SOCIO-ECONOMIC IMPACT ASSESSMENT

JULY 2023

LION THORN SOLAR PV FACILITY





DOCUMENT INFORMATION

Document Title:	Socio-Economic Impact Assessment for the Proposed Lion Thorn Solar PV Facility in Leeurdoringstad, North West Province
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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.
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- 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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INTRODUCTION

1

This document was prepared by Urban-Econ Development Economists, as per request by SiVest SA (Pty) Ltd to undertake a Socio-Economic Impact Assessment (SEIA) as part of the Environmental Impact Assessment (EIA) process managed by SiVest Environmental Division. The study focuses on the Lion Thorne solar PV facility and associated infrastructure in Maquassi Hills Local Municipality, situated in the North West Province. This document 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 Lion Thorne solar PV facility to compare its possible effects with the "no go" alternative. The "no go" alternative assumes that the Lion Thorne solar PV facility 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 socio-economic 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 Content, and Location

This subsection aims to provide an overview of the proposed Lion Thorne solar PV facility 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 intricate and multifaceted systems that incorporate specialised equipment such as inverters, electrical wiring, solar panels, and dedicated infrastructure for operation and maintenance (Law Insider, 2023). In the context of the identified site situated in the North West province, the adoption of solar energy facilities offers a myriad of advantages. The development of solar energy facilities within the North West province emerges as a vital step towards sustainable development. By improving energy access and addressing pressing energy challenges, solar power plays a crucial role in fostering progress, prosperity, and environmental well-being in these communities.

Lion Thorn solar PV facility is set to be developed within the jurisdiction of the Maquassi Hills Local Municipality in the Dr Kenneth Kaunda District as shown in Map 1-1 below. Maquassi Hills Local Municipality is situated within the North West Province of South Africa, strategically positioned along the N12 highway, which stretches from Mpumalanga to Western Cape. This municipality encompasses three primary towns, namely Wolmaransstad, Makwassi, and Leeudoringstad. The proposed site is situated within the Leeudoringstad town and is surrounded by farm portions that will be discussed in chapters to follow.

Map 1-1: Lion Thorne Solar PV Facility Site Location



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

Lion Thorn Solar PV facility is intended make use of photovoltaic (PV) technology. PV refers to a solid-state electronic cell that produces direct current (DC) electrical energy from the radiant energy of the sun through a process known as the photovoltaic effect (Chowdury, 2020). This refers to light energy placing electrons into a higher state of energy to create electricity. Each PV cell is made of silicon (i.e., semiconductors), which is positively and negatively charged on either side, with electrical conductors attached to both sides to form a circuit. This circuit captures the released electrons in the form of an electric current (DC) (Chowdury, 2020)

The solar PV facility will have a generating capacity of up to 200 megawatts alternating current (MWac). The total development footprint of the project will be approximately 324 hectares (including supporting infrastructure on site, excluding underground cables). It will comprise various components, including:

- Solar PV panels;
- Substation complex, 33/ 132 kilovolts (kV) Lion Thorn SS, Security,
- Operation and Maintenance (O&M)/ office buildings;

- Battery energy storage systems (BESS) of 4.5 gigawatt-hour (GWh),
- which could be either lithium-ion or redox flow technology, etc.;
- Underground electrical reticulation (33 kV);
- Temporary site compound, permanent laydown areas, access roads, etc.

The proposed solar energy facility will be accessible via the existing R502 road, with the main access road to the project measuring up to 8 meters in width. Among various alternatives, the site is chosen as the most suitable for renewable energy development. A solar energy installation is deemed the ideal choice for harnessing the abundant solar potential in the area, making it a favourable option for the project.

Reason for the location chosen:

This site is preferred due to the suitable climate, conditions, and topography. Proximity to the substation on the property and knowledge of an upgrading to the 132 kV powerline is also available. Based on the above site-specific attributes, the study area is considered highly preferred in terms of the development of a solar PV facility. As such, no property / location alternatives have been considered.

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 North West 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.



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:

- 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:
 - o North-West Provincial Development Plan 2030
- District and Local Strategic Documents:
 - Dr Kenneth Kaunda District Municipality Integrated Development Plan 2017/18 2021/22
 - Maquassi Hills Local Municipality Third Generation Integrated Development Plan 2013- 2016 (Amendments based on the 2016 Annual Report)
- Other national, provincial, and local government strategic documents and policies

b) Primary Data Gathering

A site visit was conducted by Urban-Econ on the 10th of July 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 Lion Thorne solar PV facility 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 socioeconomic impact assessment, which includes impacts that are presumptively expected to occur during Lion Thorne solar PV facility'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 Lion Thorne solar PV facility 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
 - o 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:
 - North-West Provincial Development Plan (2013)
 - o Renewable Energy Strategy for the North-West Province 2012
- Local:
 - o Dr Kenneth Kaunda District Municipality Integrated Development Plan 2017/18 -2021/22
 - Maquassi Local Municipality Integrated Development Plan (IDP) 2013-2016 (Amendments based on the 2016 Annual Report)

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 Lion Thorne solar PV facility.

Table	2-1.	Policy	/ Summary	,
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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 Lion Thorne solar PV facility 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	The NDP aims to address South Africa's developmental challenges of poverty and inequality			
(NDP, 2012)	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 Lion Thorne solar PV facility 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 The White Paper elaborates on the South African government's policy principl			
Energy (2003)	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:		
	\checkmark 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 second s		
	The proposed development shows alignment with the White Paper through its objective of		
	promoting the implementation of sustainable renewable energy.		
	p 0, p		
	(Department: Mineral Resources & Energy, 2003)		
PROVINCIAL POLICIES			
	North-West is a province that significantly depends on non-renewable sources and		
	experiences pollution and environmental degradation. The North-West Provincial		
	Development Plan (2013) therefore acknowledges that energy provision is a concern in some		
	areas, given that the mining sector consumes a great portion of the available electricity. The		
	specific targets for the development plan regarding renewable energy are to:		
	specifie targets for the development plan regarding renewable chergy die tor		
	\checkmark Increase the population with access to electricity from 84% in 2011 to 95% by 2030.		
	with non-grid options available for the rest.		
North-West Provincial	✓ Increase renewable energy consumption to 37% by 2030		
Development Plan (2013)	 Ensure that 67% of households have a solar water heater installed 		
,			
	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)		
	indicate chergy emolency (reduce demand).		
	The proposed project fulfils the operation and maintenance of the PV plant's aims and is fully		
	aligned with the NW Provincial Development Plan.		
	(Northwest Planning Commission, 2013)		
	The Renewable Energy Strategy for the North-West Province 2012 argues that the		
	generation of clean energy is one of the responses to climate change and it is a way to meet		
	the commitments of the Kyoto Protocol. The objectives of the strategy are to:		
Renewable Energy Strategy for			
the North-West Province 2012	✓ Improve the NWP's environment.		
	 Reduce the NWP's contribution to adverse climate change, 		
	✓ Alleviate energy poverty.		
	 Promoting economic development and job creation in the province 		
	✓ Developing its green economy.		

	The proposed development is strongly aligned with Renewable Energy Strategy for the North-		
	West Province through its potential to contribute to the mentioned strategic objectives.		
	(Department of Economic Development, Environment, Conservation and Tourism, 2012)		
DISTRICT AND LOCAL POLICIES			
Dr Kenneth Kaunda District Municipality Integrated Development Plan 2017/18 - 2021/22	 2021/22 identifies the comparative advantage of electricity provision and production that the region has in the provincial context. The integrated development plan aims to support the constitutional obligations of local government through the following strategic objectives: To promote physical infrastructure development To promote socio-economic development To provide environmental health services To ensure disaster risk management To ensure municipal excellence To provide integrated Public Transport within the District To provide integrated waste management facilities 		
	The proposed project is somewhat aligned with the Dr Kenneth Kaunda District Municipality Integrated Development Plan. The proposed development will develop infrastructure and contribute to the social and economic development of the community by producing sustainable energy for the community. (Dr. Kenneth Kaunda District Municipality, 2017)		
Maquassi Local Municipality Integrated Development Plan (IDP) 2013-2016 (Amendments based on the 2016 Annual Report)	 The Maquassi Hills Local Municipality (LM) Integrated Development Plan, 2013 - 2016 (latest available IDP) recognises that the municipality's electricity network has aged. The integrated development plan aims to support the constitutional obligations of local government through the following strategic objectives: Provision of basic services and infrastructure development Local economic development Municipal transformation and institutional development Municipal financial viability Good governance and public participation. The proposed development is therefore somewhat aligned with the Maquassi Local Municipality Integrated Development Plan. The proposed project will contribute to providing electricity, which is considered a basic service, as well as contribute to the local economic development of Maquassi Local Municipality. (Maquassi Hills Local Municipality, 2013)		

2.2 Concluding Remarks

The policy environment plays an integral role in the initial stages of a project and provides an overview of the government's main objectives, and whether the project is aligned with the objectives of the policy and legislation of the country. The above-mentioned national, provincial, and local municipality policies and strategies focus on

promoting decent work and economic development, improving, and expanding infrastructure, as well as prioritising sustainable renewable energy and how the proposed development is aligned with them.

The objectives from a national level mainly include the promotion of economic development and job creation through developing a green economy, poverty reduction, upskilling, educating its citizens, and advancing rural and spatial integration. Based on the above, the proposed Lion Thorne solar PV facility is aligned with the core of these objectives. The Lion Thorne solar PV facility will make use of solar PV technology to generate electricity from the sun's energy. This will contribute to the reduction of the province's (and hence national) contribution to climate change and job creation through the development of the green economy.

At a provincial level, the North-West provincial government strives to increase economic development, alleviate energy poverty, and improve the environment by reducing the effects of climate change. As a result, the planned project aligns with provincial policies in that the Lion Thorne solar PV facility 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 facility is aligned with the IDPs, which aim to increase infrastructure development and increase overall local economic and socio-economic development within the municipalities. This is applicable as the proposed project will increase infrastructure in the area as well as general jobs which 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 which areas the proposed project is most likely to affect (if any) to identify who will be affected by the socio-economic impacts that may arise from the development of the proposed project.

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 site is envisioned to be located on 324 hectares of portion of Farm Leeuwbosch 44 as depicted in the map below.



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/)

As can be seen in the map above, there are multiple farms within the zone of influence. Although most of the land is underutilised, there are scattered commercial farms within the zone. In total, 11 farm portions are identified to be located within the zone of influence. The table below is used to represent the different farms within the zones, along with the size and whether or not there are residents in the area.

Table 3-1: Zones which will likely be influenced

Farm Portions	Area(Ha)	Presence of residences
Portion 37 Farm Leeuwbosch 44	120	4 farm structures and residences
Adjacent farm portions		
Portion 35 Farm Leeuwbosch 44	173	None
Portion 38 Farm Leeuwbosch 44	130	None
Remainder of Portion 6 Leeuwbosch 44	533	None
Remainder of Portion 7 Farm Leeuwbosch 44	131	1 farmhouse
Farm portions located further away from the	e project site	
Portion 47 Farm Leeuwbosch 44	642	None
Remainder of Portion 5 Farm Leeuwbosch 44	333	None
Portion 21 Leeuwbosch 44	924	None
Portion 36 Farm Leeuwbosch 44	200	None
Remainder of Portion 29 Farm Leeuwbosch 44	618	None
Portion 13 Farm Leeuwbosch 44	644	None
Portion 14 Farm 59	172	None
Remainder of Portion 5 Farm 59	109	None
Portion 51 Farm 43	913	None
Portion 4 Farm 24	782	7 farm structures and residences
Portion 21 Farm Leeuwbosch 44	924	6 farm structures and residences
Portion 13 Farm Leeuwbosch 44	219	None
Portion 26 Farm Leeuwbosch 44	128	None
Portion 27 Farm Leeuwbosch 44	128	None
Kgakala	200	2369 households

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

As evident from the information provided earlier, the proposed site is strategically situated within a highly agricultural zone, potentially impacting surrounding farming businesses and Kgakala township, located approximately 4 kilometres away from the proposed site.

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 focus of this study is the town of Leeudoringstad, as it encompasses the proposed site for the solar energy facility. This area includes Kgakala township, which is the nearest township to the site and is also situated within Leeudoringstad as well as the regions immediately adjacent.
- The secondary study area is Maquassi Hills Local Municipality. This is due to the wider range of impacts the Lion Thorn 200MW Solar PV and associated infrastructure could potentially have on the surrounding areas in the local municipality.
- The tertiary study area is the Dr Kenneth Kaunda District Municipality and North West Province. These areas are considered due to the potential impacts, if any, that the proposed solar PV facility could have on the district and provincial 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



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 mainly on unimproved (natural) grassland. Unimproved natural grassland refers to a type of grassland or open land area that has not undergone significant human intervention or improvement. In this context, "unimproved" means that the land has not been cultivated, fertilised, or otherwise modified for agricultural purposes. Instead, it retains its natural state, characterised by native grasses, herbs, and other plant species that have evolved and adapted to the local environmental conditions over time.

Unimproved natural grasslands play a vital role in supporting biodiversity, as they provide habitat and food sources for various plant and animal species. They also contribute to ecological stability, soil conservation, and water regulation. In many cases, unimproved grasslands are important for carbon sequestration, as the vegetation captures and stores carbon dioxide from the atmosphere. 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 Lion Thorn Solar PV



Source: Urban-Econ (Site Visit)

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 the findings presented in Map 3-3, the variation in shading indicates different land capabilities within the study area, with lighter shades signifying lower agricultural potential and darker shades representing higher capabilities for agriculture. In the case of the proposed development site, it predominantly falls within areas with low land capabilities, suggesting limited suitability for extensive agricultural activities. As a result, it can be inferred that the proposed site is not likely to significantly disturb potential agricultural activities in the surrounding area. 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 Existing 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 national road (N12) near the proposed site of the Lion Thorn Solar PV. This road serves as an access route to the site, connecting with a main road (R502) 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 N12.

Additionally, there are high and medium voltage powerlines in the vicinity of the development; however, none of these 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, this matter will be investigated briefly in in Chapter 6 of this report and further elaborated upon in the EIA report.

Figure 3-2 offers a visual representation, providing valuable context for the infrastructure in the site and surrounding area.



Figure 3-2: Existing Infrastructure in Proximity to Proposed Site

Figure 3-2 also shows infrastructure that exists around the proposed site which may be affected by the proposed project, this infrastructure includes telecommunication towers and powerlines, there is no other infrastructure on site beyond ones mentioned above.

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 Lion Thorn Solar PV facility is proposed to be positioned amidst various farm portions and holds a close proximity of approximately 4 kilometres to Kgakala township. Access to the site is available through the R502 branching off from the N12. The immediate vicinity of the proposed development consists of diverse land types, including unimproved grassland, 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.

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 decisionmaking 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

This sub-section aims to provide an overview of the study area's composition and locational factors. The proposed development is envisaged to be located in North-West province, a province bordering Botswana. The province has 4 district municipalities, namely.

- Bojanala Platinum District,
- Dr Ruth Segomotsi Mompati District,
- Ngaka Modiri Molema District, and,
- Dr Kenneth Kaunda District

The proposed Lion Thorn Solar PV Plant is planned to be in the Maquassi Hills Local Municipality, a Category B municipality within the Dr Kenneth Kaunda DM. Maquassi Hills Local Municipality consists of 3 main towns namely, Wolmaransstad, Makwassi, and Leeudoringstad (proposed location). Leeudoringstad is a small farming town in which the most prominent spoken languages are Afrikaans, SeTswana, and Northern Sesotho.

Map 4-1: Representation of Study Area



Source: Municipalities of South Africa, Maquassi Hills Local Municipality

Maquassi Hills Local Municipality covers an area that is approximately 4643 square metres within the Dr Kenneth Kaunda District in the Northwest Province (Maquassi Hills, 2020). This local municipality is bordered by Tswaing in the north, the Free State province in the South, City of Matlosana in the East and Dr Ruth Segomotsi Mompati District in the west.

The main socio-economic issues in the area are unemployment and crime which will be discussed further in the sub-sections to follow. The following sub-sections will also briefly unpack the history and cultural aspects of the municipality; the demographics, health, and cultural aspects; the economy of the municipality; the income and education levels of the people living in the municipality; the current labour force and employment structures; the area's access to basic services; as well as highlight any planned developments within the area beside the proposed development.

4.2 Sense of Place, History, and Cultural Aspects

This sub-section aims to provide an overview of the Local Municipality's sense of place, history, and cultural aspects applicable to the proposed project area. Leeudoringstad, which is the Afrikaans name for the town otherwise known as Lions Thorn City, is a small farming town that was named after a species of thorn bush that grows abundantly in the area (Maquassi Hills, 2020). While the town is mainly known for its farming activities, it is essential to carefully assess the surrounding area's potential tourist attractions to ensure that the proposed development does not adversely impact any significant tourist destinations or local wildlife. The tourist attractions within the proposed Lion Thorn 200MW Solar PV are depicted in Map 4-2 on the following page.



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

As depicted in the map above, the study area surrounding the proposed project contains some tourist facilities, including cottages, camp sites, caravan sites, and picnic sites. These facilities contribute to the region's potential as a destination for travellers seeking recreational activities and natural experiences. While the operations of the proposed solar facility are not anticipated to have a significant impact on these existing establishments during its operational phase, it is crucial to consider potential negative impacts that may arise during the construction phase.

Construction activities, such as increased traffic, noise, and dust, can temporarily affect the tranquil ambiance of these tourist facilities and potentially disrupt the experiences of visitors. As part of the environmental and social impact assessment process, careful planning and mitigation measures will be developed to minimize the short-term disturbances during the construction period.

Map 4-3 on the following page provides an overview of the existing social facilities within the study area, further supporting the need for a comprehensive impact assessment to ensure responsible and sustainable development.



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, the study area surrounding the proposed project is equipped with essential social facilities, including schools and a clinic, catering to the well-being and education of the local community. While there may be concerns about potential disruptions to the operations of these facilities during the construction phase, it is crucial to note that the nature of the solar project and the distance between the proposed site and the social facilities mitigate the likelihood of significant impacts. 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.

As shown in the figure below, Maquassi Hills Local Municipality consists of more males than females with females accounting only for 48,4% of the total population in the year of 2021.



Figure 4-1: Population Demographics

Source: Quantec, 2023

As of 2021, the population of Maquassi Hills Local Municipality was estimated to be around 89 862 people, residing in 181 098 households. This population represents about 11% of the total population of Dr Kenneth Kaunda District Municipality and about 2% of the total population of the North-West Province. The average household size in Maquassi Hills Local Municipality is approximately 3.8%. This average household size is higher than the district average of 3.4%, the provincial average of 3.3% and the national average of 3.6. Crime is an important indicator of a community's socio-economic status. Figure 4-2 represents the serious and other crime levels in the Maquassi Hills Local Municipality from 2017 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: Maquassi Hills Local Municipality: Serious Crime Levels

Source: Quantec, 2023

Figure 4-2 provides a comprehensive overview of the serious and other crime levels in the Maquassi Hills Local Municipality from 2017 to 2022. It is evident from the figure that the municipality experienced a notable decline in crime rates in 2021, reaching its lowest point during the observed period. The sharp decrease in crime from 2019 to 2020 can be linked to the implementation of stringent lockdown measures in response to the Global Covid-19 pandemic, which likely limited movement and social activities.

As the global pandemic restrictions gradually eased in 2021, the decline in crime rates continued, suggesting a potential positive impact on the restoration of employment opportunities and improved socio-economic conditions within the municipality. However, it is important to note that the year 2022 saw a significant increase in crime rates, surpassing the levels observed in the preceding years. This rise in criminal activities could be a reflection of ongoing challenges in enhancing economic opportunities and social welfare within the Maquassi Hills Local Municipality. The increase in crime rates serves as a wake-up call to address potential gaps in sustainable development efforts and community empowerment.

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 Lion Thorn 200MW Solar PV 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 Maquassi Hills Local Municipality.

Table 4-1: Primary Study Area Household Inco	me (2011)
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Income levels	Maquassi Hills Local Municipality
No income	14,5%
R1 - R4,800	6%
R4,801 - R9,600	9,8%
R9,601 - R19,600	24,2%
R19,601 - R38,200	22,8%
R38,201 - R76,400	10,2%
R76,401 - R153,800	6,3%
R153,801 - R307,600	4,1%
R307,601 - R614,400	1,5%
R614,001 - R1,228,800	0,3%
R1,228,801 -R2,457,600	0,2%
R2,457,601+	0,2%

Source: Stats SA, 2012

According to the 2011 Census data, a significant portion of Maquassi Hills Local Municipality's population falls within the category of low-income households. Most households (24.2%) fall within the income range of R9,601 to R19,600, which translates to approximately R800 to R 1633 per month. Moreover, 14,5% of households have no income at all. The prevalence of low to middle income households in the Local Municipality 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.





The data presented in the figure above indicates significant disparities in educational attainment levels among the adult population in Maquassi Hills Local Municipality. Approximately 30% have no schooling, while 20% have completed matric. About 15% have some primary education, and 23% have some secondary schooling. Less than 6% have higher education qualifications.

The educational landscape in Maquassi Local Municipality 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 Maquassi Hill Local Municipality 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 socio-economic 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 Maquassi Hill Local Municipality.



In 2021, the employed population in Maquassi Hills Local Municipality constituted approximately 61% of the total employed population in the municipality. The working-age population (WAP) accounted for 62% of Maquassi Hills Local Municipality's total population, which is made up of 89 862 individuals. Figure 4-4 provides an overview of the labour force profile in Maquassi Hills Local Municipality, highlighting the working-age population, total employed individuals with formal skills, and the total number of unemployed individuals.

Approximately 15 732 individuals amongst the economically active population are employed, representing approximately 61% of the total economically active individuals. On the other hand, the total number of unemployed individuals amounts to 10 039, constituting around 39% of the economically active population.

Regarding the formal employment sector, skilled workers make up approximately 19%, while semi-skilled workers account for 43%, and low-skilled workers represent 38% 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).

Area/economy 2021	R (millions)	South Africa	North-West	Dr Kenneth Kaunda
			Province	District
South Africa	12 241 428	100%		
North-West Province	796 864	7%	100%	
Dr Kenneth Kaunda DM	136 978	1%	17%	100%
Maquassi Hills LM	8 594	0%	1%	6%

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

Urban-Econ calculations based on Quantec, 2023

Table 4-2 shows that the GVA of the Maquassi Hills Local Municipality was valued at R8 594 million in 2021. This constituted approximately 1% of the total GVA for the North-West province in that year, making Maquassi Hills Local Municipality the lowest contributor to the province. The economic profile of Maquassi Hills Local Municipality is dominated by the primary sector, with the highest contributing sector being the agriculture, forestry and fishing. The dominance of this sector is evident in the table below.

Table 4-3: Sector Contributions to Maquassi Hills Local Municipality Economy

Maquassi Hills LM Economic Sectors	Contribution
Agriculture, forestry, and fishing	23%
Mining and quarrying	2%
Manufacturing	11%
Electricity, gas, and water	5%
Construction	3%
Wholesale and retail trade, catering, and accommodation	12%
Transport, storage, and communication	5%
Finance, insurance, real estate, and business services	13%
General government	13%
Community, social and personal services	12%
Total GVA (million)	R8,594,30

(Urban-Econ calculations based , 2022)

As depicted in Table 4-3, the agriculture, forestry, and fishing sector play a significant role in Maquassi Hills Local Municipality's GVA contributing 23%. General government and Finance, insurance, real estate, and business services sectors follow closely, each contributing approximately 13% to the GVA. While the proposed solar facility and associated infrastructure are expected to contribute to the Local Municipality's electricity, gas, and water sectors, being a solar energy facility, it is unlikely to have a substantial impact on the overall GVA. Chapter 6 will provide an overview of the GVA impact, while the EIA report will delve into further details.

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 Local Municipality. 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.

	Water		Ene	ergy
	Inside dwelling Borehole Inside yard Other	26% 3% 58% 0%	Elect Cano Solar Non	tricity 90% dles 9% r 0% e 0%
Sanitation			Refuse	Removal

Figure 4-4: Access to Basic Services

Source: Quantec, 2022

Figure 4-3 provides valuable insights into the access to basic services in Maquassi Hills Local Municipality. It reveals that 58% of households within the municipality have piped water within their yards, while approximately 26% have piped water inside their dwellings. For about 3% 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 90% of households in Maquassi Hills Local Municipality have access to electricity provided by Eskom. However, a small portion, approximately 9%, still rely on candles for energy. Regarding sanitation, only roughly 90% of Maquassi Hills Local Municipality's households have access to flushing toilets with sewage systems, while the 5% have a pit toilet or no sewage system at all. About 48% of the Local Municipality's households have their refuse removed by the community's waste on a weekly basis while 29% remove their own refuse.

The above subsection suggests that besides the provision of electricity, the Local Municipality is likely to be underdeveloped and that the standards of living are fairly low. The proposed Lion Thorn Solar PV facility is unlikely to improve the Local Municipality's 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 energy economy is the system of generating, distributing, and using energy in a society. It includes the investment in energy-related technologies that boost the national economy and create jobs. The World Bank (2019) states that "energy is at the heart of development." It is an essential force that drives the economy, manufacturing, goods transportation, and service delivery.



The energy economy is made up of a variety of components, including:

- Energy sources: This includes the different types of energy that are used in a society, such as fossil fuels, renewable energy, and nuclear energy.
- Energy infrastructure: This includes the systems that are used to generate, transmit, and distribute energy, such as power plants, pipelines, and transmission lines.

- Energy markets: This includes the systems that are used to buy and sell energy, such as power exchanges and spot markets.
- Energy policies: This includes the regulations and laws that govern the energy sector, such as environmental regulations and emissions standards.
- The energy economy is a complex system that is constantly evolving. The changing needs of society, the availability of new technologies, and the evolving regulatory environment all play a role in shaping the energy economy.

The energy economy is essential for economic growth and development. It provides the energy that businesses need to operate and grow, and it provides the energy that households need to live and work. The energy economy also creates jobs in the energy sector and in the industries that are supported by the energy sector.

South Africa's Energy Economy

In South Africa, the energy sector is at the heart of economic and social development. The energy sector contributes significantly to the economy, and it is essential for job creation, economic growth, and improved living standards. According to the National Development Plan (NDP), South Africa will have an energy sector that supports economic growth and development by investing in energy infrastructure by 2030. As of 2016, coal is the dominant energy source in South Africa, accounting for 80% of the country's electricity generation. Other major sources of energy in South Africa include crude oil and petroleum products (14%), natural gas (3%), nuclear (3%), and renewables (11%).

The South African government is committed to diversifying the country's energy mix and reducing its reliance on coal. The government has set a target of 100% renewable energy for electricity generation by 2050. To achieve this target, the government is investing in renewable energy projects, such as solar and wind power. The energy sector is facing a number of challenges, including climate change, energy security, and energy poverty. The government is working to address these challenges by investing in renewable energy, promoting energy efficiency, and ensuring that everyone has access to reliable and affordable energy.

Current Energy Crisis in South Africa

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



Source: Eye Witness News

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

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



Source: Mining Review Africa

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/m². 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). The map below depicts the Photovoltaic Yield Tracking and solar irradiance potential in the proposed location for the Lion Thorn Solar PV facility and its surrounding areas.



Map 4-4: Photovoltaic Yield Tracking of Study Area

Source: Mappable, (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 Lion Thorn 200MW Solar PV 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 the proposed site. The impacts related to the construction of the Lion Thorn 200MW Solar PV 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 Maquassi Hills Local Municipality baseline profile. The profile contains details about Maquassi Hills Local Municipality'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 socio-economic impacts.

The key insights drawn from the baseline assessment show Maquassi Hills Local Municipality has a significant population of approximately 89 862 people, comprising about 11% of the total population of Dr Kenneth Kaunda District Municipality and about 2% of the entire population of North West province.

The education levels in Maquassi Hills Local Municipality reveal a significant portion of individuals with some secondary education and matric qualifications, which aligns with the higher proportion of low-income workers in the region. This underscores the need for job opportunities that require low to medium-level skills to uplift the socio-economic conditions within the community. Providing employment opportunities that match the skillset of the local workforce can play a crucial role in enhancing livelihoods and fostering economic growth in the area.

The baseline assessment recognises 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 Lion Thorn 200MW Solar PV, 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.

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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 Lion Thorn Solar PV 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 Lion Thorn 200MW Solar PV.

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 Lion Thorn Solar PV, 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
Spatial characteristics	sustainable energy sources. The proposed location for the Lion Thorn solar PV facility is situated on land surrounded by various farms and has limited infrastructure besides electrical powerlines. The site benefits from convenient accessibility, as it is connected to local roads that link to the N12 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. However there in some infrastructure present on site and around namely telecommunication towers and electric powerlines which may be affected by the proposed 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 Lion Thorn solar PV facility 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 development 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 development 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 PV 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.

Table 5-1: Need and Desirability Assessment

Aspect	Comment
	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 Lion Thorn site may have.
Consideration of special locational factors that might favour the specific location	The location of the proposed solar PV project has moderate 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 farms and Kgakala township may have visual impacts on residents, which will be further examined in the visual report. The development of the Lion Thorn solar PV facility site 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 Lion Thorn site and associated infrastructure	As indicated in Chapter 4, most 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 Lion Thorn Solar PV. Most 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 Lion Thorn site 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 Lion Thorn solar PV facility site 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 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 LION THORN 200MW SOLAR PV FACILITY 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 Lion Thorn solar PV facility 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 an initial capital expenditure investment of which some is expected to be spent in South Africa, which will consequently stimulate the national economy for a temporary period during the construction of the solar PV facility.

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:

- 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.
- Indirect Economic Effects: The construction of the proposed Lion Thorn solar PV facility can have an indirect effect 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 Lion Thorn solar PV facility, a diverse range of 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. It is anticipated that the potential 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 Lion Thorn solar PV facility. 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 Lion Thorn solar PV facility 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 Lion Thorn solar PV facility, 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.

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 Lion Thorn solar PV 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 Construction

This subsection highlights the socio-economic impacts during the operations phase of the proposed Lion Thorn solar PV facility. 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.

It is anticipated that the operational phase of the proposed Lion Thorn solar PV facility will provide full-time employment positions, that is inclusive of low skilled, semi-skilled, and 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 Lion Thorn solar PV facility 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 Lion Thorn solar PV facility's management, leading to a multiplier effect on the local economy.

3) Impact on the environment.

The operation of the proposed Lion Thorn solar PV facility is expected to have some environmental impacts, particularly in relation to the reduction 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.

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 Lion Thorn solar PV facility 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 Lion Thorn solar PV facility 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 Lion Thorn solar PV facility on the local community throughout its construction and operational phases. The findings reveal that the project is likely to have minimal negative impacts if it is well-designed and approved. While the 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 project. As a result, the current socio-economic conditions are likely to remain largely unchanged. However, the employment opportunities that do emerge would be valuable to the community, particularly given the high levels of unemployment and low-income levels in the region.

The primary negative impact associated with the project is the deforestation required to accommodate its construction. However, reforestation efforts in nearby areas could help to mitigate these impacts. Additionally, the influx of people 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 Lion Thorn solar PV facility can be developed in a manner that minimizes environmental harm, respects the local sense of place, and provides valuable employment opportunities for the community.

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



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.

Step 1: Updating of the baseline informationThe 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

Table 7-1: Next Steps (EIA Phase)

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 economy of the destated as will excite in providing high level impacts for
	the proposed site, illustrating the highest benefit and minimising potential negative effects.
Step 4: Impact evaluation, mitigations	All socio-economic impacts identified will be assessed and categorised in line with
and closure risk assessment	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 Lion Thorn solar PV facility, a 200 MW solar installation, is planned to be situated in Maquassi Hills Local Municipality, with Kgakala township being the closest residential area to the project site. Positioned strategically along the N12 highway, the municipality offers an advantageous location for the solar facility.

The surrounding area showcases a diverse array of land types, including unimproved natural grassland, temporary cultivated land, and unimproved land. Furthermore, the chosen location for the Lion Thorn has low to moderate land capacities, indicating limited agricultural potential.

This report encompasses a needs and desirability assessment, which examines the factors supporting the development of Lion Thorn solar PV 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,	Section of
	Report
Appendix 6	(Page)
1. (1) A specialist report prepared in terms of these Regulations must contain-	iiiError!
a) dataile af	Bookmark
a) details of-	not
i. the specialist who prepared the report; and	defined.
ii. the expertise of that specialist to compile a specialist report, including a	
curriculum vitae;	
b) a declaration that the specialist is independent in a form as may be specified by the	VError!
competent authority;	Bookmark
	not
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c) an indication of the scope of, and the purpose for which the report was prepared;	defined.
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 c) an indication of the scope of, and the purpose for which the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development 	defined. 1 6 44
 c) an indication of the scope of, and the purpose for which the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; 	defined. 1 6 44
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 c) an indication of the scope of, and the purpose for which the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment; 	defined. 1 6 44 7
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 c) an indication of the scope of, and the purpose for which the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment; e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used; 	defined. 1 6 44 7 1 1

Regula	tion GNR 326 of 4 December 2014, as amended 7 April 2017,	Section of
		Report
Append	dix 6	(Page)
f)	details of an assessment of the specific identified sensitivity of the site related to the	44
	proposed activity or activities and its associated structures and infrastructure, inclusive of	
	a site plan identifying site alternative;	
g)	an identification of any areas to be avoided, including buffers;	44
h)	a map superimposing the activity including the associated structures and infrastructure on	15
,	the environmental sensitivities of the site including areas to be avoided including buffers:	10
	the environmental sensitivities of the site meloding areas to be avoided, meloding burlets,	
i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	7
j)	a description of the findings and potential implications of such findings on the impact of	44Error!
	the proposed activity, (including identified alternatives on the environment) or activities;	Bookmark
		not
		defined.
k)	any mitigation measures for inclusion in the EMPr;	44Error!
		Bookmark
		not
		defined.
)	any conditions for inclusion in the environmental authorisation;	N/AError!
		Bookmark
		not
		defined.
m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation:	N/A
n)	a reasoned opinion-	44
	i. whether the proposed activity, activities or portions thereof should be authorised;	

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017,	Section of
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(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;	
o) a description of any consultation process that was undertaken during the course of	N/A
preparing the specialist report;	
p) a summary and copies of any comments received during any consultation process and	N/A
where applicable all responses thereto; and	
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	NA
information requirement to be applied to a specialist report, the requirements as indicated in such	
notice will apply.	

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