the long-term goal will be for Ergo Mining to reduce their carbon footprint and curtail the use of energy supplied from the national grid which will alleviate the current pressure on the Eskom grid.

The proposed project is anticipated to comprise the construction and operation of solar PV panels and associated infrastructure (i.e. inverter stations, new substation, internal and external access roads, underground cabling and overhead powerlines etc.) capable of generating up to 40 MW of energy. A description of the key components of the proposed project is provided in **Table 2**.

Note: The proposed project (Phase 2) will rely on the substation, battery storage system, 22 kV overhead lines and axillary services of Phase 1. The infrastructure required for Phase 2 will be limited to PV panels, connecting lines, and access and security services.

Table 2 Overview of key activities

Activity	Description
PV panels	– Design capacity: 40 MW – Panel dimensions: 2.1m x 1.1 m – Panel height: 1.57m above ground – Footprint: To be confirmed following Scoping
Substations and electrical systems	– Development of a new substation on the proposed PV site – Installation of connecting lines and cabling from the PV panels to the Phase 1 substation and electrical system where required
Battery storage	Not applicable – will feed into the Phase 1 containerized 100MWh battery storage system
Overhead power line	– will feed into the Phase 1 22 kV overhead transmission lines where required – new <22kV overhead transmission line requirements to be determined by design engineer in impact assessment phase
Access and security services	– Upgrade of existing access roads or construction of new internal and external roads to the PV site with crusher run or similar materials (not paved) – Appropriate lighting, access control with guard house and fencing around the PV site
Auxiliary services	As for Phase 1, namely: – Operational power supply and use -from existing Ergo Mining operations and onsite diesel generators (i.e. Eskom, existing) – Water supply and use from existing Ergo Mining operations transported via tankers to site (i.e. municipal, existing) – Waste management (private, existing)

TIMEFRAMES

The site establishment and construction phase is anticipated to take approximately twelve to fifteen months. The total life of the facility is anticipated to be up to 30 years.

FINANCIALS

An overview of key financial aspects for the socio-economic environment are provided in **Table 3**.

Table 3 Overview of key financial aspects – approximate values

	Capital Value
Construction phase	R 1.4 billion
Operational phase	To be confirmed

LABOUR AND EMPLOYMENT

The estimated employment generated through the proposed project is provided in **Table 4** (numbers to be revised at impact assessment phase). The labour will be sourced regionally and from the local community (where appropriate skills exist or unskilled labour is required) in collaboration with the Ergo Mine Training Centre and main contractor (responsible for engineering, procurement, and construction) (Ergo, 2021).

The construction phase will see up to 273 people employed, with the majority (75%) being unskilled. The total capital value of employment is during construction and operation is still to be confirmed. During the operational phase, however, up to 27 new employment opportunities will be generated for the management, maintenance and security of the facility.

Table 4 Estimated employment positions generated

	Construction phase	Operational phase	Decommissioning
Management	9	2	6
Professional	8	2	-
Skilled	48	5	9
Semi-skilled	28	5	-
Unskilled	204	14	127
TOTAL	**273**	**27**	**142**

2 RECEIVING ENVIRONMENT

2.1 REGIONAL OVERVIEW

The City of Ekurhuleni is one of three metropolitan areas in Gauteng, including the City of Tshwane and the City of Johannesburg. These three areas make up the administrative and economic capitals of South Africa. Unlike the other two cities, Ekurhuleni does not have a historical city centre. It was created through the amalgamation of two municipal areas and encompasses nine towns and seventeen townships that comprise the East Rand.

The lack of a single central business district and spatially fragmented economic and residential areas make the municipality a challenge to manage holistically (City of Ekurhuleni, 2016). These challenges include basic service delivery and planning, community health, and environmental monitoring.

In addition to this, there are four major concentrations of previously disadvantaged communities within the municipality due to the historical spatial separation of low-income, black-township areas from key economic areas within Gauteng. Collectively, these areas represent 61% of the municipality's population, and contribute to the high levels of poverty within Ekurhuleni (City of Ekurhuleni, 2016).

The population of Ekurhuleni is approximately 3.3 million people, which represents 6% of South Africa's population (Statistics SA, 2017). The growth rate of the population within Ekurhuleni is 2.47% (whereas nationally it is 1.2%) (City of Ekurhuleni, 2018). This growth is likely to be driven by the in-migration of people to the area. As with the City of Johannesburg and City of Tshwane, Ekurhuleni attracts a high number of jobseekers from areas outside of the city (e.g. rural areas, other provinces and neighbouring countries). The population of the municipality is largely concentrated in the young adult group (20-34 years of age). The in-migration of people may skew the demographics, as it is likely to be young adults who move to the area for work.

The majority (80%) of the population falls into the Black-African population group, followed by White (14%), Coloured (3%) and Indian (2%) (City of Ekurhuleni, 2018). The languages spoken reflect the diversity of people that migrate to the area. The mostly widely spoken first language is isiZulu (34%), followed by Sepedi (12%) Sesotho (11%) and English (10%) (City of Ekurhuleni, 2018).

Ekurhuleni is comprised of approximately 1.3 million households; 18% of which are considered informal (City of Ekurhuleni, 2018). The distribution of income per household is similar to Gauteng and the City of Johannesburg's, with 18% having no income, 21% low income, 32% low-middle, 2% middle-high and 4% high income (Statistics SA, 2012).

2.2 REGIONAL ECONOMY

The economy of Ekurhuleni is based predominantly on manufacturing, financial and business services, and community services and general government, which comprise 23%, 21% and 21% of the sector contributions respectively (City of Ekurhuleni, 2018). Other key economic activities include trade and hospitality (15%), and transport, storage and communication (11%) (City of Ekurhuleni, 2018).

There has been a notable shift in the economy of the municipality over the past 15 years, with a marked decline in manufacturing and increase in finance and businesses services (City of Ekurhuleni, 2018). This has created a significant issue for the City of Ekurhuleni, and revitalisation of the sector has become a key strategic focus (City of Ekurhuleni, 2018). This decline is likely to have affected the local economy for two reasons – firstly, employment (especially unskilled and skilled) is directly reliant on the manufacturing sector, and secondly, a loss of investment and income for the municipality.

Most employment within Ekurhuleni in 2015 was in three key sectors, namely trade (22%), finance (22%) and community services (19%), followed by manufacturing (13%) and construction (7%) (City of Ekurhuleni, 2018). A high portion of the population (48.5%) are economically active, however only 72.5% of this group are employed (City of Ekurhuleni, 2018). The unemployment rate of 27.4% is relatively high compared to the national rate of 24.5% in 2015, but similar to that of Gauteng at 27.6% (Statistics SA, 2016). This rate is likely to have increased significantly in 2020 with economic decline related to the Covid-19 pandemic.

2.3 LOCAL OVERVIEW

The proposed project site is located in Brakpan on the East Rand, within Wards 74, 82 and 99 of the City of Ekurhuleni metropolitan area. The local area, however, encompasses a broader region of Brakpan.

2.3.1 LAND-USE

The site is located within an active gold mining area of the East Rand. There are several mining activities (mostly tailings facilities and slimes dams) within a 5 km radius of the site. The closest urban centre to the site is Brakpan, which is located approximately 5 km north of the site, and Springs, which is located approximately 8 km north-east of the site.

Both Brakpan and Springs began developing in the late 19th century as a result of the coal and gold-bearing resources found in the area, together with the associated mining and industrial activities. Today this area is characterised by a mosaic of mining and industrial land uses, interspersed with urban centres, residential areas, agriculture and open veld.

2.3.2 MINING AND RELATED OPERATIONS

The Gauteng region is known as the key mining area in South Africa, with gold, platinum, coal and other mineral resources being found in the area. The main mining corridor runs from east to west across the province, with Brakpan, Springs and Nigel forming the eastern and south-eastern extends (Ekurhuleni Metropolitan Municipality, 2015). Due to historic and ongoing mining, the landscape is scattered with tailings and other waste dumps and dams. Numerous mining-related operations are found in the area, including associated engineering and related services.

Mining has shaped the East Rand, however, due to declines in recent years in this sector business and government have looked to new means of economic sustainability within urban areas. One such means reclaiming of old tailing facilities for reprocessing, of which the Ergo Mining is one such operation. The Ekurhuleni Spatial Development Framework (SDF) indicates that old mining areas are also becoming focal points for the development of a variety of mixed uses, including active open space system for recreation and tourism to overcome social inequalities and provide more socio-economically sustainable and beneficial environments (Ekurhuleni Metropolitan Municipality, 2015).

2.3.3 INDUSTRY AND COMMERCIAL

The industrial and commercial aspects of the East Rand reflect the development around mining and subsequent socio-economic dynamics. Brakpan and Springs make up one of the seven industrial areas of the municipality and contribute significantly to the local economy.

There are several industrial areas within 10 km of the proposed project site, including Vulcania (1.7 km north), Vulcania South (<1 km east), New Era (4 km north-east), and Boksburg East Industrial (9 km north-west). While much of the manufacturing in this area started as mining related, a wide variety of products are now produced here, from construction supplies and electronics to health care and food.

Transport and logistics is also a key component of the local services, as the location and space available in the area (outside of the densely developed City of Johannesburg) provides a good logistics hub.

Retail and other tertiary sector activities (consulting, financial) have developed in the area over the past few decades, as population and industrial activities have increased. There are several malls and office parks in the area that support these activities.

2.3.4 DEMOGRAPHICS

The population of Ward 74, 82 and 99 is 100 839 people (in 2011), with an average population density of 714 (ranging from 505 to 1124) people per square kilometre (Statistics SA, 2012). This is 3% of the total population of the City of Ekurhuleni Municipality (3.1 million).

The population of the wards is considered youthful, with 67% being below the age of 35, and 26% below the age of 15 (**Figure 3**) (Statistics SA, 2012). There is a slightly higher ratio of men to women in the

local area at 52% male to 47% female (Statistics SA, 2012). This is likely to be due to the high concentration of mining and industrial activities, and the related in-migration of men for employment.

The dependency ratio is 40%, which is marginally higher than Gauteng (39%) but lower than the national ratio of 56% (Statistics SA, 2012). The majority (85%) of the population within the three wards is Back African, followed by Coloured (8%), and White (6%) (**Figure 4**) (Statistics SA, 2012).

There are a number of languages spoken within the study area. isiZulu is the most spoken (19%), followed by English (13%), Afrikaans (12%), Sesotho (11%) and Sepedi (10%). This variety is likely to reflect the in-migration of people seeking work or working in the area (**Figure 4**).

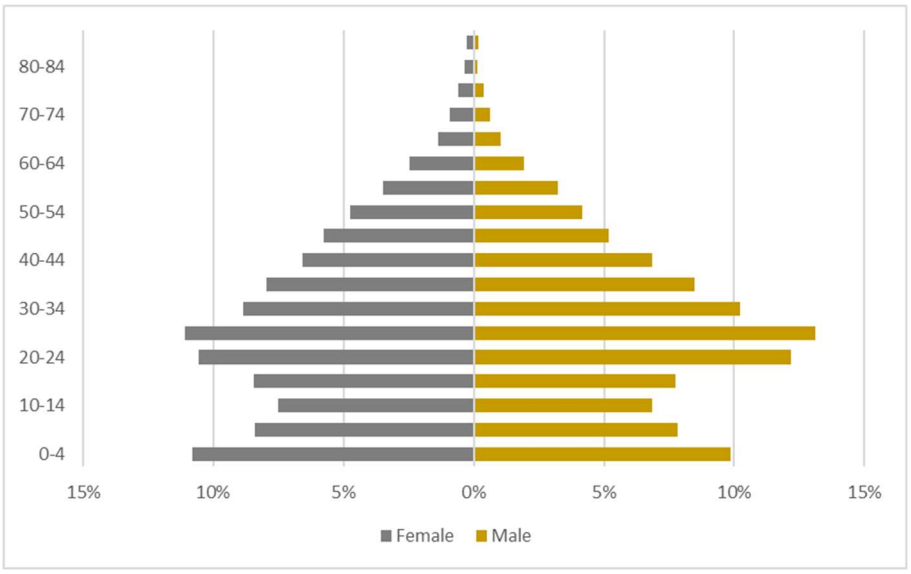


Figure 3 Population pyramid for Wards 74, 82 and 99

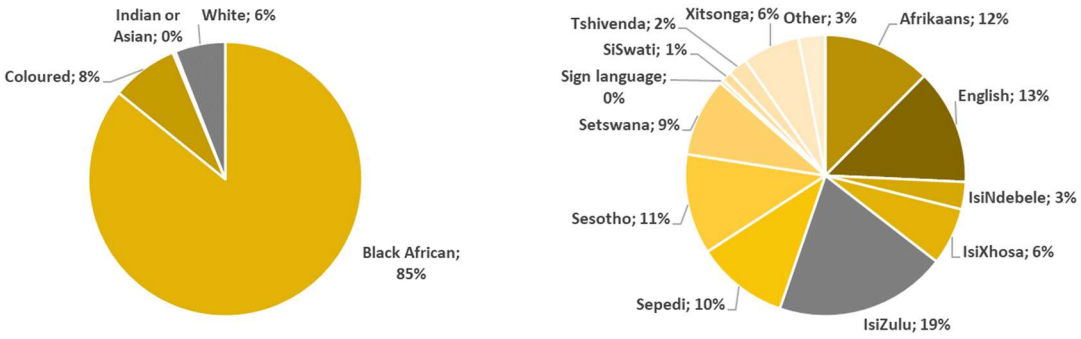


Figure 4 Population groups and languages for wards 74, 82, 99

The local area is classified as urban and comprises 77% formal residential, 15% informal residential, 1% smallholdings and 1% industrial properties (Statistics SA, 2012)[3]. The level of access to basic services is moderates and slightly lower than the Gauteng and Ekurhuleni Municipality averages. The key indicators for municipal service for the three wards are provided in **Table 5** below.

[3] *Note percentages are based on the number of land parcels, not percentage of land. Many formal houses take up small amounts of land, but smallholdings cover a large portion of the local area.*

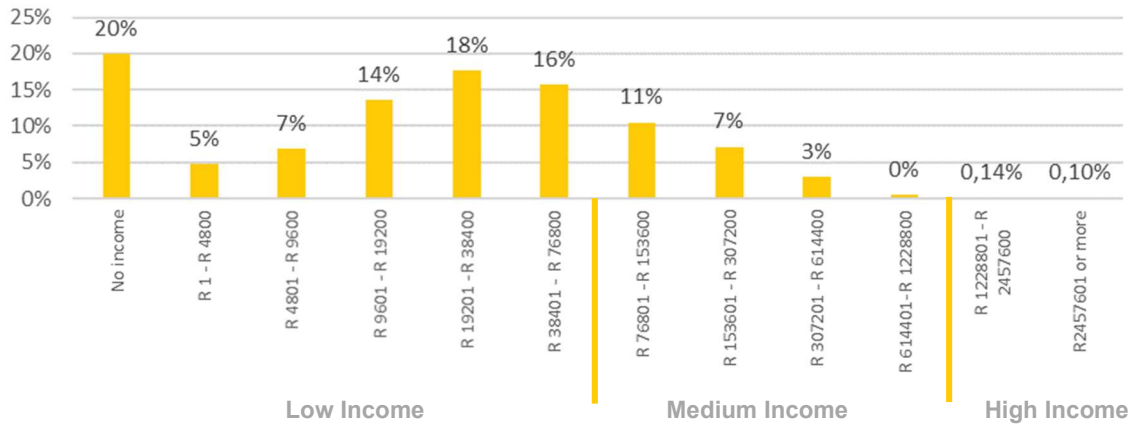
Table 5 Level of access to basic services for wards 74, 82 and 99

Service		Highest percentage	Next Highest percentage	No access
Piped Water		51% inside dwelling	29% in yard	0.4%
Sanitation		78% flush toilet	17% pit latrine	1%
Energy	**Cooking**	71% electricity	24% paraffin	0.1%
	Heating	62% electricity	13% paraffin	10%
	Lighting	73% electricity	19% candles	1%
Refuse removal		85% by municipality	7% own / communal dumps	6%

Source: Census 2011, Statistics SA 2012

The local area comprises a mix of low and middle-income households, with 20% of local households not receiving any form of income. The majority of households (59%) are considered low-income, 21% of households considered middle-income, and 0.2% considered high-income households (See **Figure 5**).

Unemployment in these wards is 33% (excluding 5% discouraged work seekers) (Statistics SA, 2012). This is lower than the national and municipal (Ekurhuleni) levels of 27 %, and provincial levels of 25% in 2011 (Statistics SA, 2012). There are likely to be a number of people who have moved into the area seeking jobs, but not able to find employment. This is likely to have become exacerbated during 2020 due to Covid-19-related restricts and economic slow-down.



Source: Census 2011, Statistics SA 2012

***Figure 5 Total household income per year* - wards 74, 82 and 99**

2.4 SITE

2.4.1 LAND USE

The identified site on which the PV solar plant and associated infrastructure is to be located is currently zoned as agricultural and mining, which comprises predominantly open veld. Past studies (Sanderson, 2021) indicated that open veld is not all secured and often accessed by members of the public who are moving between areas (informal pathways) and using the area for informal grazing of livestock.

The local area immediately surrounding the proposed project site comprises mostly of formal agricultural smallholdings. There are a number of residential and industrial areas in the vicinity, as outlined below.

INDUSTRY AND COMMERCIAL

Industrial and trade areas within the immediate vicinity of the proposed project site are included in **Table 6** and mapped in **Figure 6**.

Table 6 Identified industrial areas within 2 km of the Proposed site

Residential Area	Distance & Direction from site
Witpoort Estates AH	450 m north-west
Vulcania	2.2 km north north-east
Vulcania South	1.5 km east
Labore	1.5 km south

RESIDENTIAL

There are various residential areas in the local area, ranging from low- to middle-income and formal in nature. Agricultural smallholdings overlap with industrial areas around the site.

There is one informal settlement, located north-east of the proposed project site. This is called the Ergo squatters and is likely to have developed as a result of mining and industrial-related employment opportunities in the immediate area.

An overview of each residential area is provided in **Table 7** and mapped in **Figure 6**.

Table 7 Identified residential areas within 2 km of the Proposed site

Residential Area	Distance & Direction from site
Witpoort Estates AH	Immediately east, north and west
Withok Estates AH	Immediately east, south and west
Minnebron	550 m north-west
Sallies Village	1.1 km north
Sunair Park	1.1 km north north-west
Rand Colliers SH / Denneoord	1.5 km north
Ergo Squatters	1.2 km north-east
Kwa-Thema	1.7 km east

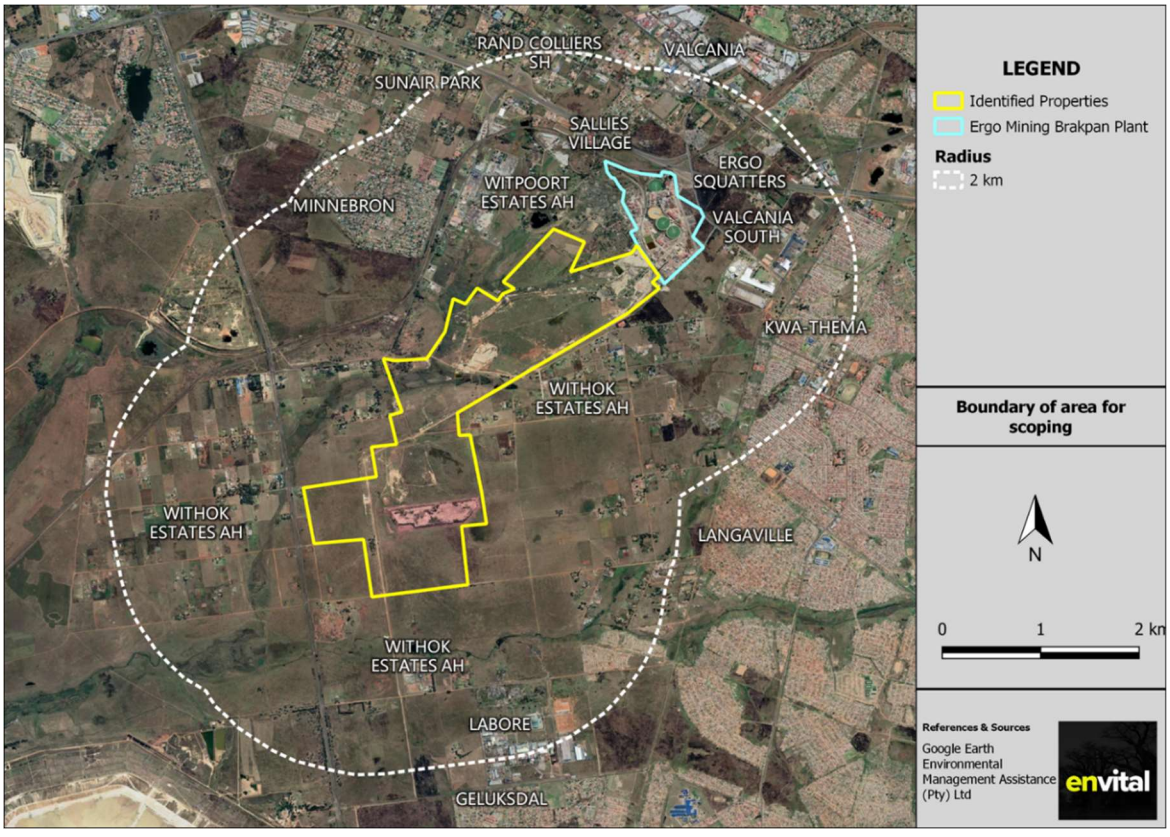


Figure 6 Boundary of all properties identified for development – Phase 2, Scoping

2.4.2 SOCIAL AND POLITICAL STRUCTURES

The formal authority in this region is the regulated municipal structure, which means that a Ward Councillor and Ward Committee is responsible for representing and engaging with the local communities. There are no recognised traditional authorities, however the municipality engages with local communities through ad hoc community groups and representatives as necessary.

2.5 SOCIO-ECONOMIC POLICY AND PLANNING CONTEXT

2.5.1 NATIONAL POLICY

The national context of the SIA is based in the two key national pieces of legislation, which promote the social, economic, and environmental rights of South Africans, namely the Constitution of South Africa (108 of 1996) and the National Environmental Management Act (107 of 1998)

CONSTITUTION OF SOUTH AFRICA (108 OF 1996)

The Constitution of South Africa, and specifically the Bill of Rights, gives South Africans the right to:

> "*an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures"*

This right is inherent in the EIA and SIA process and underpins the needs to link the people to the environment in which they live, in terms of sustainable development and the right to healthy living environment.

The Constitution outlines the objectives and development duties of municipalities. As well as the legal rights of all South Africans.

There are two provisions within the Constitution that are of specific relevance for the SIA context, namely Sections 25 and 26. as provided below:

Section 25:-

> "(1) No one may be deprived of property except in terms of law of general application, and no law may permit arbitrary deprivation of property.
>
> (2) Property may be expropriated only in terms of general application – (a) for a public purpose or in the public interest; and (b) subject to compensation, the amount of which and the time and manner of payment of which have either been agreed by those affected or decided or approved by a court
>
> (6) a person or community whose tenure of land is legally insecure as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an act of Parliament, either to tenure which is legally secure or to comparable redress"

Section 26:-

> (1) Everyone has the right to have access to adequate housing.
>
> (3) No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the circumstances. No legislation may permit arbitrary evictions."

The proposed project is to be located on land that is currently vacant (agricultural and mining) and so no resettlement or appropriation of formal or informal residents or businesses is anticipated. There is the potential for the project to impact on the environmental rights of surrounding residents, which will be assessed through a scoping and EIA process.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT (107 OF 1998)

The National Environmental Management Act (107 of 1998) (NEMA) is the overarching national legislation in terms of environmental protection and management for sustainable development. The principles that are enshrined within the NEMA speak to the need to integrate people into environmental management and ensure equitable consideration of people within sustainable development. The

following NEMA principles highlight the need to include social impacts within integrated environmental management:

- Equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.
- Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- The social, economic, and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
- The costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

The social aspects of the NEMA principles include equality, meeting basic human needs, and identifying social and economic impacts of development. The aims and objectives of the SIA study are to ensure these aspects are considered as part of the EIA and decision-making process.

2.5.2 ENERGY-SPECIFIC POLICY AND LEGISLATION

On a national level, legislation and policy around the development and use of renewable energy in South Africa is crucial to understanding the context and potential impacts and implications of the proposed project.

The following national-level policies were reviewed to provide context for the proposed project in terms of the production of renewable energy:

- Integrated Resource Plan (2010/2019)
- National Development Plan of 2030
- National Infrastructure Plan of South Africa;
- New Growth Path Framework;

The findings of the review process were that renewable energy is a key element in the sustainable growth of the South African economy. In addition to the economic benefits, including energy supply stability, it also will provide an opportunity to reduce the carbon emissions and promote the green economy within the country.

In response to an increasing need for energy for industry and economic development across South Africa, the national Department of Energy initiated the renewable energy policy to support the existing coal-fired energy production, which currently dominates South Africa's energy production. As a result, the Renewables Energy Feed-in Tariffs (REFIT) policy was developed and the National Integrated Resource Plan (IRP) and Integrated Resource Plan (IRP2010), incorporating the Renewable Energy Independent Power Producer (REIPP) Procurement Process. This process was initiated in 2009 to contribute towards the target of 10,000 gigawatt hours (GWh) of renewable energy supply by 2030.

An integral part of the renewable energy policy is the socio-economic benefits associated with the development of renewable power generation plants, which include:

- Improved human and ecosystems health as a result of reduced pollution and climate conscious and sustainable development
- Secure energy supply for social services centres, schools, clinics, telecommunications, small businesses and other such facilities vital for poverty alleviation and socio-economic development
- Allowing for an equitable platform for Independent Power Producers (IPPs) to qualify for the generation of renewable energy
- Employment opportunities for local communities

- Opportunities for local economic development, with 45% local content (as per qualifying criteria for the third phase of IPP procurement process)

In addition the following relevant legislation was considered:

- **The National Energy Act no 34 of 2008** which promotes the diversification of the supply of renewable energy and its sources, including the development of solar, in the support of economic growth and poverty alleviation.
- **White Paper on the Energy Policy of the Republic of South Africa of 1998**; which indicates that the government has committed to "the promotion of access to affordable and sustainable energy services for small businesses, disadvantaged households, small farms, schools, clinics, in our rural areas and a wide range of other community establishments".
- **White Paper on Renewable Energy of 2003**; supports the White paper on Energy Policy and sets out the government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

While the proposed project is anticipated to generate electricity for private use (i.e. for Ergo Mining Brakpan Plant and Brakpan/Withok Tailings Dam facility) the long-term goal of the proposed project is to feed into the local or regional grid and support energy stability. The generation of renewable energy is likely to allow for energy produced through coal to be diverted to other sectors or uses, and therefore contribute toward local renewable energy production and provider broader support as a result.

2.5.3 LOCAL

SPATIAL DEVELOPMENT FRAMEWORK

The Ekurhuleni Metropolitan Spatial Development Framework (SDF) (Ekurhuleni Metropolitan Municipality, 2015) identifies the springs and Brakpan areas as existing nodes that require infrastructure and services upgrades, infill, and improved transport linkages to develop their potential and meet the future requirements of the municipality's development planning. This comes from a number of broader spatial planning policies, including the National Development Plan and Global City Region Concept.

The National Development Plan identifies the need to overcome spatial and economic exclusion by developing logistics hubs, road, rail, fuel and other infrastructure through the development of key areas, which includes the Tambo Springs Logistics Gateway. The Tambo Springs Logistics Gateway consists of a central logistics hub in Gauteng, that is supported by several decentralised nodes and corridors. In Springs, there are four hubs planned for development (including manufacturing, logistics, and warehousing).

The Global City Region Concept was developed to build Gauteng into an integrated and globally competitive region where the economic activities of different parts of the province complement each other in consolidating Gauteng as an economic hub of Africa and an internationally recognised global city region. The key principles include "Reducing present rates of non-renewable energy usage".

Ekurhuleni is a key industrial area for Gauteng and South Africa, and so needs to ensure efficient and continuous industrial growth (Ekurhuleni Metropolitan Municipality, 2015). The regeneration of the far East Rand (including the Springs/Brakpan areas) is identified as one of the key aspects. This in turn supports strategic objectives of the Tambo Springs Logistics Gateway and other needs, such as road, rail and industrial, commercial and residential infill and development.

In addition to industrial development, one of the key objectives and indicators for spatial development within the Ekurhuleni Municipality is to "identify the spatial impact of climate change" by enabling the energy sector to better support the local economy (Ekurhuleni Metropolitan Municipality, 2015). This can be achieved by:

- Increasing renewable and clean energy contribution to the total energy supply mix;
- Energy planning to include full economic cost of energy; and
- Providing incentives for increased energy efficiency and use of renewable energy.

The development of industrial operations within the local area relates to the ongoing development and support of existing operations, including mining, within the local area. The SDF indicates that Tambo Springs development could potentially increase energy demand in the region. The support of the

development in the region, as well as the promotion of the development and use of renewable energy is key for the proposed project, and therefore is considered aligned with the SDF.

The proposed project must also consider the potential for future development and infilling of housing and industrial activities in the area south of Springs, which could potentially affect the future surrounding land uses.

EKURHULENI INTEGRATED DEVELOPMENT PLAN

The City of Ekurhuleni Integrated Development Plan (IDP) (Ekurhuleni, 2018) aligns with national and provincial development strategies with municipal and localised requirements. The IDP provides several strategic objectives for the Ekurhuleni Growth and Development Strategy (GDS 2055) and to develop and implement the IDP. These objectives are:

- To promote integrated human settlements through massive infrastructure and services rollout;
- To build a clean, capable and modernised local state;
- To promote safer, healthy and socially empowered communities;
- To protect the natural environment and promote resource sustainability; and
- To create an enabling environment for inclusive growth and job creation.

To align the IDP with strategic processes, key focus areas are identified. One of the aspects is to "protect the natural environment and promote resource sustainability", with the focus of implementing the alternative and renewable energy strategy to limit dependence on the national grid" (Ekurhuleni, 2018).

The City of Ekurhuleni has experienced challenges with regards to energy provision, and the alternative and renewable energy strategy focusses on providing small-scale and individual renewable energy solutions for municipal and state-sponsored operations, initiatives, and low-cost housing.

The proposed project is not directly highlighted in the IDP as it is for private industrial use, however the IDP supports the production of solar energy in support of broader provincial and national strategies to reduce carbon emissions and move towards cleaner energy sources.

3 SOCIO-ECONOMIC IMPACTS

3.1 POTENTIAL RECEPTORS

3.1.1 PRIMARY RECEPTORS

RESIDENTIAL

The land use immediately surrounding the proposed project site (all properties) is agricultural. This area comprises Withok Estates AH and Witpoort Estates AH. Both comprise of small holdings, which are used for a variety of activities, including residential, agricultural, small businesses, and light industrial. An overview of each residential area is provided in **Table 8**.

Figure 7 indicates the 500m and 1 km radius around the proposed project site. Based on previous studies undertaken by the specialist (Sanderson, 2021), the area of direct impact is likely to be within 500m. Changes in the socio-economic dynamics of the local environment are likely to occur within 1 km of the site (including visual, traffic, and change in nature of the area).

Table 8 Summary of residential areas within 1 km of the Proposed site

Residential Area	Distance & Direction from site	Broad characteristics
Withok Estate	Neighbouring to the east, south and south-west and south-east	▶ Formal, mixed smallholdings and industrial/trade ▶ Low- to middle-income ▶ Basic Services
Witpoort Estates AH	Neighbouring to the north-west	▶ Formal, mixed smallholdings and industrial/trade ▶ Low- to middle-income ▶ Basic Services
Minnebron	500 m north-west	▶ Formal, small properties with standalone houses ▶ Low- to middle-income ▶ Basic Services

INDUSTRIAL AND MINING

The site and areas adjacent to the northern end of the site are comprised of mining activities (including the Ergo Brakpan Mine), as well as light industry (including construction materials manufacturing, logistics and distribution).

An overview of each residential area is provided in **Table 9** and mapped in **Figure 7**.

Table 9 Summary of industrial areas within 1 km of the Proposed site

Industrial Area	Distance & Direction from site	Broad characteristics
Ergo Mining Brakpan Plant	Immediately north of the site	▶ Metallurgical plant and associated
Witpoort Estates AH	500 m north-west	▶ Transport and logistics ▶ Manufacturing - construction
Vulcania South	500 m north-east	▶ Manufacturing and logistics

COMMERCIAL

There are no formal commercial areas within 1 km of the proposed project site. There may be informal food sellers in the vicinity of the Ergo Plant and industrial areas, as well as small businesses run from properties within the smallholdings in Witpoort and Withok Estates.

3.1.2 SECONDARY RECEPTORS

The secondary receptors, namely those that could be indirectly impacted by the proposed project, are likely to include the broader Brakpan area, including mining, agricultural, industrial and residential areas (**Figure 8**). This area has been defined as within 10 km of the proposed project site, however, could extend to a regional level.

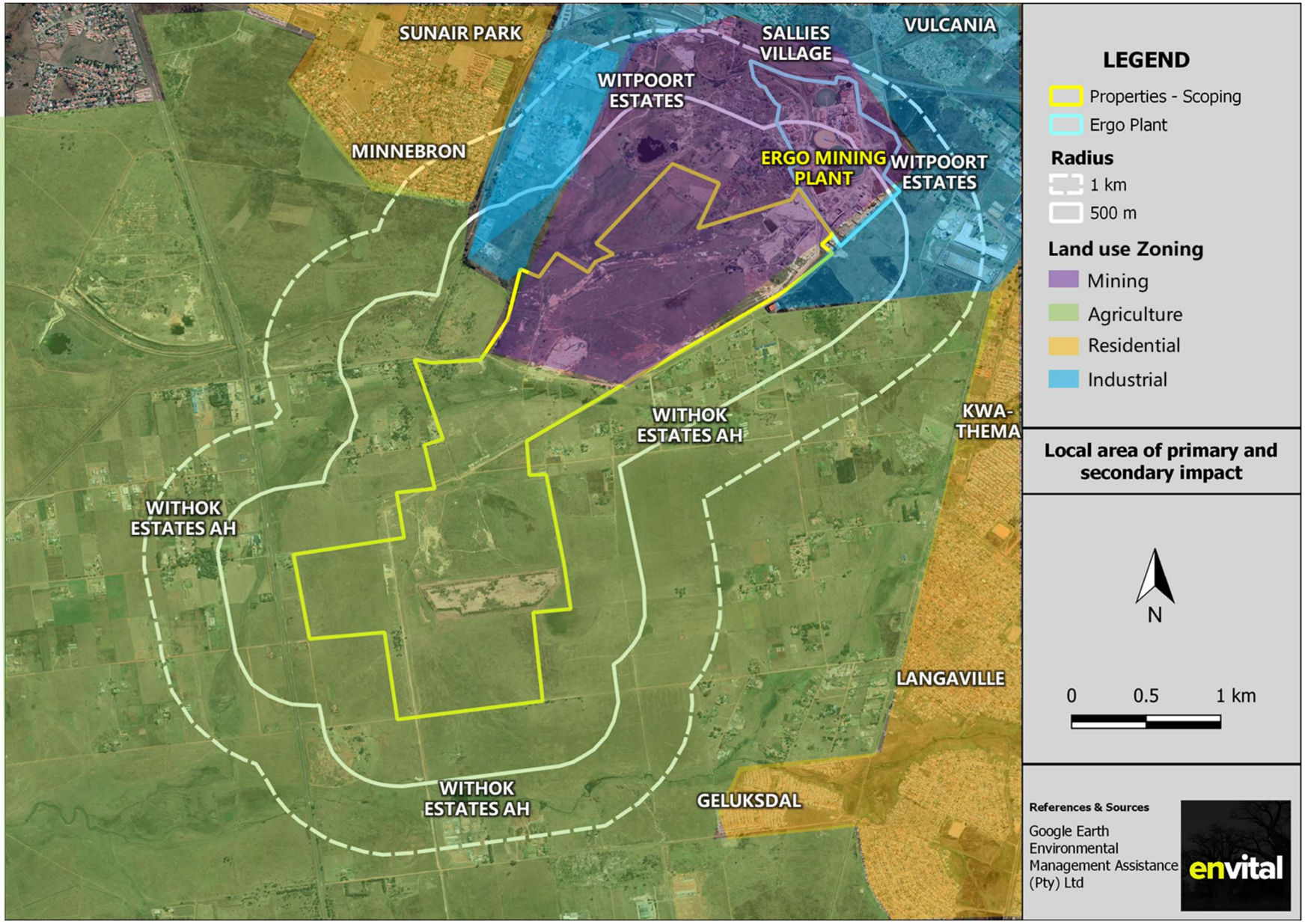


Figure 7 Area of direct impact

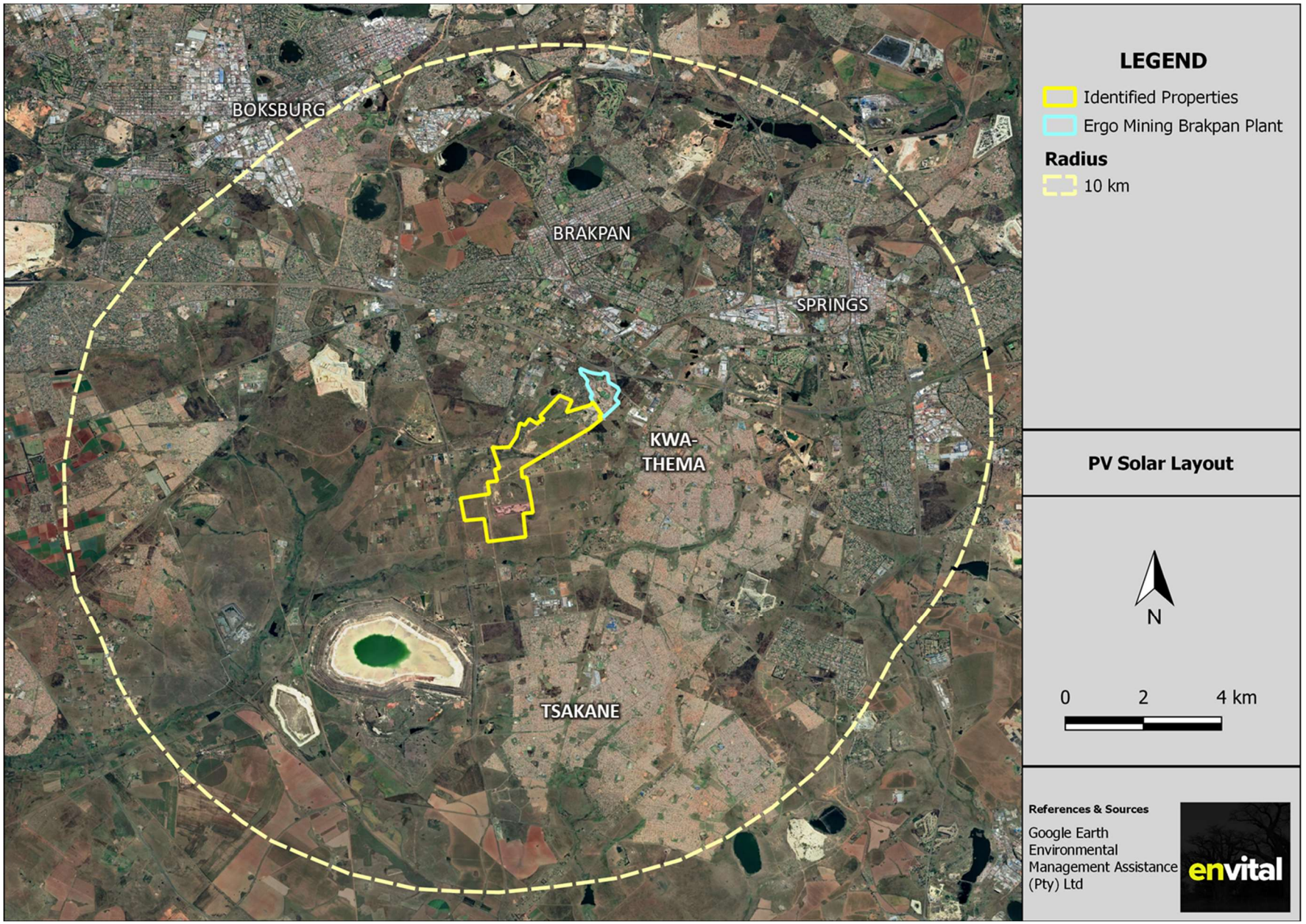


Figure 8 Area of Indirect impact

4 SOCIO-ECONOMIC IMPACTS

The following potential socio-economic impacts have been provided as a preliminary assessment based on previous studies (Sanderson, 2021) and a desktop assessment of the proposed project and socio-economic receiving environment.

4.1 CONSTRUCTION PHASE

1) **Increased temporary local employment opportunities** – It is anticipated that up to 273 temporary or short-term employment opportunities may be generated during the construction phase. Some of which may benefit local unemployed individuals. The benefits may impact beyond the local area – i.e. to the regional or national level – as many of these opportunities may be skilled or professional and so are unlikely to be sourced locally.
2) **Increased local economic development opportunities** – The local procurement of materials and services could benefit local businesses and indirectly provide employment and improved local spending in the short-term. As the types of services required during construction is unlikely to exist locally, these benefits may be realised on a regional or national level, however the procurement of locally available materials (e.g. crusher run) and services such as security and cleaning could be sourced locally.
3) **Reduced access to livelihood resources** – Construction activities may require the securing of certain portions of the site for security of the PV facility, which may be used by local communities to support their subsistence livelihoods, including grazing.
4) **Reduced public safety** - During the construction phase, there will be an influx of labour, machinery, traffic, and potentially jobseekers into the area over the twelve - fifteen-month construction phase. This is likely to increase the exposure of local public (including residents, roads users and businesses) to health and safety risks. These risks may include the potential for increased levels of crime, traffic accidents, and exposure to dust and vehicle emissions.
5) **Increased nuisance, disruption and indirect costs** – The construction phase is likely to alter the sense of place and impact the local residents through changing the local environment. These changes are likely to include increased noise (excavation, labour, machinery and traffic), reduced local air quality (dust, vehicle emissions), increased traffic, machinery and people in the area, and potentially an increased in crime and presence of “outsiders” and construction activities in the area. These aspects can result in nuisance and disruption to social and economic activities and communities, as well as create an environment that spreads social pathologies and ills.

4.2 OPERATIONAL PHASE

1) **Increased employment opportunities** – It is anticipated that the operational phase will see the employment of approximately 27 people for the 20 to 25-year duration for the operational phase, creating direct employment for the region. In addition, the sourcing of materials and services could develop indirect employment opportunities.
2) **Increased local economic stimulation opportunities** – Local businesses could also see growth and diversification through the provision of services and materials to the operation, thus encouraging diversification within the local economy. The removal of the Ergo Plant for the grid could also allow for a more stable energy supply to be made available to the region which could support local economic development and investment.
3) **Increased nuisance, disruption and indirect costs** – The operation of the proposed project could result in indirect economic impacts on the local environment. It is likely that the facility will disrupt the immediate visual landscape and could change the nature of the area and sense of place for local residents. Any significant disruption could change how immediately adjacent residents live, work and experience this area. This is likely to be through visual intrusion, increased traffic and dust, and potentially indirect impacts such as crime and security issues.

4) **Reduced access to livelihood resources** – The operational phase may see the reduced access to livelihood resources by local communities, such as grazing land for subsistence farmers.

5) **Reduced public safety and security** – The operational phase is likely to make the area more secure, as the PV facility will be fenced and monitored due to the high value of the equipment. However, this could also attract criminal activity to the area, as cables and equipment for the PV facility are likely to be targeted for theft. The close proximity of this site to residential houses and businesses within Withok Estates AH means that these houses and business are likely to be the most exposed to public health and safety risks.

6) **Change in sense of place** – The visual intrusion of the proposed project is unlikely to be significant but is likely to change the nature of the area from agriculture to an industrial landscape. While this is unlikely to affect businesses in the area, it could impact on residents, including property values.

4.3 DECOMMISSIONING PHASE

1) **Loss of permanent jobs** - The employment during the operational phase is likely to be phased out during decommissioning at end of life of the PV facility, resulting in a loss employment locally and regionally.

2) **Loss of local economic opportunities** - The decommissioning of the PV facility is likely to remove direct and indirect opportunities for local and regional businesses to benefit from providing goods and services to the facility.

3) **Increase temporary employment** – Approximately 127 temporary employment opportunities may be generated during the decommissioning phase, which could benefit local communities.

4) **Increased local procurement** - The decommissioning phase may see the need for local procurement of goods and services.

5 PLAN OF SIA

5.1 AIM AND OBJECTIVES

The aim of the socio-economic impact assessment (SIA) will be to determine the potential positive and negative impacts of the proposed project and the potential alternatives, including no-go alternative, on the local and regional socio-economic landscape. The study will consider the direct, indirect, and cumulative impacts of the proposed project in relation to current and proposed activities within the local area, and the people and activities on and around the proposed projects property.

The objectives of the SIA will be to:

- Further develop a social profile for the proposed project area through the description of the social receiving environment that may be affected by the proposed activity;
- Undertake the field work to determine the current activities on and adjacent to the proposed project site;
- Identify, describe, and assess the potential positive and negative socio-economic impacts associated with the proposed project; and
- Provide mitigation measures and recommendations to enhance the socio-economic sustainability of the proposed project.

5.2 PROPOSED SCOPE OF WORK

a) Desktop Review

The socio-economic impact assessment (SIA) will build on the scoping assessment to further develop a baseline of the socio-economic receiving environment associated with the project. This will include a review of existing data and information including geographical, demographic, socio-economic, institutional, and sociocultural. Other key sources of information may include project documentation, studies for past and similar projects, and relevant policy and planning information. The desktop review will aim to contextualise the proposed development and provide insight into potential impacts.

b) Field Work

It is anticipated that field work will be required to establish the current socio-economic environment associated with the proposed project. It is anticipated that the fieldwork will take place over two or three days. During this time, observational data will be obtained, as well as interviews with key stakeholders and community representatives. At this time, it is not anticipated that detailed investigations, such as household surveys will be required.

c) Review of other specialists

The SIA process will include a review of the other specialist studies, specifically the visual impact assessment. The specialist will engage with each relevant report and specialist to determine the extent and significance to which the biophysical impacts may affect the local social and socio-economic environment.

d) Reporting

A SIA report will be compiled in line with the requirements Appendix 6 to the 2014 EIA Regulations (GN R 982). The report will contain a description of the socio-economic receiving environment, potential positive and negative socio-economic impacts, qualitative impact assessment, and recommended management and mitigation measures to be included in the Environmental Management Programme and/or the Environmental Authorisation.

6 CONCLUSION

The socio-economic scoping assessment for Phase 2 of the Ergo Mining Solar (PV) Energy project was based on past studies by the specialist for Phase 1 and a desktop review of exiting information. The proposed project site is located within an area that comprises a mix of agricultural small holdings and mining activities. The scoping assessment did not identify any immediate fatal flaws in terms of potential socio-economic impacts. There is, however, the potential for certain residential properties, specifically within Withok Estates and suburbs of Brakpan (namely Minnebron) to be negatively affected by the proposed project in terms of change in visual landscape, nature of the land use and sense of place due to the construction and operation of the proposed PV facility. It is therefore recommended that a detailed socio-economic impact assessment study should be undertaken during the EIA phase.

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