environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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File Reference Number:	
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Date Received:	

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)

PROJECT TITLE

Ndau 1 Solar Energy Facility

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1. SPECIALIST INFORMATION

Specialist Company Name:	Urban-Econ Development Economists			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	2	Percentage Procurement recognition	125%
Specialist name:	Louis Calitz			
Specialist Qualifications:	B.Com Hons (Business Communication), B.Com (Marketing) • Economic Planning Unit Manager • 18y Experience			
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2. DECLARATION BY THE SPECIALIST

I, ___Louis Calitz_____, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Urban-Econ Development Economists

Name of Company:

19/05/2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _____ Louis Calitz _____, 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

Urban-Econ Development Economists

Name of Company

19/05/2023

Date

Signature of the Commissioner of Oaths

19/05/2023

Date

"I certify that the DEPONENT has acknowledged that he/she knows and understands the contents of this affidavit, that he/she does not have any objection to taking the Oath, and that he/she considers it to be binding on his/her conscience, and which was sworn to and signed before me at Pretoria on this the 19th day of May, and that the administering oath, complied with the regulations contained in Government Gazette No. R1258 of 21 July 1972, as amended."

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LIEZEL GAGIANO
Commissioner of Oaths
HR Associate (HRA)
Member number: 82113662
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SOCIO-ECONOMIC PRELIMINARY ASSESSMENT

1 JUNE 2023

NDAU SOLAR FACILITY 1

PRAXOS 373

ABO WIND

URBAN-ECON Development Economists

DOCUMENT INFORMATION

Document Title:	Socio-Economic Preliminary Assessment for the Ndau Solar Facility 1
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SPECIALISTS' DETAILS

Louis Calitz

Cell: 076 147 6773

E-mail: louis@urban-econ.com

Position: Manager: Economic and Planning

Qualifications: B.Com Hons (Business Communication), B.Com (Marketing)

Experience: 17 years

Brief profile: Louis is a senior professional and a manager of the Economic Planning Unit at Urban-Econ. He has extensive knowledge in socio-economic assessments, local economic development and other fields of development economics. Louis is an experienced strategist having led various socio-economic, sectoral and management consultation projects. Louis has extensive experience in various fields, including developing strategic frameworks, socio-economic analysis, policy analysis, stakeholder engagements and developing socio-economic impact assessment and project prioritisation models. Louis is further an experienced quantitative and qualitative researcher. Louis is skilled in economic statistical techniques and advanced analysis. Louis is currently the manager of the Economic Planning Unit within Urban-Econ. Louis has conducted a range of studies focusing on local economic development, regional growth and development, industry market assessments, municipal planning, management consultation, skills development, investment marketing strategies and policy development.

Nthabiseng Makhoali

Cell: 071 533 3572

Email: nthabiseng@urban-econ.com

Position: Development Economist: Economic Planning

Qualifications: BCom Hons (Transport Economics), BCom (Economics & International Trade)

Experience: 4 years

Brief profile: Nthabiseng Makhoali is a Development Economist in the Economic Planning Unit at Urban-Econ. Having obtained her Honours in Transport Economics, she has a keen understanding of economic theory and the role it plays in the development of a country. She has a thorough understanding of data analytics, research, and consulting frameworks and has worked on several projects developing project-specific data models and solutions. Her extensive work experience has equipped her with sufficient background knowledge to conduct socio-economic impact assessments for various development projects.

Sibahle Ndlela

Cell: 0608073985

Email: Sibahle@urban-econ.com

Position: Junior Development Economist: Economic Planning

Qualifications: BSoc Sci Hons (Population Studies), BSoc Sci (Sociology, Community and Development Studies)

Brief Profile: Sibahle is a Junior Development Economist in the Economic Planning Unit at Urban Econ. Having obtained her Honours in Population Studies, she has a keen understanding of demographic change and its influence on the underlying growth of the economy, structural productivity growth, living standards, saving rates, consumption and investment. She has a thorough understanding of different aspects of population size, density, birth and death rates as well as migration. She has assisted several projects developing project-specific data models and solutions and has sufficient background knowledge to assist in conducting Economic and Property Value Impact Assessment.

DECLARATION OF INDEPENDENCE

I, Louis Calitz, declare that:

- I act as the independent specialist in this application.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, regulations, and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- All the particulars furnished by me in this form are true and correct.
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

DECLARATION OF INDEPENDENCE

I, Nthabiseng Makhoali, declare that:

- I act as the independent specialist in this application.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, regulations, and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- All the particulars furnished by me in this form are true and correct.
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

DECLARATION OF INDEPENDENCE

I, Sibahle Ndlela, declare that:

- I act as the independent specialist in this application.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity.
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- All the particulars furnished by me in this form are true and correct.
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TABLE OF ACRONYMS

DM	District Municipality
EA	Economically Active
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programmes
GDP	Gross Domestic Product
GN	Government Notice
GVA	Gross Value Added
ha	Hectare
IDP	Integrated Development Plan
IPAP	Industrial Policy Action Plan
km	Kilometre
LM	Local Municipality
LP	Limpopo Province
NA	Not Applicable
NEA	Not Economically Active
NEMA	National Environmental Management Act
NDP	National Development Plan
NGPF	New Growth Path Framework
PGDP	Provincial Growth and Development Plan
PGDF	Provincial Spatial Development Framework
PGDS	Provincial Growth and Development Strategy
PV	Photovoltaic
RE	Renewable Energy
SAM	Social Accounting Matrix
SAPS	South African Police Service
SEIA	Socio-Economic Impact Assessment
SDF	Spatial Development Framework
WAP	Working-age Population

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF MAPS

1 INTRODUCTION

This document was prepared by Urban-Econ Development Economists, at the request of ABO Wind renewable energies. The purpose of this document is to conduct a Socio-Economic Impact Assessment (SEIA) as part of the Environmental Impact Assessment (EIA) process managed by PRAXOS. The study focuses on the Ndau Solar Energy Facility 1 and associated infrastructure in Polokwane LM, situated in the Limpopo Province. It serves as a deliverable for the scoping phase, providing a foundation assessment for the subsequent Environmental Impact Assessment (EIA) phase.

The main objective of this document is to determine the current socio-economic baseline characteristics of the preliminary delineated study area and identify the potential impacts of the proposed project on the surrounding economic activities. The entire process undertaken is in terms of the National Environmental Management Act (NEMA), as amended.

1.1 Scope of Study

The socio-economic assessment aims to determine the potential socio-economic implications of the proposed Ndau Solar Energy Facility 1 to compare its possible effects with the “no go” alternative. The "no go" alternative assumes that the Ndau Solar Energy Facility 1 and its supporting infrastructure will not be built. This implies that the "no go" alternative represents the current state of the environment, including the current socio-economic condition of the study area.

The socio-economic impact assessment contains information that, when combined with the input of other experts, allows for a sustainable development perspective on the project. It also aids in the identification of “the most practicable environmental option" that provides "the most benefit and causes the least damage to the environment, at a cost acceptable to society" in the long and short term. The goal of the socio-economic impact assessment, in accordance with the Environmental Impact Assessment Regulations of 2014 (Government Notice [GN] R982), is to guarantee that the project, if approved, provides for justifiable social and economic development results.

Based on an understanding of the project’s objectives, the purpose of this socio-economic impact assessment is as follows:

- Undertake a **policy review** and assess the alignment of the proposed project with the national, provincial, and local socio-economic policies, with a focus on the compatibility of the project with the spatial planning, development objectives, and land use management plans of the respective authorities.

- Create a **socio-economic profile** of the potentially affected and benefiting environment, which would then represent a description of the existing impacts exerted on the zones of influence and could be used to assess the changes that might ensue from the proposed project.
- **Assess the sensitivities** of the identified sensitive receptors relative to the proposed development and analyse potential positive and negative social and economic effects of the proposed development on the local and regional economic activities.
- **Evaluate** potential positive and negative socioeconomic effects that may ensue as a result of the change in the status quo of the affected and benefiting communities and economies.
- Develop a **mitigation plan** by proposing mitigation measures for negative effects and enhancement measures for positive impacts.

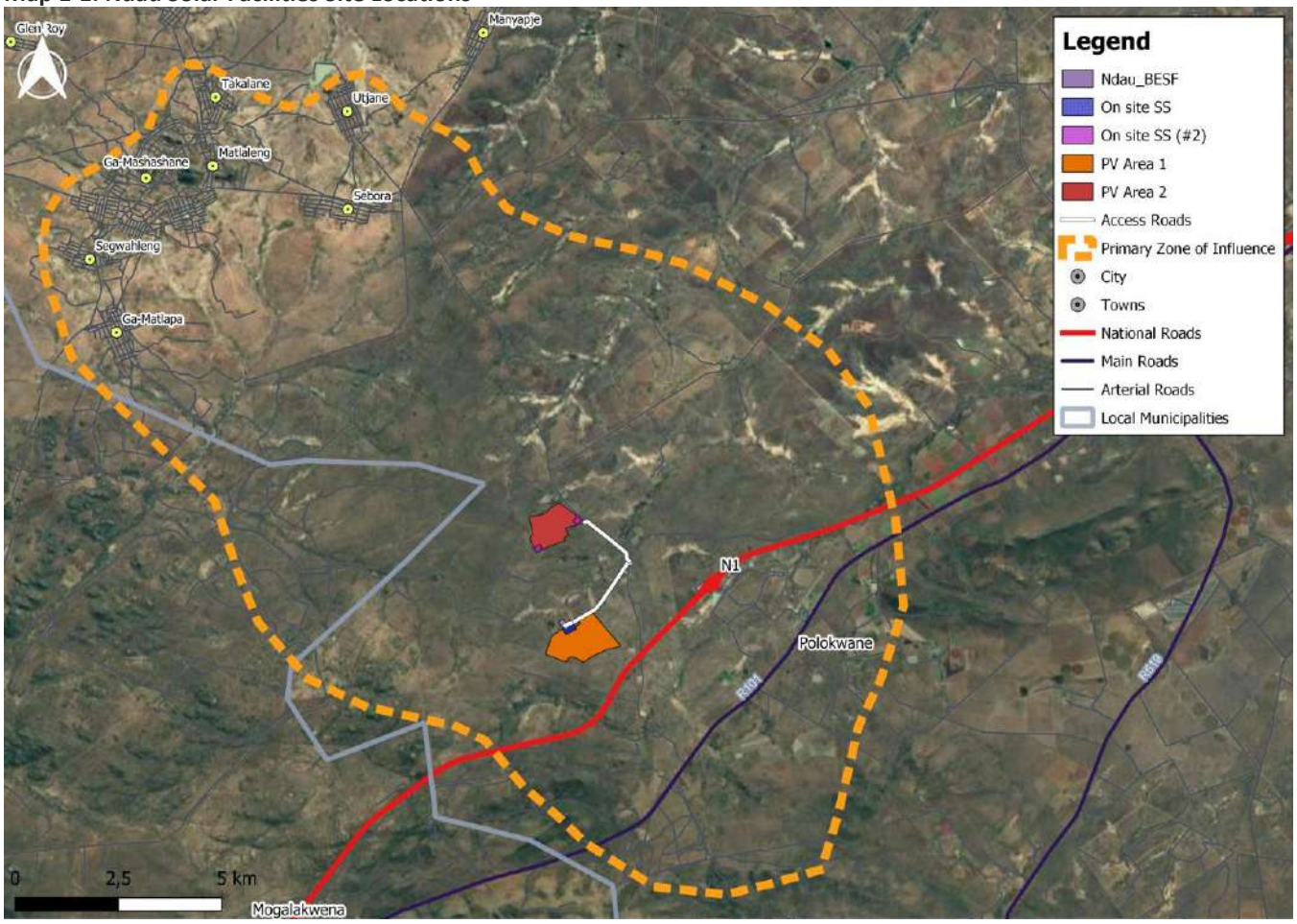
1.2 Project History, Content, and Location

This subsection aims to provide an overview of the proposed Ndau Solar Energy Facility 1 as well as describe its location. When conducting a socio-economic impact study, it is crucial to be aware of the project plan and intended location because this will help determine what potential impacts the proposed project might have and who these effects might potentially affect.

Solar energy facilities are specialised systems that require dedicated inverters, electrical distribution and transmission wiring, and various components such as solar panels, arrays, collectors, piping, footings, supports, and other infrastructure necessary for operation and maintenance (Law Insider, 2023). Given the ongoing energy crisis in the country, it is crucial to explore and implement renewable energy sources, such as solar energy facilities, more extensively.

Ndau Solar Facility 1 forms part of the development of 2 Ndau solar facilities and 1 Battery Energy Facility set to be developed within the jurisdiction of the Polokwane Local Municipality in the Capricorn District as shown in Map 1-1 below.

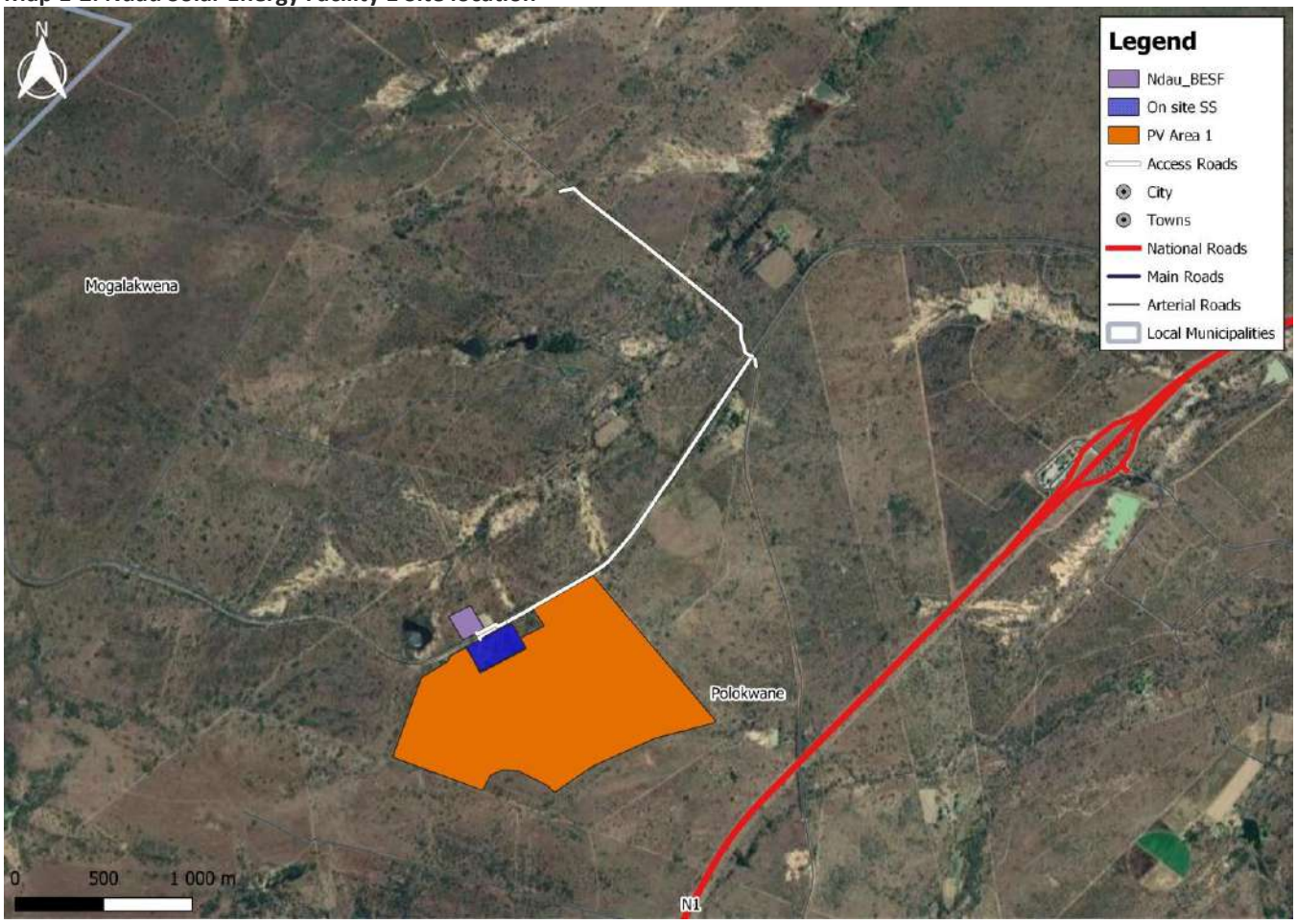
Map 1-1: Ndau Solar Facilities Site Locations



Source: QGIS, 2022 (adapted by Urban-Econ)

Ndau Solar Facility 1, specifically, is proposed to be located on Portion 19 of the Farm Rietvley No. 13,27 km south-west of Polokwane within the Limpopo Province as shown in Map 1-2 below.

Map 1-2: Ndau Solar Energy Facility 1 Site location



Source: QGIS, 2022 (adapted by Urban-Econ)

The development of Ndau 1, a photovoltaic (PV) solar energy generation facility with a capacity of up to 120 MWac and associated infrastructure.

It will comprise various components, including:

- Solar Field/Solar Arrays
- Internal access roads
- Primary access road and secondary construction road
- Underground placement of internal electrical reticulation, encompassing low- and medium-voltage lines whenever feasible
- On-site substation hub and associated infrastructure (such as substation, transformation infrastructure, collector infrastructure, step-up infrastructure, battery energy storage system, etc.), along with auxiliary buildings (operation & maintenance buildings, admin buildings, workshops, gatehouse, security building,

offices, visitor centre, warehouses, etc.) occupying an approximate footprint of up to 5 hectares. Two alternative positions are currently being assessed.

- Perimeter fencing.

The proposed facility would be accessed from the north via an existing unnamed road. The detailed design of the proposed access and road upgrade requirements would be as per the recommendations of the Transport Impact Assessment which is being undertaken as part of the environmental impact assessment process. Application for grid connection will be made through a separate process and assessed accordingly. An on-site grid connection to integrate into the national network via a 132 kV or 275 kV line is under consideration.

It is worth mentioning that the project description acknowledges the availability of technical alternatives, and the application for grid connection will follow a separate process, subject to assessment. In terms of operations, the proposed facility will require periodic servicing. Water supply will preferably be sourced from the local municipality through a Service Level Agreement established between the Municipality and the facility. However, alternative options for water supply will be explored if municipal sourcing is not feasible. Additionally, the facility's electrical requirements will be nominal and self-supplied.

1.3 Understanding Economic Impacts

The purpose of this subsection is to provide an overview of economic models that will be used in this report, which include economic models designed for the South African economy and the Limpopo province, to assess the economic implications of the proposed project. These economic models shall be compiled based on the Social Accounting Matrices (SAM) that illustrate the linkages between various economic agents. The models can be used to identify industry-specific multipliers on output, capital formation, Gross Domestic Product (GDP), employment, and income. These multipliers can also be split down into the numerous effects that can be noticed as a result of changing events introduced into the economy, such as a capital investment or an operating expense.

Three types of effects are distinguished as follows:

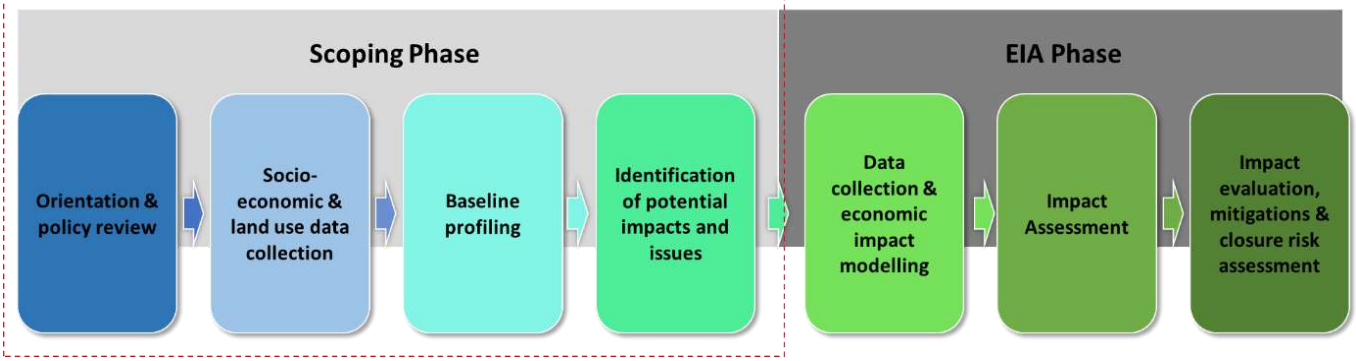
- **Direct** – these represent the original purchases for the project's establishment or operations.
- **Indirect** – these are effects that spill over the industries that supply goods and services required for the implementation of the project or its operation, whether directly to the contractor or operator or through their suppliers.
- **Induced** – these are the effects that are stimulated by the change in income levels of households that would directly or indirectly be affected by the project and businesses.

Data for the assessment was sourced from the project specialist and client and are assumed to reflect the capital and operational expenditure on the project broken down in terms of economic sectors or project cost items.

1.4 Methodology

This subsection aims to highlight the methodology which will be used to compile this report. The purpose of a research methodology is to explain the steps which will be taken when compiling the report as well as describe the activities which will be taken during each step. The methodology employed in conducting the study comprised the steps illustrated in Figure 1-1.

Figure 1-1: Methodology



Source: Urban Econ

The following paragraphs briefly describe each step in the scoping process:

Step 1: Orientation and Policy Review: The objective of this step was to gather as much background information as possible regarding the research field and the proposed project. The extent of visual, noise and other anticipated environmental, social, and economic impacts was defined by a review of the project location's Google imagery and discussion with other specialists, which aided in identifying the potential zones of influence associated with the project and proposed site. Relevant government policies and other strategic papers were also acquired and examined, with the project's ramifications noted.

Step 2: Socio-economic and land use data collection: The objective of this step was to gather secondary data, as well as to define the socio-economic context in which the proposed project will be implemented and applied to the location. This data was used to understand the primary socio-economic drivers in each zone of impact, the economy's reliance on specific activities, prominent land uses, and the community's present living standards.

Step 3: Baseline profiling: The objective of this step was to investigate the project's baseline information. To construct the socio-economic baseline profile, the researchers focused on the study area composition, land use

analysis, community profiling, demographic profile and income level, economy and labour force, access to services and infrastructure, as well as existing and projected developments in the area.

Step 4: Identification of potential impacts and issues: The objective of this method was to identify any concerns associated with the project from a land use and socio-economic standpoint. It presents any I&AP concerns that may arise during the project's implementation and identifies potential social and economic impacts that may arise because of the project, which will be investigated in greater depth during the EIA phase.

This socio-economic impact assessment was undertaken in accordance with the EIA Regulations, 2014 (Government Notice (GN) R982). The details of the regulation are outlined in further detail in Annexure A of this report.

1.5 Data Gathering and Consultation Process

The purpose of this subsection is to provide an overview of the research done when compiling this report. The assessment made use of both secondary and primary data. Furthermore, the sources used are listed below.

a) Secondary Data Gathering

Secondary data was sourced from the following databases and documents:

- Previously completed studies.
- Stats SA Census 2011
- StatsSA Labour Force Survey
- Quantec Research database
- Industrial Policy Action Plan (IPAP2), 2018/19-2020/21
- National Environmental Management Act (No. 107 of 1998) (NEMA)
- National Development Plan (NDP) 2011–2030
- New Growth Path Framework (NGPF) 2010
- Provincial:
    - Limpopo Strategic Plan 2020-2025
    - Limpopo Development Plan 2015-2019
- Local:
    - Capricorn District Municipality Integrated Development Plan (2022/2027)
    - Polokwane Local Municipality Integrated Development Plan (2021/2026)
    - Polokwane 2030 Development Plan
- Other national, provincial, and local government strategic documents and policies

b) Primary Data Gathering

A site visit was conducted by Urban-Econ on the 2nd of May 2023 to get an understanding of the locational factors of the proposed development; however, none of the local residents were consulted.

1.6 Assumptions, Limitations and Gaps in Knowledge

This subsection highlights the key assumptions that form the basis of the assessment and discussions of the study. These assumptions are in line with known gaps in the knowledge as well as limitations present within the study and are as follows:

- Project-related information supplied by the environmental practitioner and the client for the analysis is assumed to be reasonably accurate.
- The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy), although not exhaustive, can be viewed as being indicative of broad trends within the study area.
- The identification of possible impacts was based on the project team's experience with similar studies in the past and the existing desktop-level knowledge of the socio-economic environment.
- Secondary data that will be used are sourced from Stats SA and Quantec, which may include data from the 2011 Census that may not have been updated since.

If some of these assumptions and limitations are found to be potentially hampering the process, these issues will be addressed to ensure an accurate and reliable socio-economic impact assessment. Any further issues or red flags will also be identified in the policy review in the next chapter.

1.7 Report Outline

The report consists of the following chapters, which can be disaggregated as follows:

- **Chapter 1: Introduction -** This chapter provides an introduction that contains the background and purpose of the study.
- **Chapter 2: Policy Review –** This chapter reviews all national, provincial, and regional policy documents and aims to ascertain whether the proposed developments align with the objectives of these policies.
- **Chapter 3**: **Profile of Zone of Influence -** This chapter provides a profile of the zone of influence and reviews the numerous dynamics of the proposed project location.
- **Chapter 4: Baseline Information -** This chapter provides a baseline analysis which includes a status quo analysis of the study area's local economic development climate as well as the study area's composition and site-related information.

- **Chapter 5: Need and desirability assessment –** This chapter depicts aspects that support the need for and desirability of the Ndau Solar Energy Facility 1 development, as well as red flags that should be considered in the planned location.
- **Chapter 6: Preliminary Impact Evaluation –** This chapter presents the study's high-level basic socio-economic impact assessment, which includes impacts that are presumptively expected to occur during Ndau Solar Energy Facility 1's construction and operation. These impacts will be studied further in the EIA phase.
- **Chapter 7: Next Steps: EIA phase** - This chapter highlights the purpose of the EIA phase and details the next steps which will be taken during the EIA phase.
- **Chapter 8: Conclusion –** This chapter summarises and consolidates the key findings of the study, as well as relevant concluding remarks and recommendations.
- **Annexure A: Checklist –** Annexure A provides a checklist as per the EIA Regulations, 2014 (Government Notice (GN) R982) to ensure that the assessment has been undertaken to meet the requirements.

2 POLICY REVIEW

A policy review plays an integral role in the early stages of a development. The review establishes whether the development is aligned with the goals and aspirations of the developmental policies of a country. This chapter provides a policy review to highlight issues that could jeopardise the development of the Ndau Solar Energy Facility 1 and associated infrastructure in accordance with the relevant policies.

The following policies and strategic documents were identified as applying to the study areas:

- National:
    - Industrial Policy Action Plan 2018/19 – 2020/21
    - Integrated Resource Plan (IRP) for Electricity 2010-2030: Update Report 2019
    - National Development Plan 2030 (2012)
    - National Energy Act (No. 34 of 2008)
    - New Growth Path (2010)
    - White Paper on Renewable Energy (2003)
- Provincial:
    - Limpopo Strategic Plan 2020-2025
    - Limpopo Development Plan 2015-2019
- Local:
    - Capricorn District Municipality Integrated Development Plan (2022/2027)
    - Polokwane Local Municipality Integrated Development Plan (2021/2026)
    - Polokwane 2030 Development Plan

2.1 Policy Analysis

A summary of each policy is provided in Table 2-1, indicating the objectives of each policy as well as which objectives align with the Ndau Solar Energy Facility 1.

Table 2-1: Policy Summary

Policy	Key Policy Objectives
NATIONAL POLICIES	
Industrial Policy Action Plan 2018/19 – 2020/21 (IPAP2)	IPAP2 sets itself the objective of enhancing the productive capabilities of the economy. IPAP aims to increase the economy's production level while producing more complex and high-value-added products with greater efficiency. South Africa's historical dependence on fossil fuels for energy generation has resulted in the government pledging to reduce the country's greenhouse gas emissions over the coming decades. IPAP2 envisions achieving these objectives through: ✓ Infrastructure-driven industrialisation aimed at sustaining and building public and economic infrastructure ✓ Resource-driven industrialisation enables the leveraging of the green industries • Stronger alignment of industrial policies and programmes with investment and export-promotion programmes focused on increasing aggregate domestic demand • A strong commitment to supporting emerging black industrial entrepreneurs • Promoting more competitive exports • Strengthening the localisation of public procurement • Minimising regulatory and red tape measures • Meeting the challenges of technological change The proposed development aligns with the IPAP2 through its plans to develop infrastructure within the green economy. (Department of Trade and Industry, 2018)
Integrated Resource Plan (IRP) for Electricity (2010 – 2030)	The IRP provides for the disaggregation of renewable energy technologies to differentiate and display solar PV, concentrated solar power, and wind options. A review of the IRP shows that the accelerated roll-out of renewable energy (RE) technologies must be allowed and promoted to derive the benefits of the localisation of these RE technologies. Moreover, it emphasises the establishment of a solar PV programme. The following policy considerations assisted in arriving at this version of the IRP: ✓ The installation of RE technologies brought forward to accelerate a local industry • To provide for the uncertainties associated with the cost of renewables and fuels, a nuclear fleet was included • The emissions constraint of 275 million tons of carbon dioxide per year after 2024 was maintained • Energy efficiency demand-side management measures were maintained The proposed development is somewhat in alignment with the IRP for electricity strategy through its role in accelerating renewable energy in South Africa. (Department of Mineral Resources and Energy, 2011)
National Environmental Management Act (No. 107 of 1998) (NEMA)	NEMA is a legal framework to implement Section 24 of the Constitution of the Republic of South Africa. It is intended to promote cooperative governance, safeguard public health and the environment and guarantee the protection of human rights while acknowledging the need for economic development. The aim is to: ✓ Prevent pollution and ecological degradation ✓ Ensure sustainable development by providing for quality measures, standards, and management The proposed Ndau Solar Energy Facility 1 is in alignment with NEMA as it encourages renewable energy and the improvement of agriculture through the development of sustainable ecosystems. (Republic of South Africa, 2022)

National Development Plan 2030 (NDP, 2012)	The NDP aims to address South Africa's developmental challenges of poverty and inequality by 2030. Key aspects deemed necessary to enhance social cohesion, reduce poverty and raise living standards include: ✓ Creating jobs and livelihoods ✓ Expanding infrastructure ✓ Transforming urban and rural spaces ✓ Transitioning to a low-carbon economy • Improving education and training • Providing quality health care • Building a capable state • Fighting corruption and enhancing accountability • Transforming society and uniting the nation The proposed Ndau Solar Energy Facility 1 is moderately in alignment with the NDP through its potential to create employment and its plans to expand infrastructure. (National Planning Commission, 2012)
New Growth Path (2010)	The New Growth Path aims to ensure that jobs and decent work are at the centre of economic policy. The NGP has identified several job drivers and priority sectors that should be focused on over the coming years. These include: ✓ Infrastructure investment ✓ Prioritising efforts to support employment in the main economic sectors, including the Green Economy ✓ Spatial development ✓ Fostering rural development and regional integration • Seizing the potential of new economies • Investing in social capital and public services The proposed development shows alignment with the New Growth Path regarding its aim to invest in infrastructure and the potential to increase employment within the green economy. (Department of Economic Development, 2010)
White Paper on Renewable Energy (2003)	The White Paper elaborates on the South African government's policy principles and strategic goals and objectives for the promotion and implementation of the RE sector in the country. The White Paper, which supplements the White Paper on Energy Policy, identifies the long- and medium-term potential of RE in South Africa. The White Paper seeks: ✓ To promote, enhance and develop technologies for the implementation of sustainable renewable energy. • To raise public awareness of the benefits and opportunities of renewable energy. • To develop, implement, maintain, and continuously improve an effective legislative system to promote the implementation of renewable energy. • To promote the implementation of sustainable renewable energy through the establishment of appropriate financial instruments. The proposed development shows alignment with the White Paper through its objective of promoting the implementation of sustainable renewable energy. (Department: Mineral Resources & Energy, 2003)

PROVINCIAL POLICIES	
Limpopo Strategic Plan 2020-2025	Limpopo is a province that depends significantly on non-renewable sources of energy and experiences pollution and environmental degradation. The Limpopo Strategic Plan seeks to outline the provincial priorities for social and economic development for a 5-year period. The plan aims to achieve through the implementation of social and economic programs that result in the achievement of development outcomes, which are outlined as follows: ✓ Create decent employment through inclusive economic growth and sustainable livelihoods ✓ Ensure sustainable development ✓ Raise the effectiveness and efficiency of a developmental public service • Improve the quality of life of citizens • Prioritise social protection and social investment • Promote vibrant and equitable sustainable rural communities The proposed development is in alignment with the Limpopo Strategic Plan through its role in accelerating renewable energy use in Limpopo province. By providing an alternative source of energy, it is expected to alleviate the strain on the municipal electricity load, resulting in a more sustainable and balanced energy supply. (Limpopo Provincial Government, 2020)
Limpopo Development Plan 2015-2019	The Limpopo Development Plan acknowledges that energy provision is a concern in some areas, given that the mining sector consumes a large portion of the available electricity. The strategy to attract productive investment is to plan and implement carefully selected public sector investment projects in the priority growth points and economic development clusters of Limpopo province. The cluster's priorities are listed below and provide the strategic framework for most of the economic components of the Limpopo Development Plan. • Platinum Cluster in Tubatse and Mokopane Growth Points • Musina-Makhado Corridor Mining Cluster • Phalaborwa Mining Cluster • Polokwane and Musina Logistical Hubs • Agricultural Clusters • Tourism Clusters The actions set out to achieve this are: ✓ Develop energy infrastructure and service provision ✓ Expand renewable energy with special reference to solar power ✓ Increase energy efficiency (reduce demand) The proposed development is in alignment with the Limpopo Development Plan through its role in accelerating renewable energy use in Limpopo province. (Limpopo Provincial Government , 2015)

Limpopo Provincial Spatial Development Framework (PSDF) (2015)	The Limpopo Provincial Spatial Development Framework's (PSDF) vision is to create a sustainable urban and rural spatial development pattern focussed on a modern, ecologically sustainable economy, supported by a suitably skilled labour force and providing for quality of living (Limpopo Provincial Government, 2015). In order to realize its vision, it has set out strategic goals which include: ✓ International Cooperation to Accelerate Sustainable Development in Developing Countries and Related Domestic Policies (Trade). ✓ Changing consumption patterns in energy and transport. ✓ Environmentally sound management of biotechnology and transfer of environmentally sound technology, cooperation, and capacity building. • Demographic dynamics and sustainability. • Protecting and promoting human health. • Promoting sustainable human settlement development. • Integrating environment and development in decision making. • Protection of the atmosphere. • Integrated approach to the planning and management of land resources. • Combating deforestation. • Managing Fragile Ecosystems: Combating Desertification and drought. • Managing fragile ecosystems: Sustainable Mountain development. • Promoting sustainable agriculture and rural development. • Conservation of biological diversity. • Protection of the quality and supply of freshwater resources. The proposed development is in alignment with the Limpopo PSDF by promoting renewable energy use, optimizing land utilisation, supporting economic growth, and alleviating pressure on municipal electricity infrastructure. (Limpopo Provincial Government, 2015)
LOCAL POLICIES	
Capricorn District Municipality Integrated Development Plan (2022/2027)	The Capricorn District Municipality Integrated Development Plan (2022/2027) is a comprehensive strategic plan that outlines the development priorities and objectives for the district municipality over a five-year period. Its main objectives are to: ✓ To promote sustainable economic development ✓ To provide basic services and infrastructure ✓ To ensure effective governance and service delivery ✓ To protect and conserve the environment • To promote social development and inclusion The plan serves as a roadmap for the district municipality to guide its actions and investments in various sectors, including agriculture, tourism, infrastructure, education, health, and environmental management. It aims to create a prosperous and inclusive district where communities have access to quality services, opportunities for economic empowerment, and a sustainable environment for future generations. The proposed Ndau Solar Energy Facility 1 aligns with the IDP due to its potential to directly promote infrastructure growth and creating an environment which is conducive for investment. (Caprical District Municipality, 2022)

Polokwane Local Municipality Integrated Development Plan (2021/2026)	The Polokwane Local Municipality Integrated Development Plan (IDP) is a strategic document that outlines the municipality's vision, goals, and strategies for sustainable development. It provided a strategy that is pegged against a long-term growth path to transform the municipality into a bustling and sustainable entity that distinguishes the Municipality as a City of stars leading in innovation through the SMART CITY concept. The IDP seeks to achieve the following: ✓ Innovative and sustainable economic development ✓ Cost-Effective Service Delivery ✓ Socio-Economic Development • Good Governance: Emphasize good governance practices that promote transparency, accountability, and citizen participation The proposed Ndau Solar PV 1 project aligns with the IDP goals by creating employment opportunities, contributing to the energy economy, and generating tax revenue for government funding. It will improve livelihoods, reduce strain on municipal services, and support sustainable development. (Polokwane Local Municpality, 2021)
Polokwane 2030 Development Plan	The Polokwane 2030 Development Plan is a comprehensive framework that outlines the municipality's vision and goals for sustainable economic growth and development. Building upon the draft Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of 2011, the plan takes a proactive and holistic approach to ensure that development is strategically planned rather than simply reacting to immediate needs. It serves as a guide for the drafting of future versions of the IDP and SDF, aligning them with the long-term goals and vision of the municipality. The Polokwane 2030 Development Plan aims to create a path forward that maximizes the municipality's potential and promotes the well-being of its residents. Its main objectives include the following: ✓ Creation of decent employment opportunities. • Reduce service delivery backlogs, replace and upgrade aged infrastructure and increase water capacity over the next 5 years. • Make use of Polokwane's strategic location to attract investment. • Implementation of the Integrated Public Transport Network. • Implement customer centric systems and governance models. • Attain, retain and create a highly skilled labour force. • Enhanced accountability within the public sector. • More active participation and proactive planning in local government. • Maximise and utilize the local economic comparative advantages, especially in the tertiary sector. • Build safer and more resilient communities. • Social capacity building. • Improvement in quality and availability of health care. • To adopt a value chain approach to development. The proposed Ndau Solar Energy Facility 1 and associated infrastructure aligns with the development plan by promoting sustainable economic growth, creating job opportunities, and attracting investments in the renewable energy sector. (Polokwane Local Municipality, n.d.)

2.2 Concluding Remarks

At the national, provincial, and district levels, objectives include promoting economic development and job creation supporting the green economy, poverty reduction, and upskilling and educating individuals as well as fostering rural and spatial integration. The analysed national documents show that the proposed Ndau Solar Energy Facility 1 aligns with the government's strategic aims of creating new jobs, promoting infrastructure development, and contributing to the production of renewable energy.

At a provincial level, the Limpopo provincial government strives to increase economic development, alleviate poverty and improve the environment by reducing the effects of climate change. As a result, the proposed Ndau Solar Energy Facility 1 aligns with provincial policies as it will create employment and increase renewable energy initiatives within the province.

Both district and local municipality strategic documents outline the need for increased job opportunities and local economic development as well as diversification of the economy. The proposed Ndau Solar Energy Facility 1 is aligned with the IDPs, which aim to increase infrastructure development and increase overall local economic and socio-economic development within the municipalities (this through increasing infrastructure in the area as well as the number of general jobs). Furthermore, it will help Polokwane LM achieve its goals of being a SMART, innovative and more sustainable place as it is a renewable energy facility. These achievements will, in turn, increase local economic and socio-economic development.

Having determined the policy environment, the next section seeks to provide a detailed profile of the zone as per the delineation. The goal is to identify the areas that the proposed development is most likely to affect (if any) and to identify who will be affected by the socio-economic impacts that may arise from the development of the Ndau Solar Energy Facility 1 and associated infrastructure.

3 ZONE OF INFLUENCE

This chapter investigates the various dynamics of the proposed project site. This is important as it looks at the area in which the project will take place, giving a better understanding of who the project will directly affect within its proximity.

The proposed Ndau Solar Energy Facility 1 is strategically located on a 149-hectare site adjacent to the N1 road in Polokwane LM. The site is surrounded by various residential areas, including Mayapje to the North, Ga-Sebati to the East, Mogoto to the South, and Tshamahansi to the West. These residential areas, along with the neighbouring towns as indicated in Table 3-1, form an integral part of the regional context in which the project is situated.

Table 3-1: Areas in Proximity to Proposed Site

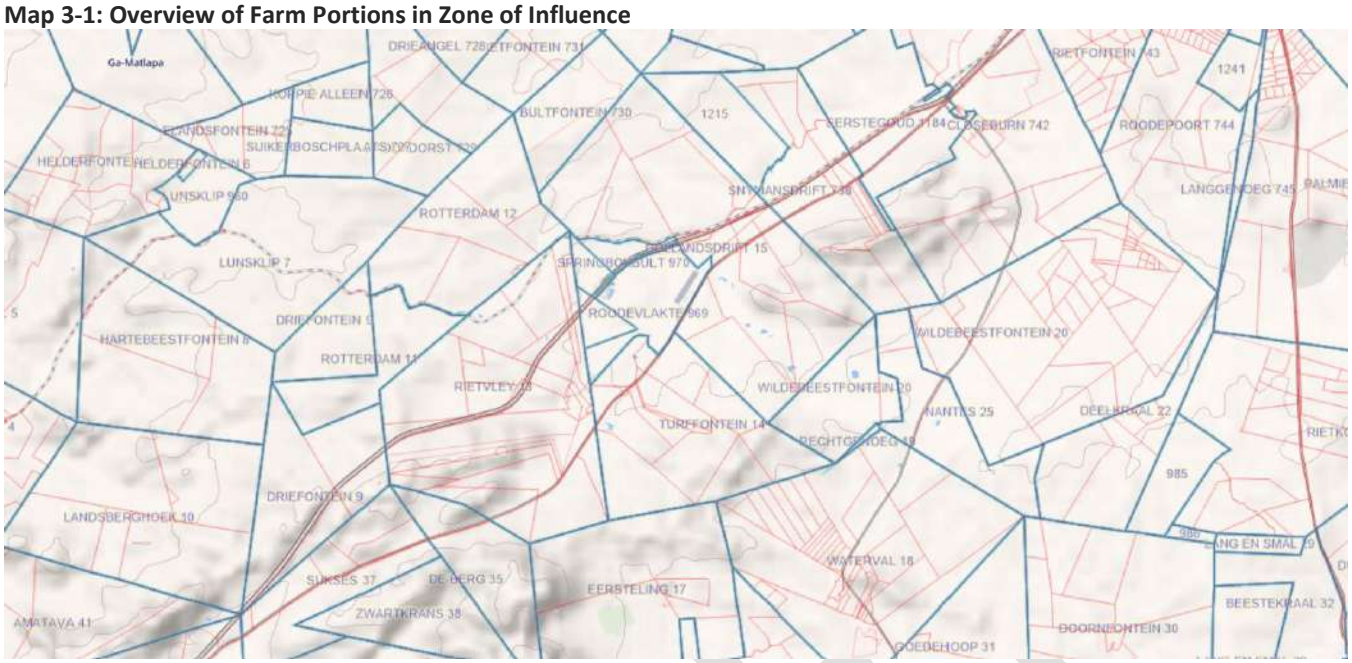
Residential Areas	Distance (km)	Direction
Mantapje (suburb)	15	North
Polokwane (city)	27	North-East
Ga-Sebati (surburb)	43	East
Bergnerk (village)	18	South-East
Mogoto (village)	33	South
Tshamahansi (Township)	24	West
Mokopane (town)	25	South-West
Ga-Mashashane (village)	15	North-West

Source: Praxos (pty) Ltd (2023)

The proposed Ndau Solar Energy Facility 1 will be situated on Portion 19 of the Farm Rietvley No. 13, 27 km south-west of Polokwane within the Limpopo Province. It is located close to the N1 which can be used to access an unnamed gravel road can be used to access a direct route to the farm entrance.

The surrounding area of Farm Rietvley showcases a blend of rural and semi-urban landscapes. Scattered settlements and diverse agricultural activities highlight the agricultural significance of the region. In addition, there are several neighbouring farms in close proximity, contributing to the agricultural landscape and enhancing the rural ambience of the area. For a visual representation of the farm layout and its relation to neighbouring farms, please refer to Map 3-1, which provides valuable context to the geographic setting of the proposed Ndau Solar Energy Facility 1.

Map 3-1: Overview of Farm Portions in Zone of Influence



Source: Source: Google Earth map observations and spatial data from Chief Surveyor-General website (https://csggis.drdlr.gov.za/psv/)

To efficiently manage the scope of the study by identifying the best clusters of observations for the projected development. The footprint of the proposed development has been classified as follows:

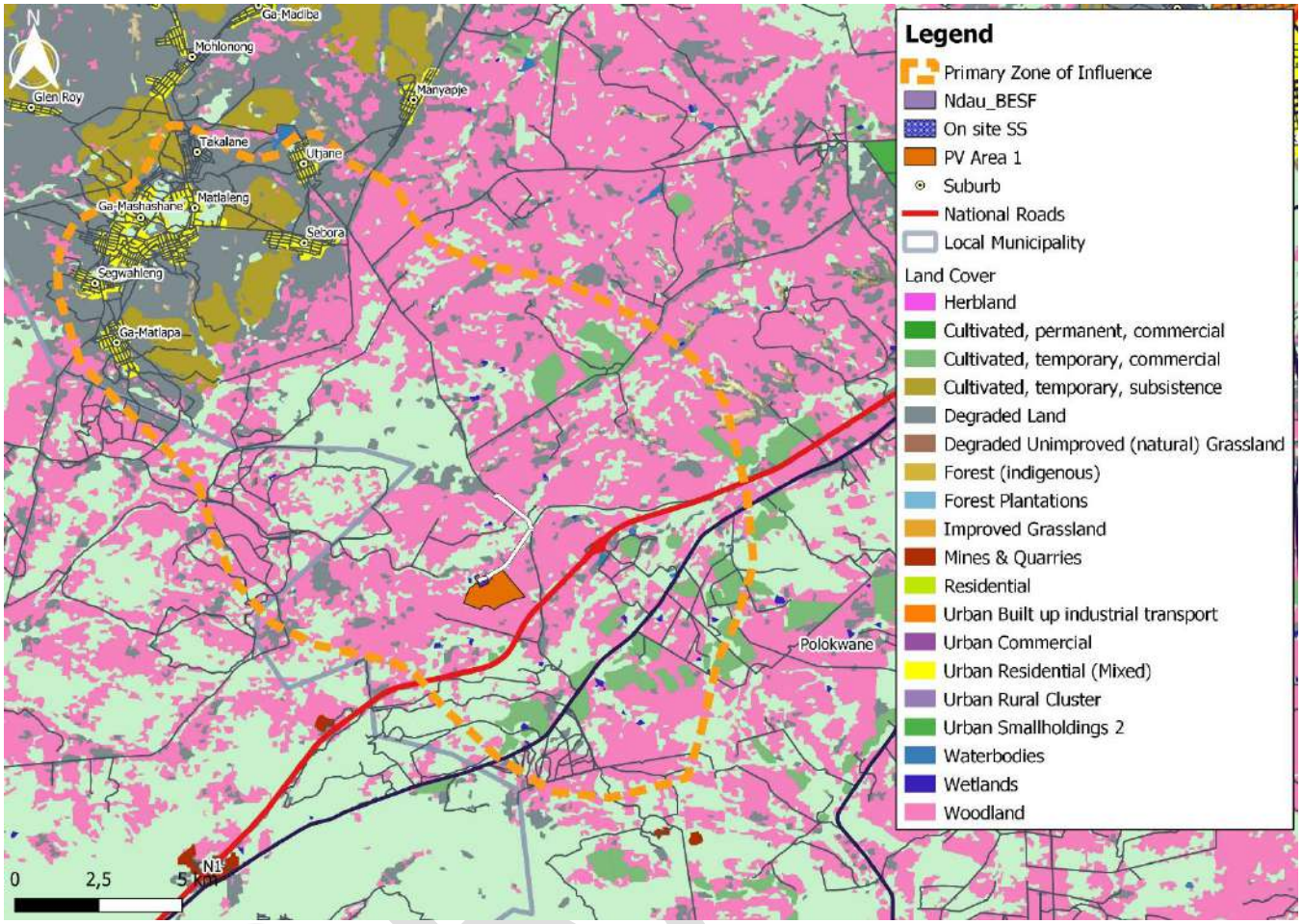
- The primary study area is Mantapje, Polokwane City and Ga-Mashashane, as the closest residential areas to the proposed development. This includes the site where the proposed Ndau Solar Energy Facility 1 is to be located and the regions immediately adjacent.
- The secondary study area is Polokwane LM. This is due to the wider range of impacts the Ndau Solar Energy Facility 1 and associated infrastructure could potentially have on the surrounding areas and the DM.
- Capricorn DM will be considered the tertiary study area due to the impacts the proposed Ndau Solar Energy Facility 1 and associated infrastructure, if any, could have on the district's economy.

The above-mentioned zones are prioritised in this report, however, mentions of other areas will be included if necessary to support the document.

3.1 Land Use Profile

This sub-section will evaluate the land-use profile for the proposed project site. Map 3-2 provides a more detailed description of the land uses that have been primarily identified to be located within the proposed project site.

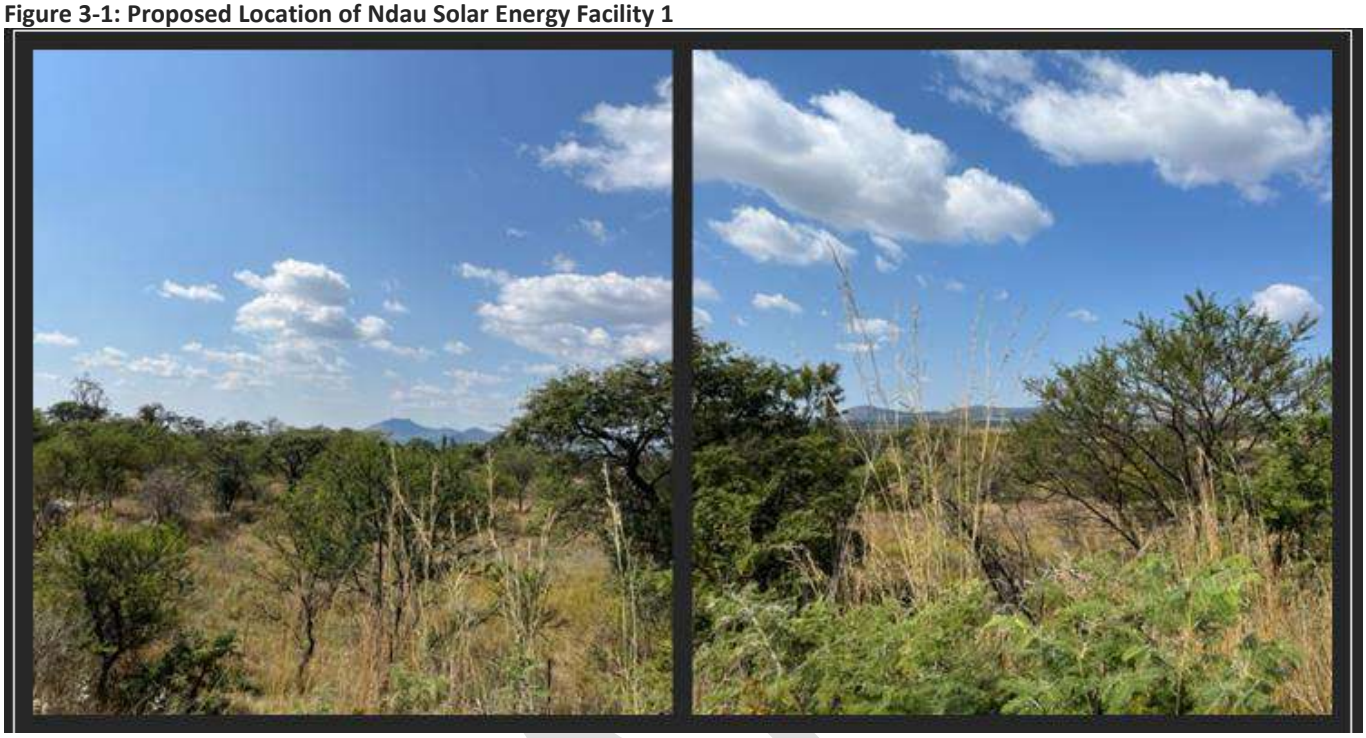
Map 3-2: Land use Map of the Proposed Project Site and Surrounding Areas



Source: National Department of Agriculture, Fishery and Forestry, QGIS, 2022 (adapted by Urban-Econ)

Map 3-2 provides a comprehensive overview of the land uses surrounding the proposed development site and within its proximity. The map indicates that the proposed development is going to be located on herbland. Herbland refers to an area or habitat characterized by the predominant growth of herbaceous plants, which are non-woody plants that do not develop persistent woody stems above the ground. Herblands typically consist of a diverse assemblage of grasses, wildflowers, and other herbaceous vegetation. These areas are often found in grasslands, meadows, prairies, and savannas, where they play a vital role in supporting various wildlife species, pollinators, and ecological processes. Other land uses in the area include cultivated land, woodland, wetlands, and areas of degraded land. This observation is further supported by the images in Figure 3-1 below, which depict the site and its immediate surroundings.

Figure 3-1: Proposed Location of Ndau Solar Energy Facility 1



Source: Urban-Econ (Site Visit)

The proposed site is located within the vicinity of a few scattered residential areas, which are expected to be affected by the development of the solar PV facility. Additionally, there are several businesses established in close proximity to the area, including Ysterberg Lodge, Caltex Fuel Station, Geyser Traction Substation, and various privately owned farms. Table 3-2 provides a detailed description of the land uses in the vicinity of the proposed site, while Figure 3-2 offers a visual representation, providing valuable context for the surrounding area.

Table 3-2: Land Use in Surrounding area

Direction	Distance	Land Use
North	0.0km	Vacant Land
	1.07km	Private Property (Small farm)
North-east	0.0km	Vacant Land
	1.25km	Ysterberg Lodge
	2.5km	Caltex Fuel Station
East	0.0 km	Vacant Land
	4.8km	Protea by Marriott Hotel Polokwane Ranch Resort
	5.68	Twin Towers Restaurant
	22.7km	Wildthingz Bush Lodge

Direction	Distance	Land Use
South-East	0.0km	Vacant Land
	1.35km	Private Property (Residential)
	1.85km	Private Property (Residential)
South	1.04km	Private Property
South-west	640m	Private Property (Residential)
	1.14km	Private Property (Residential)
	3km	Vacant Land
West	0.0km	Vacant Land
North-west	60m	Geyser Traction Substation
	1.60km	Private Property (Residential)
	2km	Private Property (Residential)

Source: Praxos (pty) Ltd (2023)

Figure 3-2: Activities in Proximity to Proposed Development

Source: Urban-Econ Site Visit

The land uses surrounding the proposed site suggest that the construction and operation of the facility may have adverse effects on nearby residential areas and businesses, including increased noise, dust, and traffic. These impacts are expected to be primarily concentrated in the immediate vicinity. Chapter 6 of this report will provide a thorough analysis of these impacts and propose mitigation measures to address them effectively.

3.2 Resource and Land Capability

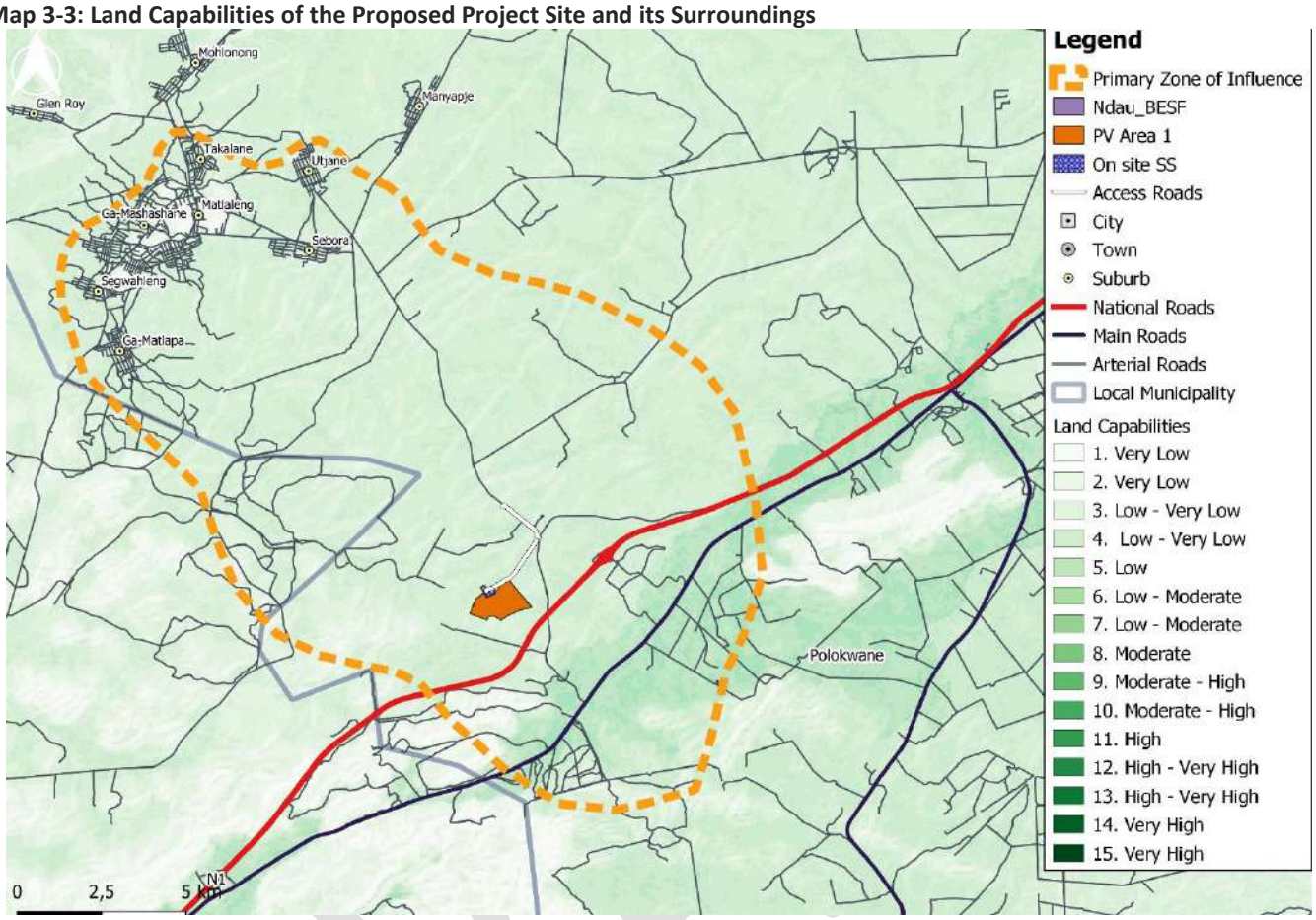
This sub-section will serve as an overview of the resources and land capability within proximity of the proposed project site. Land capability can be defined as the extent to which land can meet the needs of one or more uses under defined conditions of management without permanent management. The expression is in a value that considers several effects of physical factors on the sustainability and potential use for:

- Crops that require regular tillage
- Grazing
- Forestry
- Wildlife

Map 3-3 illustrates the land and capability of the proposed project site and its surroundings. The land capability involves consideration of the following factors:

- The difficulties in land use are caused by physical factors such as including climate (rain-fed production)
- Production potential

Map 3-3: Land Capabilities of the Proposed Project Site and its Surroundings



Source: National Department of Agriculture, Fishery and Forestry, QGIS, 2022 (adapted by Urban-Econ)

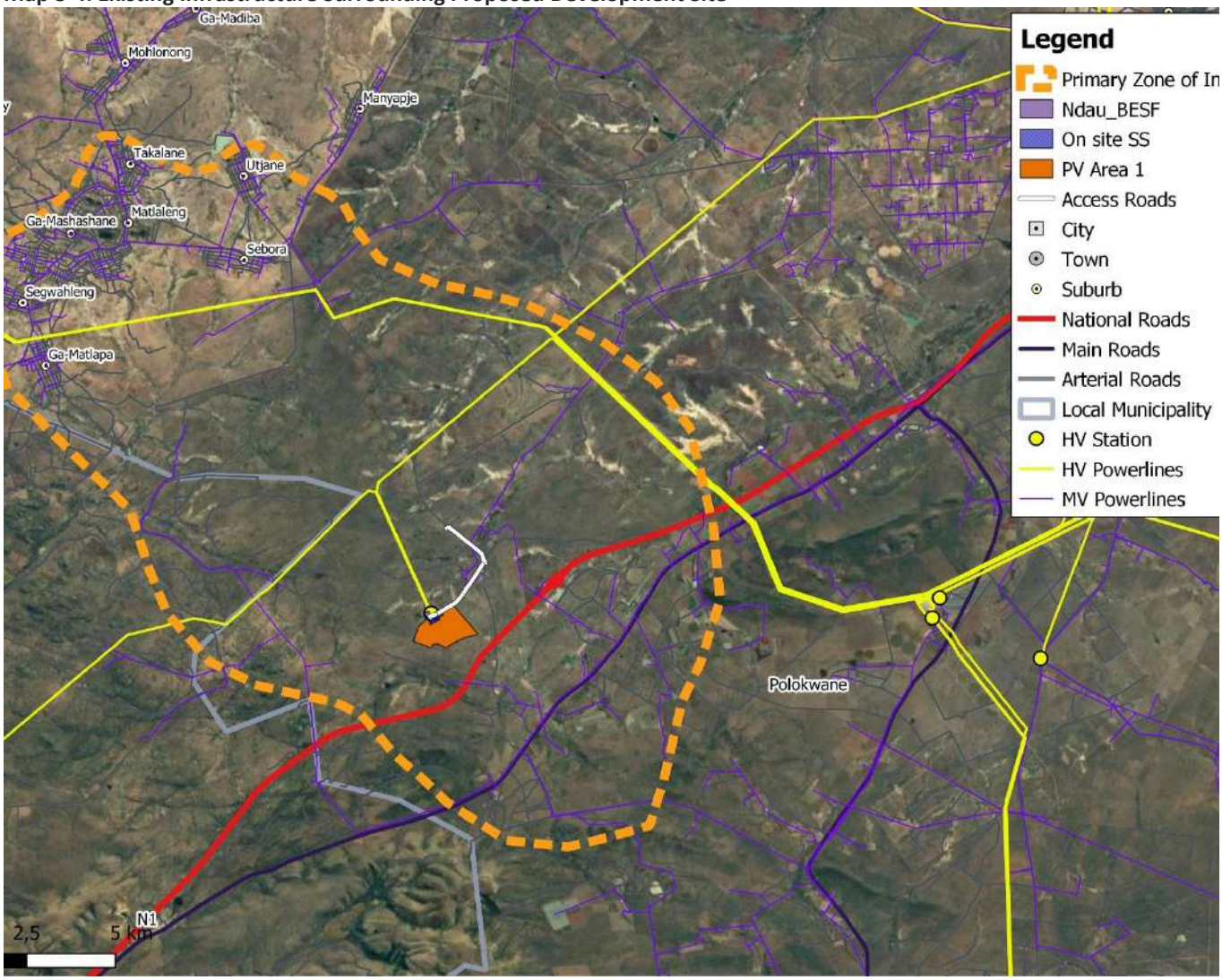
According to Map 3-3, lighter shades on the map indicate areas with lower land capabilities, suggesting limited agricultural potential. Conversely, darker shaded areas represent land with higher capabilities, indicating prime agricultural land.

The project site is primarily located on land with low land capabilities, indicating that it may not be suitable for extensive agricultural activities. However, Figure 3-2 demonstrates the presence of animal farming in the area, suggesting that the land is viable for grazing purposes. Therefore, while the proposed development is not expected to have a significant impact on existing crop planning operations, there may be potential for grazing activities. A more detailed investigation into this matter will be conducted in Chapter 6 of this report and further elaborated on in the EIA report.

3.3 Access to Infrastructure

This sub-section analyses the infrastructure around the proposed project site. The analysis includes Map 3-4 which assesses the availability of railways and roads, and any power-related infrastructure surrounding the proposed project site.

Map 3-4: Existing Infrastructure Surrounding Proposed Development Site



Source: National Geo-Spatial Information, Eskom, QGIS, 2022 adapted by Urban-Econ)

The purpose of the map above is to provide an overview of the infrastructure that currently exists in the vicinity of the proposed development site. This includes key features such as roads, buildings, utilities, and other relevant infrastructure.

As depicted in Map 3-4, there is a main road near the proposed site of the Ndau Solar Energy Facility 1. This road serves as an access route to the site, connecting with an unnamed road that leads directly to the proposed location. It is important to consider the position and orientation of the solar panels to mitigate any potential glare issues that could impact the users of the N1.

Additionally, there are high and medium voltage powerlines in the vicinity of the development; however, none of them passes directly over the proposed site. As a result, it is expected that there will be no significant impact on the existing infrastructure within the community. Nonetheless, a detailed investigation of this matter will be conducted in Chapter 6 of this report and further elaborated upon in the EIA report.

3.4 Concluding Remarks

Chapter 3 presents a comprehensive overview of the zone of influence associated with the proposed development. It encompasses a range of important factors, including the classification of observation clusters, land use profiles, resource and land capabilities, and an evaluation of existing infrastructure in and around the site. These aspects collectively contribute to a deeper understanding of the dynamics surrounding the project area.

The proposed site for the Ndau Solar Energy Facility 1 is approximately 149-ha and is surrounded by various residential areas, including Mayapje to the North, Ga-Sebati to the East, Mogoto to the South, and Tshamahansi to the West. Access to the site is available through local roads branching off from the N1, which runs from Cape Town through Bloemfontein, Johannesburg, Pretoria, and Polokwane.

Regarding existing infrastructure, there are medium voltage powerlines in the vicinity of the development, but they do not pass directly over the proposed site. Therefore, the impact on the community's infrastructure is expected to be minimal.

The immediate vicinity of the proposed development consists of diverse land types, including herbland, cultivated land, wetlands, and degraded areas. These elements contribute to the overall landscape and environmental context of the area. The land's capabilities indicate limited potential for agricultural activities, specifically crop planting, suggesting that the impact on such activities will be minimal. However, it is worth noting that there are multiple farms in the area that engage in animal farming, such as cattle. These findings highlight the suitability of the land for grazing and the potential for livestock-related agricultural practices.

Gaining a comprehensive understanding of the project area and its zone of influence is crucial in order to identify the potential stakeholders and elements that may be affected by the construction and operations of the proposed development. The subsequent chapter in this report is dedicated to examining the current state of the region, with the objective of conducting a detailed analysis of the potential impacts that could emerge from the implementation of the proposed project. This assessment will provide valuable insights for informed decision-making and effective mitigation strategies.

4 BASELINE INFORMATION

This chapter addresses the study area's existing socio-economic environment. A baseline profile is necessary because it provides both qualitative and quantitative data on the people and economies under study and thus serves as a benchmark against which the project's effects may be measured. Given the limited data available, this section primarily focuses on providing baseline information for the secondary study area. It is assumed that the secondary study area will serve as a representative sample of the primary study area.

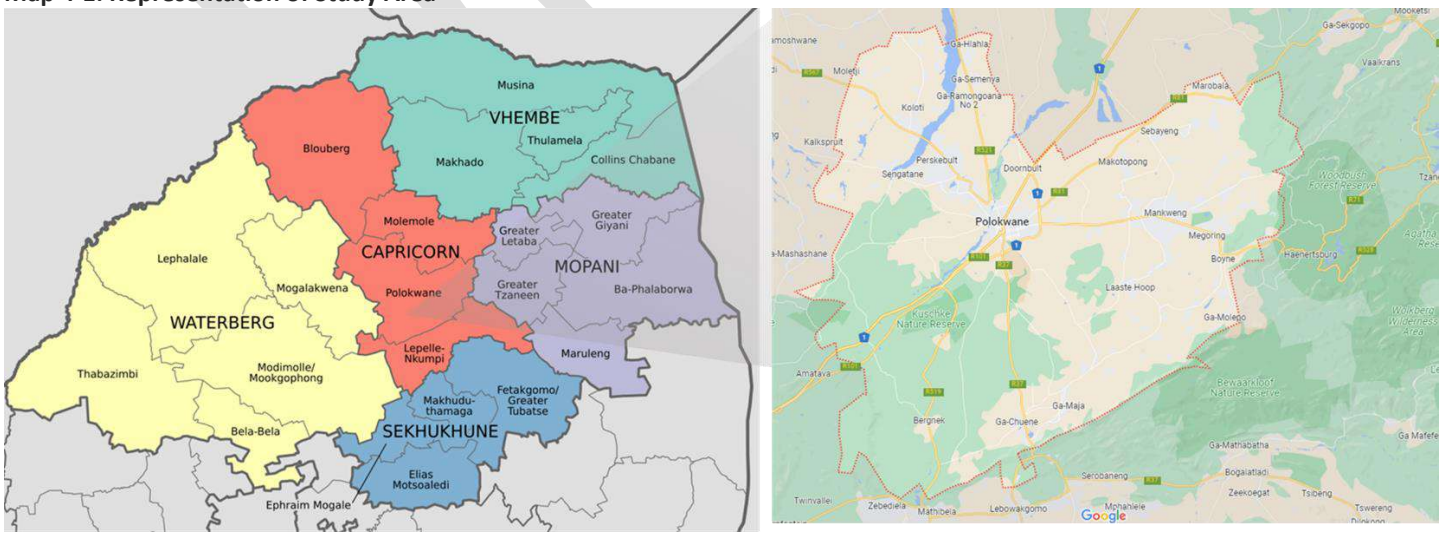
This section will analyse the following key indicators:

- The study area's composition and locational factors
- Sense of place, history, and cultural aspects
- Demographics, and crime
- Income and education
- Economy
- Labour force and employment structure

4.1 Study area's composition and locational factors

The proposed project site is in the Polokwane LM, a Category B municipality in the Limpopo Province. It is one of four LMs together with Blouberg LM, Molemole LM and Lepelle-Nkumpi LM that forms part of the Capricorn DM, as shown in the map below.

Map 4-1: Representation of Study Area



Source: Municipalities of South Africa, Polokwane Local Municipality

The Polokwane Local Municipality covers a substantial area of approximately 21,705 square kilometres within the Capricorn District Municipality. It is the largest and most densely populated municipality in the district. The municipality is home to two formal towns, namely Polokwane and Makgwareng, each with its unique characteristics and contributions to the overall socio-economic landscape.

Polokwane, the capital city of the Limpopo Province, serves as the main economic and administrative hub within the municipality. It operates under a category B Municipality classification and follows an Executive Mayoral System, complemented by a Ward Participatory System. This governance structure is outlined in the section 12 Notice of the Municipal Structures Act, Act of 2000, as gazetted by the Limpopo Provincial Government.

The combination of Polokwane's status as the provincial capital, its diverse economy, and its strategic location makes it a crucial center for commerce, services, and governance. Makgwareng, as the other formal town in the municipality, also contributes to the overall socio-economic development of the region, albeit on a smaller scale.

The following subsections will briefly unpack the primary study area further, highlighting the history and cultural aspects, the demographics, and the economy of the area. They will also provide an overview of the income and education levels of communities, the current labour force and employment structures, and the area's access to basic services.

4.2 Sense of Place, History, and Cultural Aspects

This subsection aims to provide an overview of the LM's sense of place, history, and cultural aspects applicable to the proposed project area. Polokwane LM is the economic hub of Limpopo Province and has the Capricorn District's highest population density. The municipal geographical plan resembles the old apartheid city model, which was characterized by segregated habitation.

Polokwane was founded in 1886 by Voortrekkers, a group of Dutch settlers who were fleeing British rule in South Africa. The city was originally named Pietersburg, after Petrus Joubert, a Boer general who fought in the Boer War. In 2002, the city was renamed Polokwane, which means "Place of Safety" in Northern Sotho. Polokwane is a major commercial and industrial centre. The city is home to several factories, including those that produce food, beverages, and clothing. Polokwane is also a major transportation hub, with several roads and railways connecting it to other parts of South Africa. Polokwane is a popular tourist destination.

The city is home to several historical and cultural attractions, including the Polokwane Game Reserve, the Polokwane Museum, and the Peter Mokaba Stadium. Polokwane is also a good base for exploring the surrounding

countryside, which is home to several national parks and game reserves. Polokwane is a city with a rich and diverse cultural heritage. The city is home to a number of different ethnic groups, each with its own unique culture and traditions. Polokwane is also home to a number of different festivals throughout the year. These festivals celebrate the city's rich cultural heritage and offer visitors a chance to experience the different cultures that make up the city.

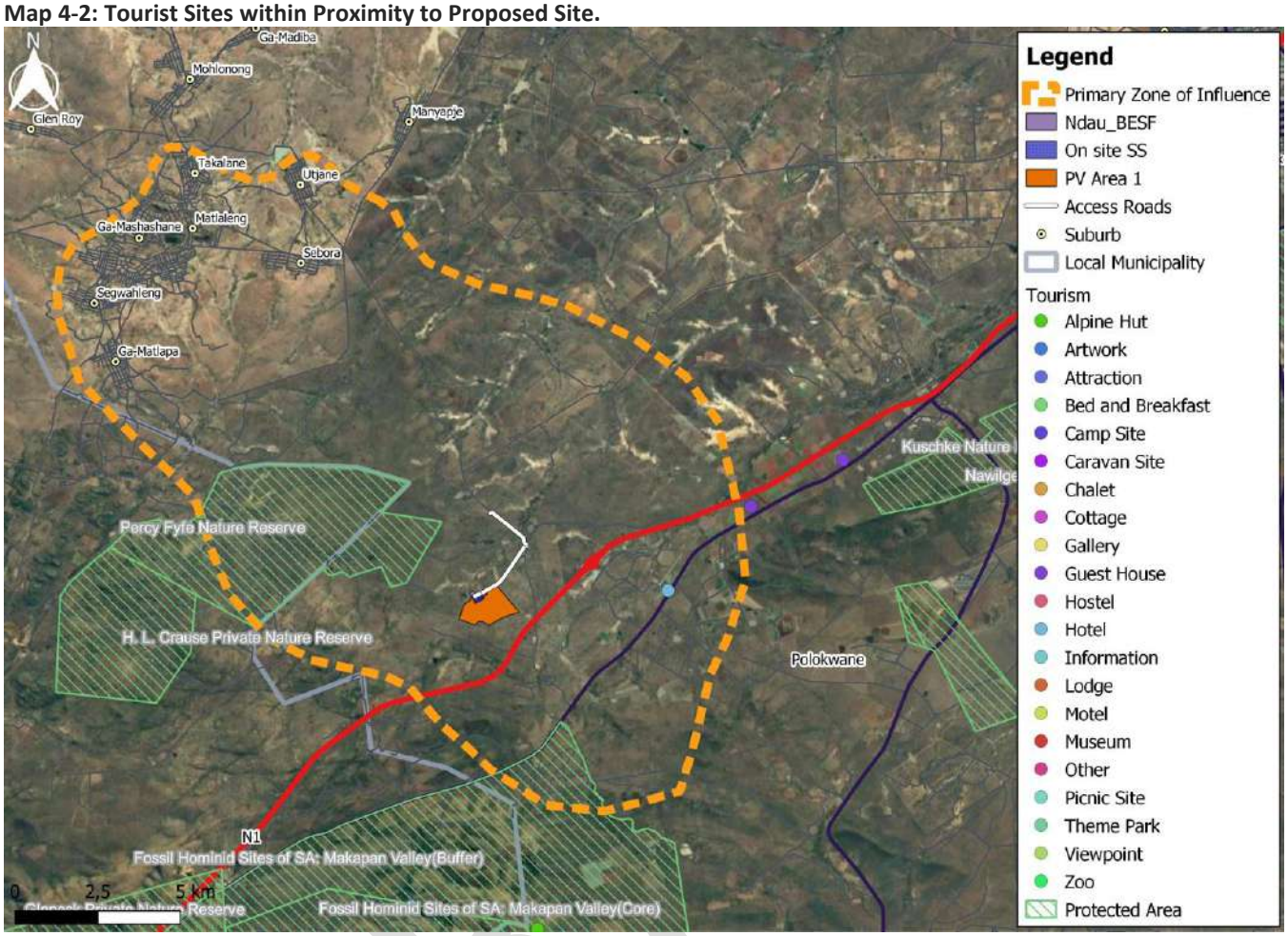
Some of the most popular cultural attractions in Polokwane include:

- Polokwane Art Museum: This museum houses a collection of over 800 artworks by artists from Limpopo Province.
- Polokwane Museum: This museum tells the story of the history of Polokwane and the Limpopo Province.
- Mapungubwe World Heritage Site: This site is home to the ruins of an ancient African kingdom.
- Bakone Malapa Open Air Museum: This museum is a reconstruction of a traditional Sotho village.
- Thathe Vondo Cultural Village: This village is home to the Venda people.

Closer to the proposed develop, there two main tourist destinations in the surrounding area are Percy Fyfe Nature Reserve and H.L Crause Private Nature service. There is also a hotel close to the area which is the Protea by Marriott Hotel.

It is important to evaluate the tourist attractions within proximity to the proposed Ndau Solar Energy Facility 1 to ensure that no notable tourist attractions or wildlife will be impacted by the proposed development. The tourist attractions within the proposed Ndau Solar Energy Facility 1 are depicted in Map 4 2 on the following page.

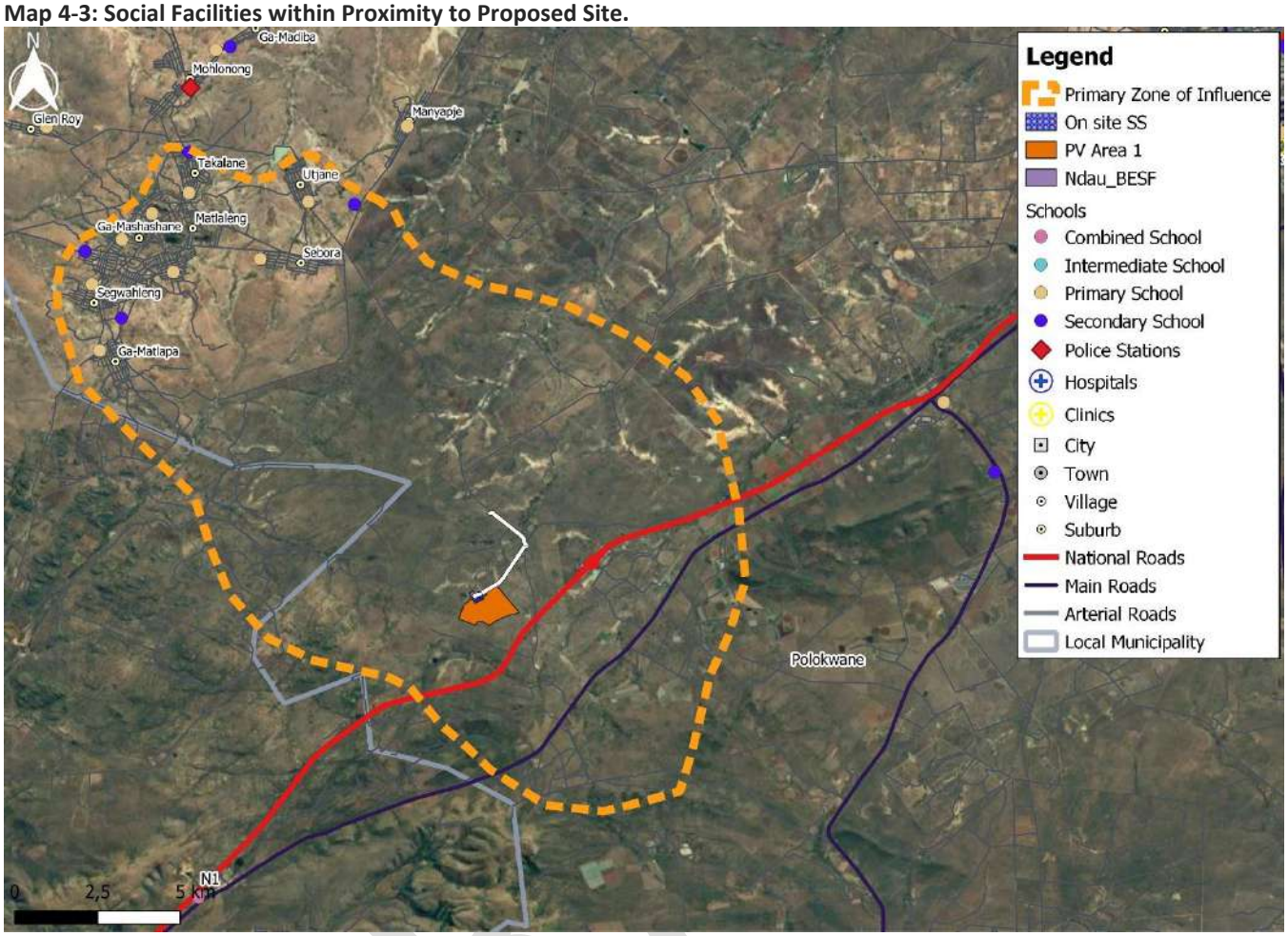
Map 4-2: Tourist Sites within Proximity to Proposed Site.



The operations of the proposed facility are not expected to have a significant impact on these establishments, it is important to consider the potential negative impacts that may arise during the construction phase. Careful planning and mitigation measures will be necessary to minimize any adverse effects and ensure the preservation of the surrounding protected areas and the uninterrupted experience for visitors to these tourist accommodations and protected areas.

Map 4-3 on the following page outlines the existing social facilities within the study area of the proposed project.

Map 4-3: Social Facilities within Proximity to Proposed Site.



Source: National Department of Basic Education, South Africa Police Service & National Department of Health, QGIS, 2022 adapted by Urban-Econ

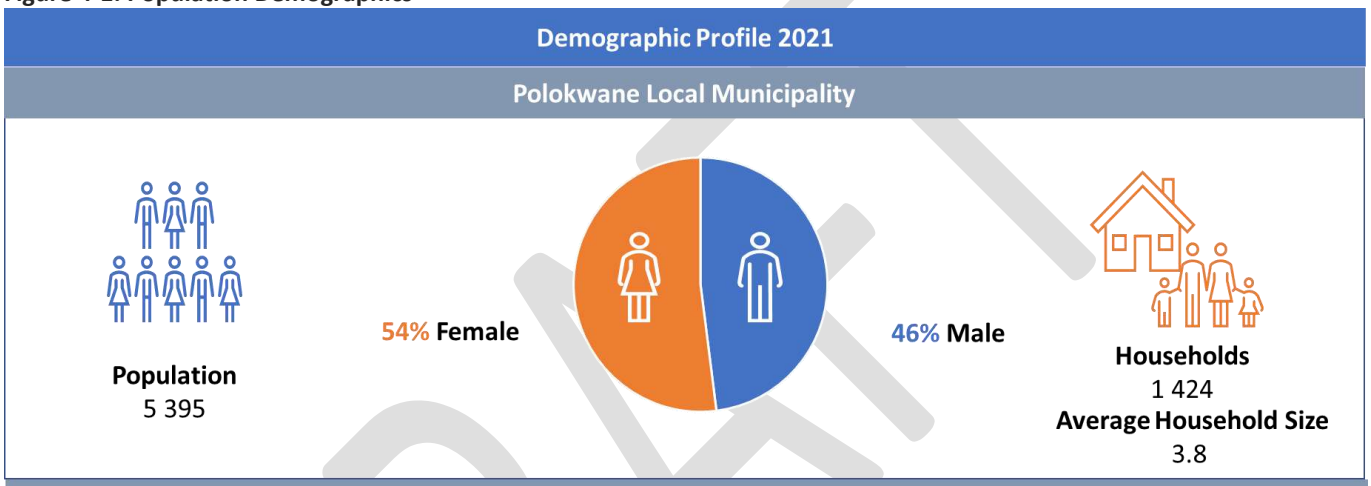
As can be seen in Map 4-3 above, there are several schools situated within the primary area of influence surrounding the proposed site. The nearest school is approximately 15km away from the location of the proposed Ndau Solar Energy Facility 1. While there is a concern regarding potential disruptions to the schools' operations due to construction-related noise and air pollution, it is unlikely that the proposed development will have a significant impact on the nearby schools, given the nature of the project and the distance involved. However, careful consideration and appropriate mitigation measures should be implemented to ensure minimal disturbances. A more detailed analysis of potential impacts will be provided in Chapter 6 of this report, while the EIA phase will offer a comprehensive examination of the subject.

4.3 Demographics, Health, and Crime Profiles

This subsection aims to provide an overview of the demographics, health, and crime profiles within the primary study area. A grasp of these profiles is central to understanding the extent, if any, to which communities will be impacted by the project at hand.

In Polokwane LM, males make up a greater proportion of the population in the LM than females. As shown in Figure 4-1 below, females account for 46% of the total population.

Figure 4-1: Population Demographics



Metro, Provincial and National demographic profiles

Location	Population	Household Total	Average Household Size
Polokwane Local Municipality	644 489	181098	3.6
Capricorn District Municipality	1 325 796	356151	3.7
Limpopo Province	5 909 763	1531918	3.9

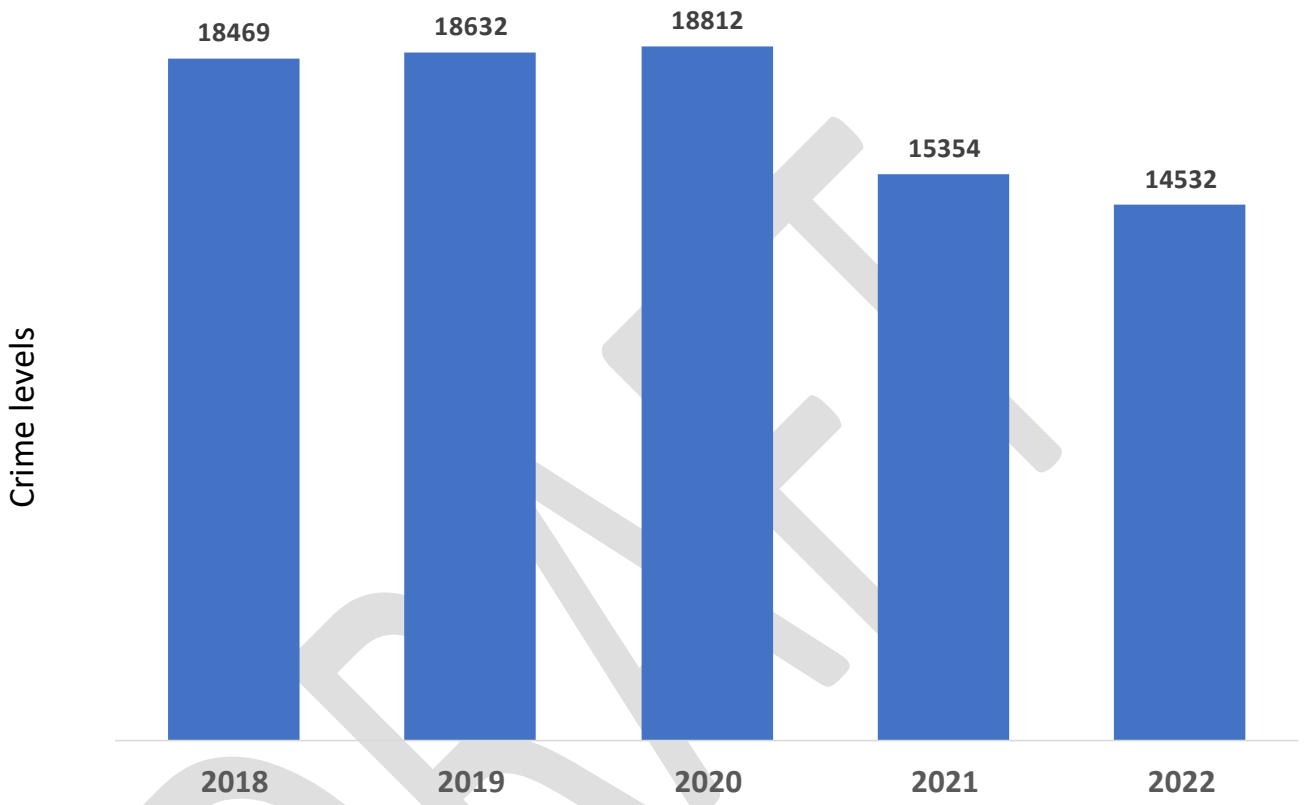
Source: Quantec, 2023

As of 2021, the population of Polokwane Local Municipality (LM) was estimated to be around 644 489 people, residing in 181 098 households. This population represents approximately 49% of the total population of Capricorn District Municipality and about 11% of the entire population of Limpopo province. The average household size in Polokwane LM is approximately 3.8 people per household. While this figure is slightly higher than the district average of 3.7, it is slightly lower than the provincial average of 3.9.

Crime is an important indicator of a community's socioeconomic status. Figure 4-2 represents the serious and other crime levels in the Thabazimbi LM from 2018 to 2022. Serious crimes comprise of contact crimes, sexual

offences, robberies with aggravating circumstances, crimes involving property, and crimes discovered as a result of police action.

Figure 4-2: Polokwane LM: Serious Crime Levels



Source: Quantec, 2023

Figure 4-2 represents the serious and other crime levels in the Polokwane LM from 2018 to 2022. The highest crime rate was recorded in 2020. This increase in crime can be attributed to various factors, including the impact of the COVID-19 pandemic and the subsequent lockdown regulations implemented in 2020.

The stringent lockdown measures resulted in job losses and economic hardships for many individuals, which may have contributed to a sense of desperation and an increase in criminal activities as people sought ways to improve their circumstances. However, as the global pandemic restrictions began to ease in 2021, the crime rates showed a decline, potentially indicating the restoration of employment opportunities and improved socio-economic conditions.

Notably, 2022 witnessed the lowest crime rate among the observed years, suggesting positive developments in the economy of Polokwane LM and progress towards sustainable development. This decline in crime rates reflects the potential positive impact of ongoing efforts in enhancing economic opportunities, social welfare, and overall well-being within the municipality.

The introduction of a new development project could potentially contribute to an increase in crime rates in an area. This is because the construction and operation of the new development project often attract a transient population, which can introduce new dynamics and challenges related to crime. The potential impact of the Ndau Solar Facility 1 on crime levels in the area will be examined in Chapter 6 of this report, providing a brief analysis. Further comprehensive analysis on this aspect will be conducted during the EIA.

4.4 Income and Education levels

The average income of an economy is used to assess the associated community's standard of living as well as its state of development. Education levels are also a key indicator of a community's social welfare and access to education. This subsection, therefore, aims to analyse the income and education levels of the primary study area to give an understanding of the developmental state and social welfare of the area. The table below is used to describe the income levels of Polokwane LM.

Table 4-1: Primary Study Area Household Income (2011)

Income levels	Polokwane LM
No income	13.8%
R1 - R4,800	4.8%
R4,801 - R9,600	8.5%
R9,601 - R19,600	19.3%
R19,601 - R38,200	19.7%
R38,201 - R76,400	11.7%
R76,401 - R153,800	8.1%
R153,801 - R307,600	7.2%
R307,601 - R614,400	4.6%
R614,001 - R1,228,800	1.6%
R1,228,801 -R2,457,600	0.4%
R2,457,601+	0.3%

Source: Stats SA, 2012

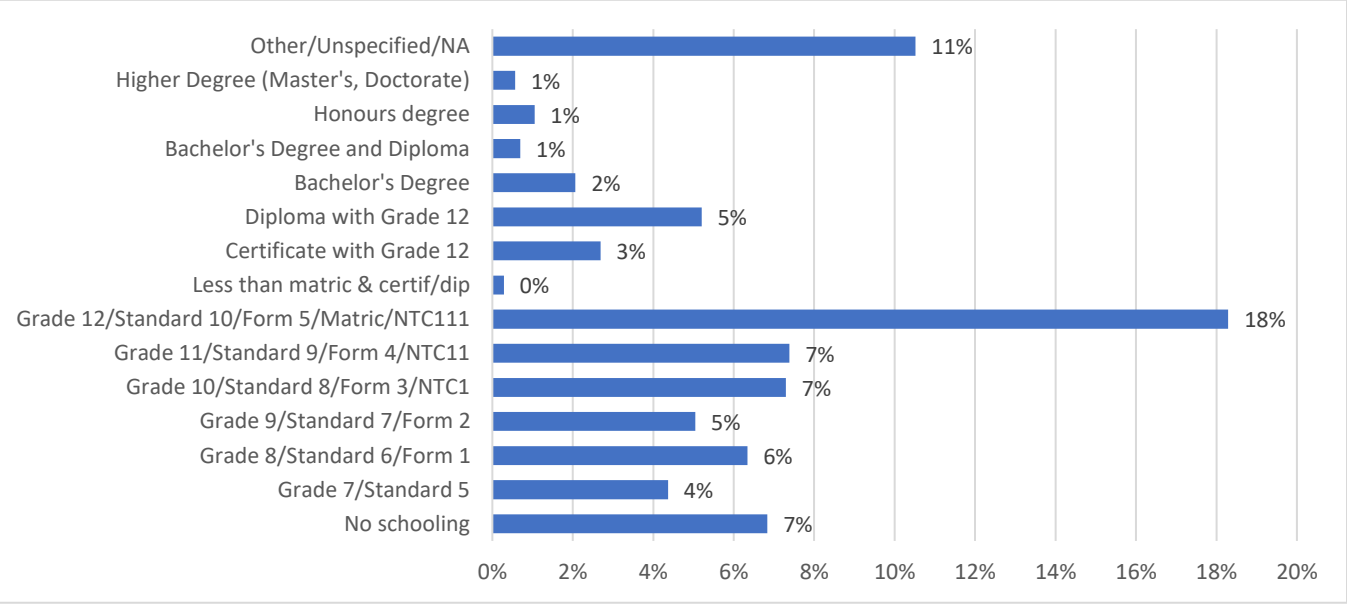
According to the 2011 Census data, a significant portion of Polokwane LM's population falls within the category of low to middle income household. The majority of households (19.7%) fall within the income range of R38 201

to R76 400, which translates to approximately R3 183 to R6 367 per month. On the other hand, about 7% of the LM's total households earn above R307 601 annually or approximately R25 633 per month. The prevalence of low to middle income households in the LM suggests that many residents face economic challenges and may experience limited financial resources.

Low average income levels are often related to the difficulty of getting access to adequate education. Education includes various levels, each of which reflects a broad segment of the education "ladder," i.e., the development from elementary learning to more difficult learning experiences. Figure 4-3 illustrates the level of education obtained by the residents of Polokwane LM

Polokwane LM can be considered a low to middle income area as the highest percentage (19.7%) of individuals earn R19,601 - R38,200. Low average income levels are often related to the difficulty of getting access to adequate education. Education includes various levels, each of which reflects a broad segment of the education "ladder," i.e., the development from elementary learning to more difficult learning experiences. Figure 4-3 illustrates the level of education obtained by the residents of Polokwane LM.

Figure 4-3: Education Levels in Polokwane LM



Source: Quantec 2023

According to the available data, it is observed that a significant portion of Polokwane LM's adult population has limited formal education. Approximately only 7% of the total adult population has not received any form of formal education, while roughly 18.0% have completed at least matriculation (secondary education). In contrast, less

than 10% of the adult population in Polokwane LM's holds higher education degrees, including bachelor's degrees, honours degrees, master's degrees, and doctorate degrees.

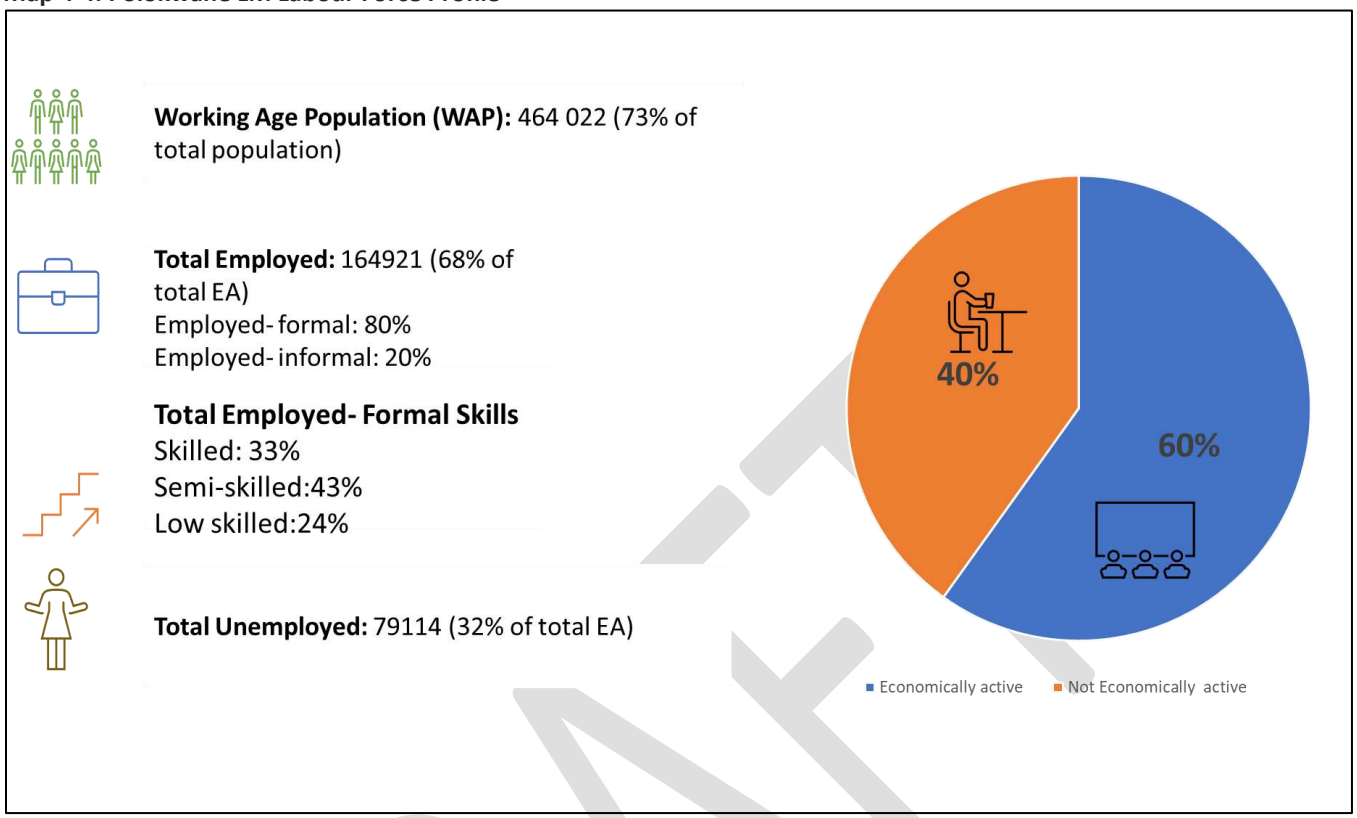
The educational landscape in Polokwane LM plays a significant role in shaping the labour market dynamics. The low levels of education among residents tend to be associated with a predominance of low-skilled labour. This correlation between educational attainment and skill level suggests that the general population faces challenges in accessing higher-paying job opportunities.

Furthermore, the observed low educational levels in Polokwane LM can be linked to the higher proportion of residents belonging to lower-income brackets. The limited educational opportunities and qualifications contribute to the prevalence of lower-income households within the municipality. This connection between educational attainment and income further underscores the socioeconomic challenges faced by the general population.

4.5 Labour Force and Employment Structure

Employment is the most common way for people of working age to generate money that will allow them to meet their necessities and enhance their standard of living. As a result, employment and unemployment rates are important measures of socio-economic status. This subsection briefly outlines the labour force in Polokwane LM,

Map 4-4: Polokwane LM Labour Force Profile



Source: Quantec, 2022

In 2021, the employed population in Polokwane LM constituted approximately 73% of the total employed population in the municipality. The working-age population (WAP) accounted for 73% of Polokwane LM's total population, which corresponds to around 464,022 individuals. Figure 4-4 provides an overview of the labour force profile in Polokwane LM, highlighting the working-age population, total employed individuals with formal skills, and the total number of unemployed individuals.

Some 164,921 individuals amongst the economically active population are employed, representing approximately 68% of the total economically active individuals. On the other hand, the total number of unemployed individuals amounts to 79,114, constituting around 32% of the economically active population.

Regarding the formal employment sector, skilled workers make up approximately 33%, while semi-skilled workers account for 43%, and low-skilled workers represent 24% of the total formally employed individuals.

4.6 Economic Profile

The creation, distribution, and consumption of products and services are the defining activities of an economy. The value of goods and services generated in a certain location, industry, or sector of the economy is measured

by gross value added (GVA). This subsection looks at the economic profile of the primary study area by specifically reviewing GVA contributions (see Table 4-2 below).

Table 4-2: Local Municipality Contributions to Limpopo and South Africa (2021)

Area/economy 2020	R (millions)	South Africa	Limpopo
South Africa	12241428	100%	
Limpopo	86 0055	7%	100%
Capricorn District	17 6879	1%	21%
Polokwane LM	129865	1%	15%
Aganang	5970	0%	1%
Blouberg	8839	0%	1%
Molemole	9250	0%	1%
Lepele-Nkumpi	22957	0%	3%

Urban-Econ calculations based on Quantec, 20233

Table 4-2 shows that the GVA of the Polokwane LM was valued at R122 502 million in 2021. This constituted approximately 15% of the total GVA for the Limpopo province in that year, making Polokwane LM the largest contributor to the province. The economic profile of Polokwane LM is dominated by the primary sector, with the highest contributing sector being the mining and quarrying sector. The dominance of this sector is evident in the table below.

Table 4-3: Sector Contributions to the Polokwane LM Economy

Polokwane LM Economic Sectors	GVA (R Millions)	Contribution
Agriculture, forestry, and fishing	7832	2%
Mining and quarrying	95938	29%
Manufacturing	8848	3%
Electricity, gas, and water	15127	5%
Construction	9693	3%
Wholesale and retail trade, catering, and accommodation	51524	15%
Transport, storage, and communication	16786	5%
Finance, insurance, real estate, and business services	47403	14%
General government	66159	20%
Community, social and personal services	13954	4%

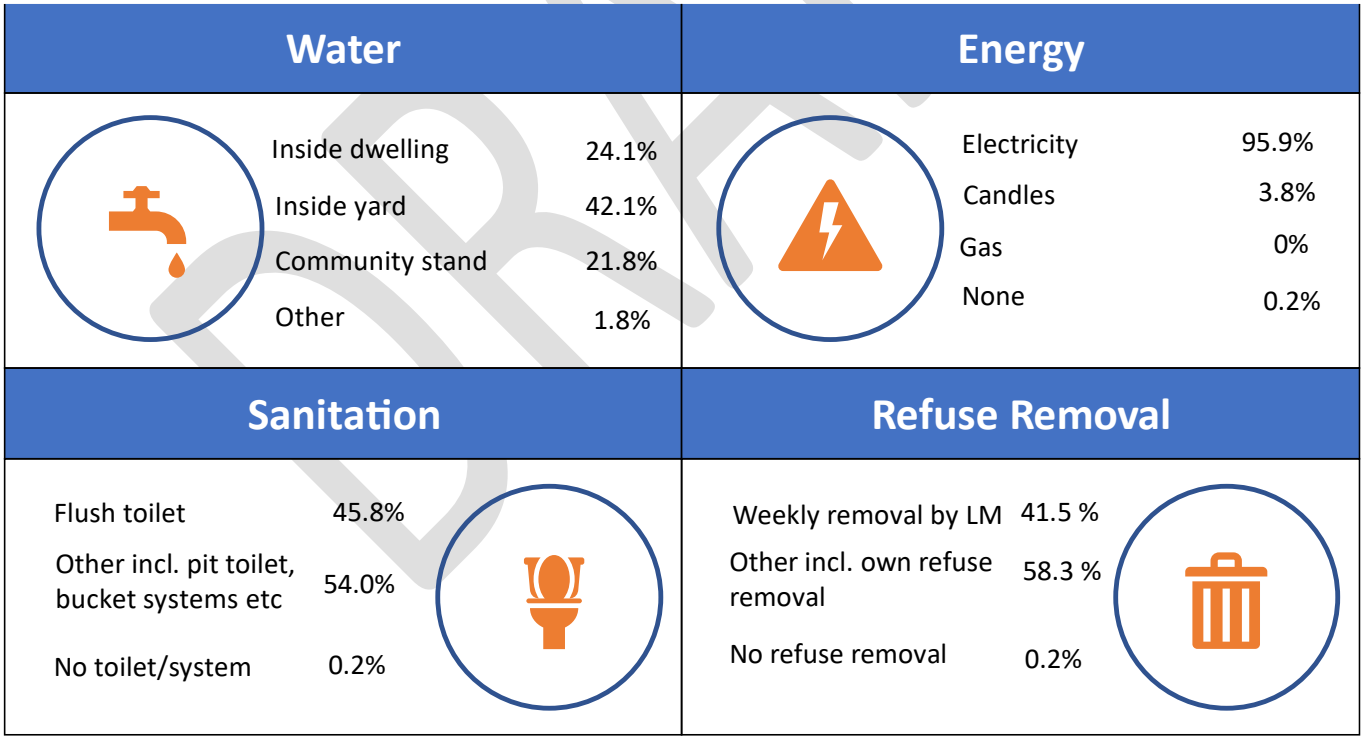
(Urban-Econ calculations based on Quantec, 2022)

As can be seen in Table 4-3, the biggest contributor to Polokwane LM's GVA is the mining and quarrying sector (29%). This is followed by general government, which contributes approximately 20% of the LM's GVA. The proposed solar facility and associated infrastructure are expected to contribute to the LMs' electricity, gas and water however, because it is solar energy facility, it is unlikely that this would have a significant impact on the GVA of the LM. Chapter 6 will give an overview of the impact on GVA, and the EIA report will go into more detail.

4.7 Access to Basic Services

Shelter, water, power, sanitation, and other services are factors that help establish people's standard of living in the LM. Another factor to consider when thinking about living standards is infrastructure and the state of municipal infrastructure. The existence of social and economic infrastructure, such as roads, educational institutions, and health facilities, further reflects the nature of the study region, which is important in constructing a comprehensive picture of the conditions in which communities live. This sub-section aims to briefly describe the municipality's access to basic services, as illustrated in Figure 4-4 below.

Figure 4-4: Access to Basic Service



Source: Quantec, 2022

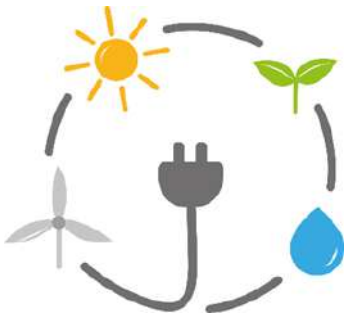
Figure 4-5 provides valuable insights into the access to basic services in Polokwane LM. It reveals that 24% of households within the municipality have piped water within their yards, while approximately 42% have piped water inside their dwellings. For about 24% of households, access to water is facilitated through a community

stand, while the remaining households rely on alternative sources such as water tankers, boreholes, rainwater tanks, rivers/streams, and water vendors.

In terms of energy access, an impressive 96% of households in Polokwane LM have access to electricity provided by Eskom. However, a small portion, approximately 4%, still rely on candles for energy, while 4.1% use paraffin, and a minority of households use other sources such as gas. Regarding sanitation, only roughly 45.8% of LMs' households have access to flushing toilets with sewage systems, while the 0.2% have no access to any toilet system. About 41.5% of the LMs' households have their refuse removed by the community's waste on a weekly basis.

The above subsection suggests that besides the provision of electricity, the LM is likely to be underdeveloped and that the standards of living are fairly low. The proposed Ndau facility is unlikely to improve the LMs' access to basic services, however, it may indirectly impact the standards of living of the local community. The extent of its impact will be covered briefly in chapter 6 of this report and in more detail in the EIA report.

4.8 Energy Economy



The supply and use of energy in societies are referred to as the energy economy. This includes investment in energy-related technologies that boost the national economy and create jobs. According to the World Bank (2019), energy is at the heart of development. It is an essential force that drives the nation's economy, manufacturing, goods transportation, and service delivery.

South Africa's Energy Economy

In South Africa, economic and social development is centred on the energy sector. It plays a crucial role in boosting the nation's economy through its economic contributions (The South African Energy Sector Report 2019, 2022). According to the NDP, South Africa will have an energy sector that fosters economic growth and development by investing enough in energy infrastructure by the year 2030. As of 2016, coal, which is abundant and inexpensive and is considered among the lowest cost energy sources in the world, dominates the South African energy sector and is used to make most of the country's electricity. Other main sources of energy in the country include:

- crude oil and petroleum products (14%);
- natural gas (3%);
- nuclear (3%); and

- renewables (11%).

Current Energy Crisis in South Africa


Source: Eye Witness News

South Africa has endured recurring power interruptions known as load shedding for years. Eskom, the nation's primary provider of electricity, first announced in 2007 that it was unable to provide power to the entire country simultaneously due to deteriorating infrastructure (The culture trip, 2019). Eskom continues to implement national blackouts as of July 2022 as it struggles to meet the national energy demand. The increasing strain on infrastructure has led to South Africans experiencing daily power outages of up to nine hours, which is referred to as stage 6 load shedding (BBC News, 2022). These outages have affected many people and businesses across the nation. Some of the most prominent impacts of the current energy crisis include (Generator Parts, 2022):

- Production loss and subsequent GVA reduction: Since the majority of businesses rely on electricity for lighting as well as powering machinery and other equipment required for daily operations, the outages have undermined their ability to function at full capacity.
- Declining profits and subsequent loss of employment: When there is a substantial drop in production, there is also a significant fall in profits. This, in turn, leads to businesses not being able to pay employees.
- Increased poverty: This is due to loss of employment and thus reduced living standards.
- Theft and burglary: These are as a result of loss of employment as well as the failure of burglar alarms and other forms of security during power outages.

For South Africa to have enough generating, transmission, and distribution capacity, it has been estimated that the country will need to spend close to R1.2 trillion by 2030. According to Eskom's Former CEO, Mr André de Ruyter, renewable energy is the quickest and most cost-effective method to fix the country's electricity crisis (BusinessTech, 2022).

Renewable Energy as a Solution


Source: Mining Review Africa

As South Africa's energy crisis worsens, renewable energy has gained popularity as a potential solution (Creamer Media, 2022). The 2003 White Paper on Renewable Energy is one of the policy documents that established the framework for the promotion of renewable energy in South Africa. It encourages the move to renewable energy in order for the country to transition to a low carbon economy (Department

of Mineral Resources and Energy, 2003). Renewable energy is created from naturally replenishing and endless sources. The different kinds of renewable energy include:

- bioenergy;
- geothermal energy;
- hydrogen;
- hydropower;
- marine energy;
- wind energy; and
- solar energy

Renewable energy has several benefits that impact the economy, ecology, national security, and human health. Some of the more prominent benefits include (U.S. Department of Energy, 2022):

- enhanced resilience, security, and dependability of the country's national electricity grid;
- generation of jobs in the renewable energy sectors; and
- reduced air pollution and carbon emissions from energy generation.

The potential for renewable energy use is abundant in South Africa, notably for wind and solar energy. According to the International Renewable Energy Agency (International Renewable Energy Agency, 2019), there is potential for wind power development across more than 80% of the country's territory with the possibility of reaching about 67 000 gigawatts. The country also has an abundance of solar energy potential with an annual sunshine duration of about 2 500 hours while the daily solar radiation intensity is between 4.5 kilowatt hours/square metre and 6.6 kWh/m^2. Despite the immense potential for exploiting renewable energy, the amount of electricity produced from these sources is still very modest (Green Finance & Development Center, 2019).

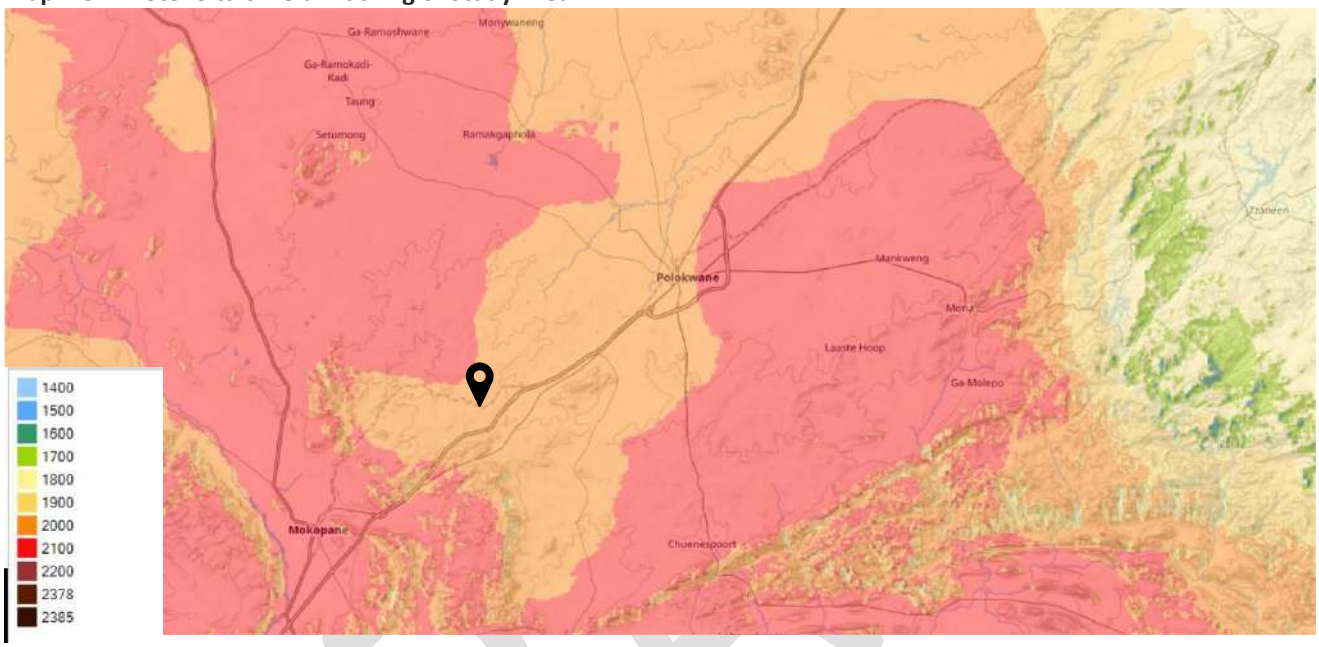
Solar Potential in the Limpopo Province

The Limpopo province in South Africa is known for its abundant solar potential. With its location in the northern part of the country, Limpopo receives high levels of solar radiation throughout the year. This makes it an ideal region for harnessing solar energy and promoting renewable energy initiatives.

The province's solar potential is supported by its favourable climatic conditions, with hot summers and relatively mild winters. The region experiences long hours of sunshine, allowing for efficient solar energy generation. The availability of ample sunlight makes Limpopo an attractive area for solar power projects. The Limpopo provincial

government recognizes the importance of solar energy in promoting sustainable development and reducing dependence on fossil fuels. Various initiatives and programs have been implemented to encourage the adoption of solar power, such as incentives for renewable energy projects, awareness campaigns, and the integration of solar technologies into government buildings and infrastructure.

Map 4-5: Photovoltaic Yield Tracking of Study Area



Source: Mapable, (adapted by Urban-Econ)

As can be seen in the map above, the study area is in a region with a fairly moderate PV yield. As a result, the installation of a Ndau Energy Facility 1 seems to be fair given the need for more renewable energy sources and the region's moderate potential for solar energy. There are areas with higher PV in the area however, the moderate potential is expected to work for the development fairly. It is still crucial however to consider all of the impacts that could result from the construction of a Ndau Solar Energy Facility. The impacts related to the construction of the Ndau Solar Energy Facility 1 and associated infrastructure will be briefly examined in Chapter 6 and more extensively examined in the EIA report.

4.9 Concluding Remarks

The chapter above highlights the Polokwane baseline profile. The profile contains details about Polokwane LM's history, demographics, economy, labour force, employment, and typical income levels. The baseline profile is an important aspect of the SEIA because it serves as a benchmark against which the proposed project's potential

impacts can be compared. As a result, giving current information on the situation in the potentially affected area is critical in assessing both positive and negative socioeconomic impacts.

The key insights drawn from the baseline assessment show that Polokwane LM has a significant population of approximately 644 489 people, comprising about 49% of the total population of Capricorn District Municipality and about 11% of the entire population of Limpopo province.

Education levels in Thabazimbi LM indicate a predominance of individuals with a matric qualification, which correlates with the higher proportion of low-income workers in the area. This suggests a need for job opportunities that require low to medium-level skills to improve the socio-economic conditions within the community.

The baseline assessment recognizes the importance of the energy sector for both the environment and society. Investing in renewable energy technologies not only has the potential to boost the national economy but also to create employment opportunities. Given the current energy crisis in the country, the development of renewable energy sources, such as the Ndau Solar Energy Facility 1, can enhance the resilience, security, and reliability of the national electricity grid. The proposed site for the facility benefits from a favourable solar potential, making it a suitable location for solar PV installations.

While the proposed development appears to offer opportunities to promote the green economy and generate employment for the community, a thorough impact assessment is necessary to fully understand the potential positive and negative effects. The EIA report will provide a comprehensive analysis of the development's impacts on various socio-economic factors, enabling informed decision-making and mitigation measures.

5 NEED AND DESIRABILITY ASSESSMENT

This chapter reviews aspects that support the need for and desirability of the Ndau Solar Energy Facility 1 development as well as red flags in the planned location that should be considered. Table 5-1 below is therefore used to illustrate these factors for the proposed Ndau Solar Energy Facility 1.

Table 5-1: Need and Desirability Assessment

Aspect	Comment
The socio-economic context of the area based on strategic documents	The strategic national, provincial, and local-level documents focus on improving the lives of communities by promoting decent work and economic development, improving and expanding infrastructure and prioritising renewable energy concerns. The proposed Ndau Solar Energy Facility 1, with its potential to create employment opportunities and contribute to the green economy, appears to be in line with the objectives outlined in these strategic documents. By investing in renewable energy infrastructure, the project aligns with the goal of transitioning to cleaner and more sustainable energy sources.
Spatial characteristics	The proposed location for the Ndau Solar Energy Facility 1 on Portion 19 of the Farm Rietvley No. 13 comprising of mainly herbland. The site benefits from convenient accessibility, as it is connected to local roads that link to the N1, which will serve as the primary route for the construction and operation of the facility. As a security measure, a fence will be constructed to enclose the designated area. The chosen site presents minimal risks, given the nature of the solar energy project. Moreover, it is worth noting that the site is situated on land with a moderate potential for photovoltaic (PV) energy generation
Equitable impacts in the short and long term as well as social and economically sustainable considerations	The proposed Ndau Solar Energy Facility 1 is expected to be operational for a minimum of 20 years. It is expected to have both short- and long-term impacts on economic and social sustainability. One of the positive identified impacts relates to its potential to provide employment opportunities to some of the region's households in the short term (during construction of the facility) and over the long term (during its operations). The proposed development will also contribute to enhancing energy resilience as it will support renewable energy development.
Creation of residential and employment opportunities nearby or amongst the different communities	The proposed project is expected to create employment opportunities at all skill levels, allowing the residents of local communities to work closer to their homes in the short and long term. Though skills capabilities still need to be assessed, it is expected that most permanent jobs will be filled by those in local communities.
Discouragement of urban sprawl and contribute to compaction/densification	The project has the potential to sustain local employment levels, providing continued job opportunities for the community. While some unemployed individuals from the local municipalities may choose to migrate to urban areas in search of opportunities, it is important to note that this migration is not directly linked to the development itself.
Encouragement of environmentally sustainable land development practices and processes	The proposed development is a Solar Energy Facility, thus encouraging the sustainable use of renewable energy. By harnessing solar power, the facility aims to contribute to the reduction of carbon emissions and the conservation of natural resources. Furthermore, the utilisation of clean and renewable energy aligns with the global shift towards a more sustainable future. The environmental specialists may provide additional guidance on further environmental benefits and drawbacks that the Ndau Solar Energy Facility 1 may have.

Aspect	Comment
Consideration of special locational factors that might favour the specific location	The location of the proposed solar PV project has sufficient PV yield, making it an appropriate site for solar PV facilities. In addition, the land is currently unutilised and thus available for development.
Impact on the sense of history, sense of place, and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area	The proximity of the proposed location to the nearby businesses and residents may have visual impacts on residents, which will be further examined in the visual report. The development of the Ndau Solar Energy Facility 1 is anticipated to stimulate economic activity, leading to new developments and increased business opportunities. However, the influx of job seekers may also contribute to a potential increase in crime rates within the area.
Limitations of current knowledge (gaps, uncertainties, and assumptions)	This study is based only on the material provided by the client and secondary research. No interviews with the many affected parties were done (either those directly or indirectly affected); this raises the level of uncertainty as not all risks could be thoroughly investigated. Information from interested and affected parties will be obtained during the Public Participation Process.
Availability of labour able to take up the job opportunities provided by the development of the Ndau Solar Energy Facility 1 and associated infrastructure	As indicated in Chapter 4, the majority of the residents have low-medium skills. The employment opportunities will be for people of various skill levels during both the construction and the operation of the proposed Ndau Solar Energy Facility 1. A majority of the opportunities will be for low-semiskilled people thus the population will reasonably meet the requisite capabilities
The location of job opportunities versus the location of impacts	As discussed in Chapter 4, the majority of residents in the area possess low to medium skill levels. The employment opportunities associated with the construction and operation of the proposed Ndau Solar Energy Facility 1 will cater to individuals with diverse skill levels. A significant portion of these opportunities will be suitable for low to semi-skilled individuals, ensuring that the local population can reasonably meet the required capabilities.
Socio-economic impacts of the development based on the socio-economic context	The proposed development is anticipated to have both positive and negative socio-economic impacts. The construction and operation of the Ndau Solar Energy Facility 1 will stimulate the economy, leading to increased household income and tax revenue. It will generate temporary employment during the construction phase and provide long-term, sustainable employment for at least 20 years during operations. Furthermore, the project's focus on renewable energy will contribute to sustainable practices. Additionally, the facility has the potential to support the growth of small businesses in the area, further benefiting the local economy.

6 NDAU SOLAR ENERGY FACILITY 1 AND ASSOCIATED INFRASTRUCTURE PRELIMINARY SOCIO-ECONOMIC IMPACT EVALUATION

A socio-economic study's main purpose is to conduct an effective evaluation and promote socio-economic development. The most significant implications identified during the analysis of the project background and current socio-economic environment relating to the proposed Ndau Solar Energy Facility 1 and associated infrastructure are discussed in this chapter. The socio-economic impact analysis will determine the impacts caused during the building and operational phases of the proposed project. The impacts identified are envisaged to be investigated in greater detail during the EIA phase.

6.1 Stimulation of Socio-Economic Impacts During Construction

This subsection highlights the socio-economic impacts during the construction phase of the proposed project. The construction phase encompasses the actual building process as well as all related tasks such as landscaping, refurbishment, site clearance, and destruction. The following socio-economic impacts are likely to occur during the construction phase:

1) Temporary stimulation of the provincial economy and growth in the regional Gross Value Added (GVA).

The proposed development is anticipated to have a CAPEX of approximately R 1.5 billion. Some of this is expected to be spent in South Africa, which will resultantly stimulate the national economy, although for a temporary period of about twelve months during the construction of the Solar PV.

During the construction phase of the project, it is anticipated that there will be more economic activity in the area, and a temporary boost in economic opportunities will be created, thus temporarily stimulating the economy and growth in the regional GVA. This economic stimulation can be attributed to several factors that include but are not limited to:

1) Local Procurement: The construction process may involve the procurement of various goods and services, such as construction materials, equipment, and supplies. Local businesses and suppliers could benefit from these procurement needs, stimulating economic activity and fostering local entrepreneurship.
2) Indirect Economic Effects: The construction of the proposed Ndau Solar Energy Facility 1 can have an indirect effects on the local economy by generating increased demand for services in related sectors. Local businesses, including restaurants, accommodations, and service providers, may experience heightened demand from workers and personnel involved in the construction activities. This ripple effect can have a multiplier effect on the local economy, further contributing to its growth.

2) Temporary employment creation in local communities.

During the construction and site preparation phase of the proposed Ndau Solar Energy Facility 1, a diverse range of workers (roughly 150 workers) with different skill levels, including unskilled, semi-skilled, and skilled individuals, are expected to be employed. This will create temporary employment opportunities for the local communities. Approximately 60% of the employment opportunities will be for low-skilled workers, 25% for semi-skilled workers, and 15% for skilled workers. This temporary increase in employment will not only enhance household incomes but also have a positive multiplier effect, as the additional income circulates within the local economy, stimulating further economic growth.

3) Temporary change to the sense of place.

There will likely be a negative change in the sense of the area during the construction of the proposed Ndau Solar Energy Facility 1. This can be attributed to the increased presence of people and the general construction activities taking place. As a result, there may be potential impacts such as dust, noise, and pollution associated with the construction activities.

4) Temporary increase in crime and social conflicts associated with influx (or removal) of people.

The preparation of the proposed Ndau Solar Energy Facility 1 may result in perceptions that there are increased opportunities. The community may be disappointed by the low number of jobs created during the preparation of the site. Thus, the influx of an outside workforce and potential job seekers could impact the crime levels in the area and/or opportunist criminals make use of the presence of these workers to undertake criminal activities.

5) Impact on the environment.

During the construction phase of the proposed Ndau Solar Energy Facility 1, there will be some negative environmental impacts to consider. One significant impact is the reduction of trees in the bush land areas, which may disrupt local ecosystems and wildlife habitats. Additionally, the construction activities may lead to a loss of cultivated and grazing land, affecting agricultural activities in the area.

Moreover, the construction phase poses potential risks of contamination, including water, dust, and air pollution. These contaminants can have adverse effects on the surrounding environment, potentially affecting water sources, air quality, and overall ecosystem health.

Considering the construction activities involved in the proposed Ndau Solar Energy Facility, the expected impacts are primarily minor and short-term, encompassing a mix of positive and negative effects. These impacts will mainly be confined to the local area, highlighting the need to minimize their potential consequences.

To address this, maintaining or enhancing security measures around the designated site area is crucial. By doing so, any potential negative impacts can be effectively managed and mitigated. It is also important to ensure that environmental factors are contained within the boundaries of the proposed facility. Implementing effective mitigation measures will prevent degradation and promote long-term environmental sustainability. By prioritising these measures, the development can achieve its objectives while minimizing any potential adverse effects on the surrounding environment and community.

6.2 Stimulation of Socio-Economic Impacts During Operation

This subsection highlights the socio-economic impacts during the operations phase of the proposed Ndau Solar Energy Facility 1. The operations phase is when the land site will be fully functioning with day-to-day tasks. The following socio-economic impacts are likely to occur during the operational phase:

1) Employment creation in local communities.

The operational phase of the proposed Ndau Solar Energy Facility 1 is projected to generate approximately 8 full-time employment positions, with a distribution of roughly 70% low skilled, 25% semi-skilled, and 5% skilled opportunities. Beyond these direct employment prospects, the operation of the solar energy facility can also have indirect employment effects on other sectors of the local economy.

These indirect effects encompass the demand for auxiliary services such as transportation, maintenance, and security, which can lead to the creation of additional job opportunities for local businesses. This multiplier effect stimulates economic growth and supports the development of a more robust and diversified local economy.

2) Local economic development benefits

During the operational phase of the project, there is expected to be a slight economic boost to the local community due to increased economic activities associated with the development. This economic stimulation can be attributed to several factors:

- Employment opportunities: The creation of employment opportunities directly benefits the community by generating income for households. The income earned by workers is likely to be spent within the local economy, contributing to economic growth and fostering local livelihoods.
- Increased Tax Revenue: The operation of the proposed Ndau Solar Energy Facility 1 can generate tax revenue for the local government through various means, such as property taxes, and other associated

taxes. This additional revenue can contribute to public services and infrastructure development in the region.

- Indirect Economic Effects: The presence of a solar energy facility can indirectly stimulate economic activity in related sectors. Local businesses, such as restaurants, accommodations, and service providers, may experience increased demand from the workers and personnel involved in the Ndau Solar Energy Facility 1 management, leading to a multiplier effect on the local economy.

3) Impact on the environment.

The operation of the proposed Ndau Solar Energy Facility 1 is expected to have some environmental impacts, particularly in relation to the reduction of trees in the bush land areas. This loss of vegetation can have implications for biodiversity and ecosystem services. However, it is important to note that solar energy facilities, in general, have a smaller environmental footprint compared to traditional thermal and coal-powered energy sources.

One notable positive impact of the solar facility is the potential improvement in air quality. Solar energy generation produces electricity without emitting greenhouse gases or other harmful pollutants, thereby contributing to a cleaner and healthier environment. By reducing reliance on fossil fuels, the solar facility helps mitigate air pollution and supports efforts to combat climate change.

4) Change in sense of place.

The construction and operation of the facility can bring about changes to the landscape and visual aesthetics of the region. The introduction of a large-scale solar energy facility may alter the existing character and perception of the area.

During the operational phase of the proposed Ndau Solar Energy Facility 1, there are several long-term benefits to consider, such as sustained employment opportunities and economic development. The ongoing operation of the solar facility can contribute to the local economy by providing stable jobs and fostering economic growth in the region.

However, it is crucial to acknowledge and address potential negative impacts that may arise during this phase. One significant concern is the potential loss of trees and natural habitats due to the construction and operation of the solar facility. The clearing of land for the installation of solar panels and associated infrastructure can result in deforestation and habitat fragmentation, which can have adverse effects on local ecosystems and biodiversity.

By prioritising mitigation initiatives and addressing potential negative impacts, the operational phase of the Ndau Solar Energy Facility 1 can be carried out in a manner that balances the benefits of renewable energy generation with environmental sustainability. This approach supports the long-term viability of the facility while minimizing its ecological footprint and preserving the integrity of the local environment.

6.3 Concluding Remarks

Chapter 6 of the report focuses on the potential impacts of the proposed Ndau Solar Energy Facility 1 on the local community throughout its construction and operational phases. The findings reveal that if the proposed extension is authorised and well-designed, it is expected to have minimal impacts due to its nature.

While the primary study area has a growing population in need of employment opportunities, it is anticipated that only a limited number of jobs will be created by the proposed Ndau Solar Energy Facility 1. Consequently, the current socio-economic circumstances are likely to remain largely unchanged. However, the employment opportunities that do emerge would be valuable to the community, particularly considering the high levels of unemployment and low-income levels in the region.

The primary negative impact associated with the proposed Ndau Solar Energy Facility 1 is the deforestation required to accommodate its construction. However, reforestation efforts in nearby areas could help mitigate these impacts.

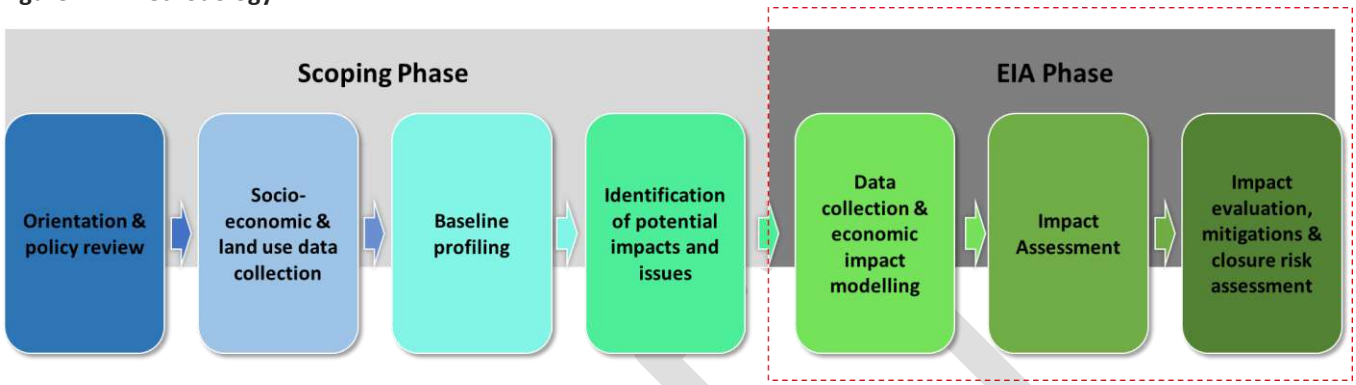
Furthermore, the influx of individuals seeking employment during the construction and operation of the solar facility may have implications for local crime rates. It is essential to address these concerns through comprehensive security measures and community engagement, ensuring the safety and well-being of both residents and workers.

By acknowledging and addressing these potential negative impacts, the proposed Ndau Solar Energy Facility 1 can be developed in a manner that minimizes environmental harm, respects the local sense of place, and provides valuable employment opportunities for the community.

7 NEXT STEPS: EIA PHASE

As mentioned in chapter one of this report, this report is primarily focused on activities in the scoping phase. The next phase would be the EIA phase in line with the EIA process, as shown below.

Figure 7-1: Methodology



Source: Urban Econ

The purpose of the EIA phase is to go into deeper detail regarding the socio-economic impacts the proposed project will have on the community. Table 7-1 outlines the activities and tasks that will be completed within the next phase of the EIA.

Table 7-1: Next Steps (EIA Phase)

Steps	EIA Phase Description
Step 1: Updating of the baseline information	The purpose of this step is to update the information in the baseline profile to ensure it is up to date and reflective of the reality on the ground. This is done in consultation with the applicant and inputs received from other specialists after the scoping phase process.
Step 2: Project data collection and economic impact modelling	The purpose of this step is to collect data related to the project and specifically its economic and job creation parameters. An economic modelling exercise can also be undertaken to determine the potential economic benefit of the project throughout the local and national economies using the economic model developed based on the Social Accounting Matrix (SAM). For this purpose, through a discussion with the Applicant, information on the expenditure during various project stages will be collected, which would include, inter alia: • Construction costs (CAPEX) and operational expenditure. • Intermediate inputs required and percentage of imports of the total project spending. • Distribution of procurement of intermediate inputs among local areas, provinces, and South Africa. • Skills requirements. • Number of people to be employed during construction and operation. Following the data gathering process, potential economic impacts derived from these potential costs and benefits of the project will be identified. These will then be quantified in monetary terms to be used in further modelling exercises. Using

Steps	EIA Phase Description
	quantified potential cost and benefits of the project, a modelling exercise determining the indirect and induced effects of the activities, either positive or negative, will be undertaken. Modelling of impacts will be done using economic models developed based on the provincial and national Social Accounting Matrices (SAMs). Impacts determined through the modelling exercise will include production, value-added, employment, household income, and government revenue. Differentiation will be made between impacts that are expected to take place within the local municipality, province, and rest of the country.
Step 3: Impact assessment	The purpose of this step is to analyse the social and economic implications of the proposed development on the affected community and local economy on macro, regional, and micro(site) levels. For each phase of the project's life cycle, the following groups of impacts will be examined: • Impacts directly associated with the construction and operation, where applicable. • Secondary impacts that involve the changes in the community structure and economic activities in the environment directly or indirectly affected by the development, as applicable to the site. • Cumulative impacts that consider other projects or developments The types of impacts that will be covered under the above-mentioned groups will include: • Natural capital • Human capital • Physical capital • Financial capital • Institutional and political capital The impact assessment undertaken will assist in providing high-level impacts for the proposed site, illustrating the highest benefit and minimising potential negative effects.
Step 4: Impact evaluation, mitigations and closure risk assessment	All socio-economic impacts identified will be assessed and categorised in line with the rating provided by the environmental specialist. A mitigation plan will be formulated whereby recommendations to reduce or eliminate the potential negative effects on the affected parties and enhance positive impacts will be provided.

8 CONCLUSION

The proposed Ndau Solar Energy Facility 1 is a 120 MW solar which will be located on 149-ha of land in Polokwane LM. Located approximately 15 kilometres from the site are the communities of Mantapje, Polokwane City, and Ga-Mashashane. The site benefits from its proximity to the N1, a major highway connecting Cape Town, Bloemfontein, Johannesburg, Pretoria, and Polokwane. The proposed site can be easily accessed via an unnamed road directly connected to the farm.

The surrounding area of the proposed development exhibits diverse land types, including herbland, temporary cultivated land, and unimproved land. The chosen location for the Ndau Solar Energy Facility has low to moderate land capacities, indicating limited agricultural potential. However, there is cattle grazing in close proximity to the site, adding to the local agricultural activities.

This report encompasses a needs and desirability assessment, which examines the factors supporting the development of Ndau Solar Energy Facility. The assessment includes an evaluation of both the positive and negative impacts that are likely to emerge during the construction and operation of the proposed project. The chapter emphasises the potential positive effects such as increased green energy, employment opportunities and economic growth, while also acknowledging the various negative social impacts that may arise, such as deforestation and an increase in crime due to the influx of job seekers. To determine the overall impact of the proposed project on the community, it is vital to assess the significance of each impact. As a result, further investigation of the identified impacts will be conducted during the EIA Impact assessment phase.

9 ANNEXURE A: CHECKLIST

This report has been compiled in accordance with the EIA Regulations, 2014 (Government Notice (GN) R982). Note that there are no specific government protocols for the assessing of impacts of the proposed TSF3 WRD Extension 1 for use in socio-economic assessments.

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report (Page)
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report, including a curriculum vitae;	**Error! Bookmark not defined.**
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	**Error! Bookmark not defined.**
c) an indication of the scope of, and the purpose for which the report was prepared;	**Error! Bookmark not defined.**
(cA) an indication of the quality and age of base data used for the specialist report;	18
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	**Error! Bookmark not defined.**

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report (Page)
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	N/A
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	17
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternative;	**Error! Bookmark not defined.**
g) an identification of any areas to be avoided, including buffers;	**Error! Bookmark not defined.**
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	**Error! Bookmark not defined.**, **Error! Bookmark not defined.**
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	19
j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified alternatives on the environment) or activities;	**Error! Bookmark**

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report (Page)
	not defined.
k) any mitigation measures for inclusion in the EMPr;	**Error! Bookmark not defined.**
l) any conditions for inclusion in the environmental authorisation;	**Error! Bookmark not defined.**
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	**Error! Bookmark not defined.**
n) a reasoned opinion- i. whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	**Error! Bookmark not defined.**, **Error! Bookmark not defined.**
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report (Page)
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	NA
2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NA

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