Socio-Economic Site Sensitivity Verification for the Akkerboom Solar Powered EV Charging Station & PV Facility as required by 2014 EIA Regulations

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) (NEMA) AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 (ACT NO. 59 OF 2008) (NEM:WA) IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT NO. 28 OF 2002) (MPRDA) (AS AMENDED).

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CONTROL SHEET

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1 Introduction

This report presents the findings of a Site Sensitivity Verification (SSV) conducted for ZCC Akkerboom Solar Powered Electric Vehicle (EV) Charging Station & Photovoltic (PV) Facility. The Akkerboom Solar Powered EV Charging Station & PV Facility, with a generating capacity of 7MW, is located approximately 6km south-west of the town of Loxtonvale and approximately 16km north-east of the town of Kakamas, within the Kai !Garib Local Municipality in the Z.F. Mgcawu District Municipality, Northern Cape Province.

This SSV Report focuses on socio-economic aspects and has been prepared in compliance with the Protocols for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes (hereinafter referred to as "the Protocols"), as stipulated in Government Notice 320 (published in Government Gazette No. 43110 on 20 March 2020).

The primary objective of the SSV Report is to establish baseline conditions and theme sensitivities within the study area, and then to verify this information through on-site observation or in-person visits. Based on this verification, the report determines whether a specialist assessment is warranted, providing clear motivation for the decision.

In cases where the need for an impact assessment is challenged, the report articulates a reasoned justification as to why the proposed theme(s) may not be applicable to the proposed development. This approach aligns with the broader goal of evaluating socio-economic risks and impacts, potentially determining a sensitivity rating, and outlining the way forward for further studies or investigations if deemed necessary.

Date of Site Visit	**7th of September 2023**
Company	**Eco Thunder (Pty) Ltd**
Specialists Topic	**Socio-Economic**
Proposed Project	**Akkerboom Solar Powered EV Charging Station & PV Facility**

1.1 Limitations and Assumptions

The following assumptions and limitations are applicable to this Report:

- The proposed site fulfils the requirements for a suitable site based on technical information regarding local climatic conditions, solar radiation, topography, and land availability.
- The legislative and policy context plays a crucial role in assessing the socio-economic impacts of the project.
- The planning and feasibility study of the project was undertaken with integrity, and the information provided by the project proponent was accurate and true at the time of preparing this report.
- This report is based on available information at the time of preparation, and there may be additional information that could strengthen arguments, contradict the information presented, or identify additional relevant data.

- The socio-economic data presented relies largely on Census information and additional data collected from communities near the proposed project site. These data sources may have limitations due to the data collection process, including potential underrepresentation of certain groups or interests and a small sample size.
- The assessment is based on a snapshot in time and does not account for future changes in socio-economic trends, legislation, or technology that could affect the project's socio-economic impacts.
- The assessment may not capture all potential indirect or cumulative socio-economic impacts, particularly those that result from complex socio-economic processes or interactions with other projects or activities in the area.
- The assessment relies on certain methods and tools to predict and evaluate socio-economic impacts. These methods and tools have inherent uncertainties and limitations, and different methods or tools may yield different results.

1.2 Specialist Details

ETC is a 100% woman-owned, private company that specializes in a range of specialist studies, such as social research, economic development planning, development program design and implementation as well as community trust management. Based in Johannesburg, South Africa, Eco-Thunder has established itself as an expert on the conditions, needs and assets of communities that are linked to independent power generation facilities.

ETC has conducted research on behalf of and advised IPPs since 2017. Its client base is thus comprised of IPPs that have been successful across all the REIPPPP bidding rounds. ETC also implements development programs in energy communities, which ensures a comprehensive understanding of the how to drive positive socio-economic impact.

1.3 Development Type Categorisation

The categorisation of the development type is a fundamental step in the SSV process and is aligned with the Equator Principles, a globally recognised framework for managing environmental and social risks in projects. The Equator Principles categorise projects into three distinct categories (A, B[1], or C) based on the potential environmental and social risks and impacts[2].

[1] There can be a range in the scale of potential environmental and social risks and impacts within Projects classified as Category B. In general terms, higher risk Category B Projects will be treated similarly to Category A Projects, and lower risk Category B Projects could be treated in a lighter regime.
[2]For Category A and, as appropriate, Category B Projects, the Assessment Documentation includes an Environmental and Social Impact Assessment (ESEIA), and one or more specialised studies may also be required.

This categorisation guides the depth and breadth of the environmental and social assessment required:

Table 1: Categorisation of the environmental and social assessment

	Category A	Category B	Category C
	Significant Adverse Environmental and Social Risks	**Limited Adverse Environmental and Social Risks**	**Minimal or No Adverse Environmental and Social Risks**
Category Guidelines	1. Large-scale Mining Operation: Extraction of minerals in a sensitive ecological region, potentially affecting water quality, biodiversity, and local communities. 2. Major Oil Refinery Construction: Development near populated areas, with risks of air and water pollution, health impacts, and potential displacement of communities. 3. Nuclear Power Plant Development: Construction in a densely populated region, with significant concerns regarding safety, waste disposal, and potential long-term environmental contamination.	1. Small Hydroelectric Dam: Development in a less sensitive area, with some potential impacts on fish migration and local water use but manageable through proper design and mitigation. 2. Urban Transit System Expansion: Construction of new metro lines or bus routes, with temporary disruption to communities and potential noise and visual impacts, but generally reversible. 3. Wind Farm Development: Installation in a non-sensitive area, with potential noise and visual impacts but limited broader environmental or social risks.	1. Rooftop Solar Panel Installation: Implementation across commercial buildings, with minimal environmental or social impacts. 2. Energy Efficiency Retrofit: Upgrading existing industrial or residential buildings to improve energy efficiency, with no significant adverse impacts. 3. Small-scale Community Garden Development: Creation in urban areas to enhance local food production and community engagement, with no anticipated negative environmental or social effects.
	Decrease Risk Profile and Equator Principle Requirements		
Summary of Category	Projects with potential significant adverse environmental and social risks and/or impacts that are: • Diverse; • Irreversible; or • Unprecedented.	Projects with potential limited adverse environmental and social risks and/or impact that are: • Few in number; • Generally site-specific; • Largely Reversible; and • Readily addressed through mitigation measures.	Projects with minimal or no adverse environmental and social risks and/or impacts.
High Level Comparison with other Categories	Category A Projects represent greater environmental and/or social risks, and EPFIs are required to impose correspondingly more stringent compliance and reporting obligations on Clients engaged in Category A Project.	There can be a range of potential environmental and social risks within Projects classified as Category B. In general terms, higher risk Category B Projects will be treated similarly to Category A Projects, while lower risk Category B Projects may be treated with a lighter regime.	Category C Projects will also be subject to reporting and compliance requirements commensurate to their level of environmental and social risk (which may be assessed to have minimal or no adverse impact in this regard).

1.4 Stakeholder Engagement

Stakeholder engagement is a critical component of the socio-economic impact assessment process. It provides an opportunity for stakeholders to express their views, concerns, and suggestions regarding the Project.

The SSV process emphasises the importance of stakeholder engagement as a foundational step in understanding the socio-economic sensitivities of the proposed development. The approach taken for preliminary stakeholder engagement during the SSV phase began with an initial desktop assessment to identify key stakeholders, including local communities, government authorities, businesses, and other relevant parties, this can be noted as **Figure 1** below.

Surveys and engagement clusters were prepared to facilitate the collection of initial insights and feedback, the template for the survey used is attached as **Error! Reference source not found.**. Where applicable, meetings and appointments were set up to facilitate direct engagement by the site team. A comprehensive site visit was undertaken to verify information gathered and preliminarily engage with local stakeholders.

Post site visit, a list of additional stakeholders was compiled (if applicable), and preliminary comments and high-level findings were captured. The list will be incorporated into the Stakeholder Engagement Plan (SEP[3]) if required, possible approaches for further engagement undertaken will be discussed in the SEIA report. This approach ensures a systematic and thoughtful consideration of all relevant parties, setting the stage for a robust and insightful socio-economic impact assessment, aligning with best practices outlined in the IFC Standards and Equator Principles[4], and demonstrating a commitment to social responsibility and sustainable development.

1.5 Site Sensitivity Verification Process

The SSV process, provides a robust and systematic approach to understanding the socio-economic sensitivities of the proposed development site. By integrating a comprehensive review of existing data, on-site observations, stakeholder engagement, and alignment with the Equator Principles, and guidelines, the process ensures that potential risks and impacts are identified early in the project planning phase. The following key actions encapsulate the essence of the SSV process:

This structured approach ensures that the project is assessed with due consideration to both local context and international best practices, contributing to responsible and sustainable development. It lays the groundwork for subsequent phases of the project, providing a clear path for addressing socio-economic considerations in a manner that aligns with ethical and regulatory requirements.

[3] This primarily comprises of the public participation strategy followed by the environmental consultant, and where applicable additional engagement required by the social specialist.
[4] The stakeholder engagement process for the SEIA report will be, where possible, conducted in accordance with the International Finance Corporation's (IFC) Performance Standard 1 on Assessment and Management of Environmental and Social Risks and Impacts, which emphasises the importance of effective stakeholder engagement in managing environmental and social risks.

1.5.1 Methodology

The SSV process, provides a robust and systematic approach to understanding the socio-economic sensitivities of the proposed development site. By integrating a comprehensive review of existing data, on-site observations, stakeholder engagement, and alignment with the Equator Principles, and guidelines, the process ensures that potential risks and impacts are identified early in the project planning phase. The following key actions encapsulate the essence of the SSV process:

Methodology

The methodology employed in this SEIA is designed to offer a robust and systematic approach to understanding the socio-economic sensitivities of the proposed development site. The assessment is divided into the following key steps:

Data Collection:

- Development Site: Key elements of the Akkerboom site were identified, including aspects like Eskom overhead lines, rivers and wetlands, and main access roads.
- Local Context: Data on the Kai !Garib Local Municipality was collected, focusing on demographic, economic, socio-cultural, and environmental profiles.

Classification by Vulnerability Class:

- Both the key elements from the development site and the local context data were classified under the five Vulnerability Classes—Economic, Environmental, Social, Physical, and Cultural.

Integrated Outcomes Matrix:

- An Integrated Outcomes Matrix was developed for each Vulnerability Class. This matrix brings together the key elements and local context to assess anticipated impacts, synergies, conflicts, and sensitivity ratings.

Sensitivity Rating:

- An overall sensitivity rating for the site is calculated as a weighted average of the sensitivity ratings for each Vulnerability Class

Recommendations:

- Based on the overall sensitivity rating, targeted recommendations are made for each Vulnerability Class, focusing on mitigation measures and community engagement strategies.

2 Legislation

The categorisation framework as used in this SSV report has been tailored to correspond with the guidelines for engaging socio-economic assessment specialists in EIA processes, as described by Barbour (2007).

Within this context, a specific trigger, analogous to the project category, signifies the potential magnitude of impact on the socio-economic environment. Barbour (2007) emphasises that most, if not all, projects are inclined to exert some influence on the social milieu. Projects of a more substantial scale (such as those in Category A) are generally associated with more pronounced impacts compared to smaller, less significant initiatives (falling under Category C). The depth of assessment and the intricacy of details included are guided by both the specific nature of the project and the characteristics of the affected socio-economic environment (as identified in section 3 of this report). Specific risks may include adverse impacts on Indigenous Peoples, impacts on Critical Habitats, significant cultural heritage impacts, and large-scale resettlement of the population. This approach ensures that the project aligns with both local regulations and international standards, providing a robust framework for responsible development.

This categorisation serves as the foundation for determining the appropriate level of assessment and engagement required for the project, in line with both national regulations and international best practices.

3 Study Area Description

The Socio-Economic Site Sensitivity Verification for the Akkerboom Solar Powered EV Charging Station & PV Facility as required by 2014 EIA Regulations was conducted by ETC, it involves a comprehensive evaluation of the study area to identify potential impacts and features that may require further assessment. It aims to aid improved decision-making and ensure that projects and programs are environmentally and socially sustainable.

3.1 Site Specific Sensitivities

The study area for this SSV encompasses the geographical, sociocultural, economic, and administrative domains that may be directly or indirectly influenced by the proposed development. It serves as the foundation for subsequent analysis, ensuring that the assessment is comprehensive, relevant, and aligned with both the local context and

international best practices. The study area is illustrated in

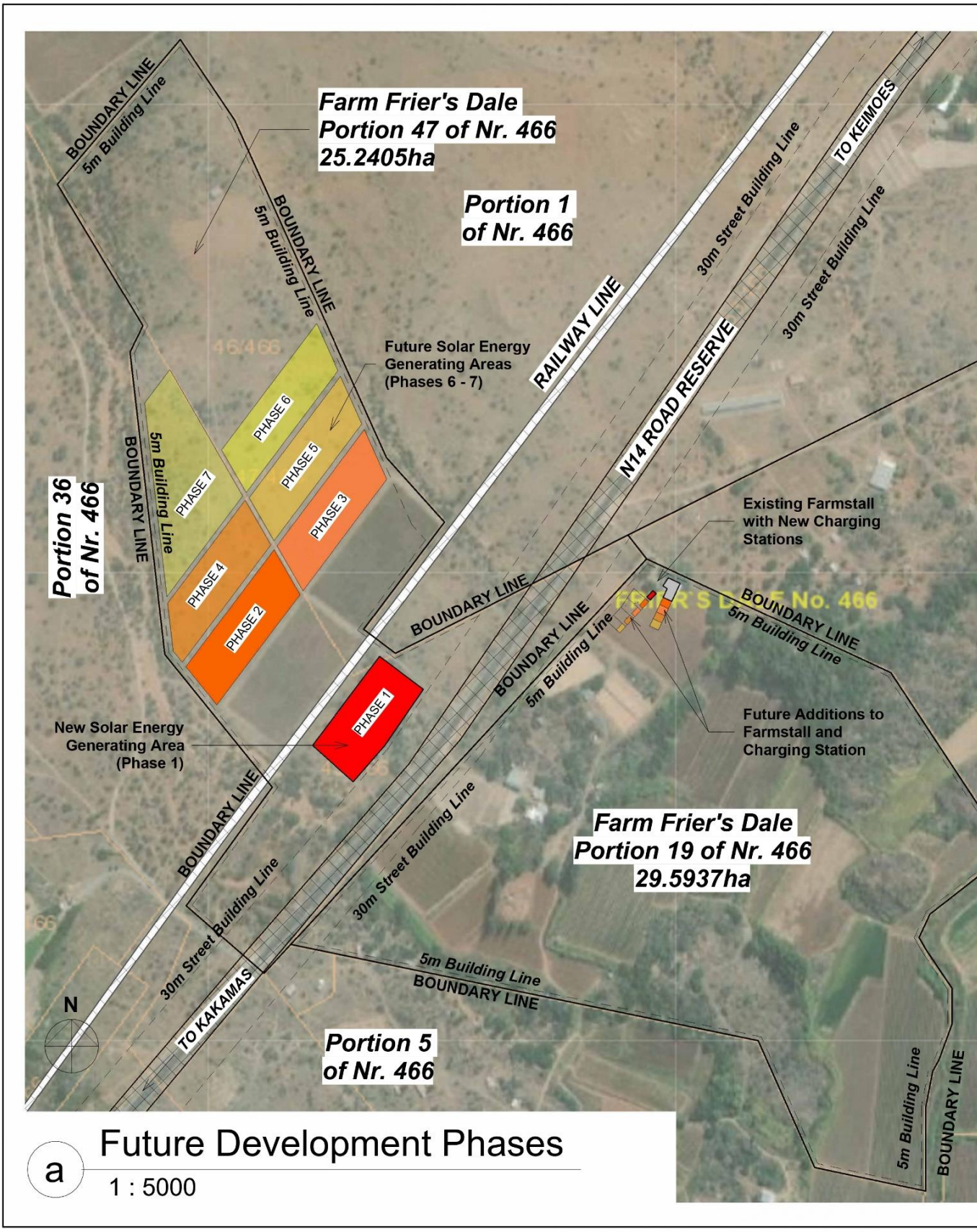


Figure 2, and detailed descriptions of the specific components are provided in the subsequent sections.

Table 2 presents a preliminary assessment of key socio-economic elements identified in the study area. The elements have been identified based on a review of existing information, desktop analysis, site visits, and initial stakeholder consultations. The intent with Table 2 is to provide a structured framework for the ongoing SEIA process and will be further refined during the assessment process.

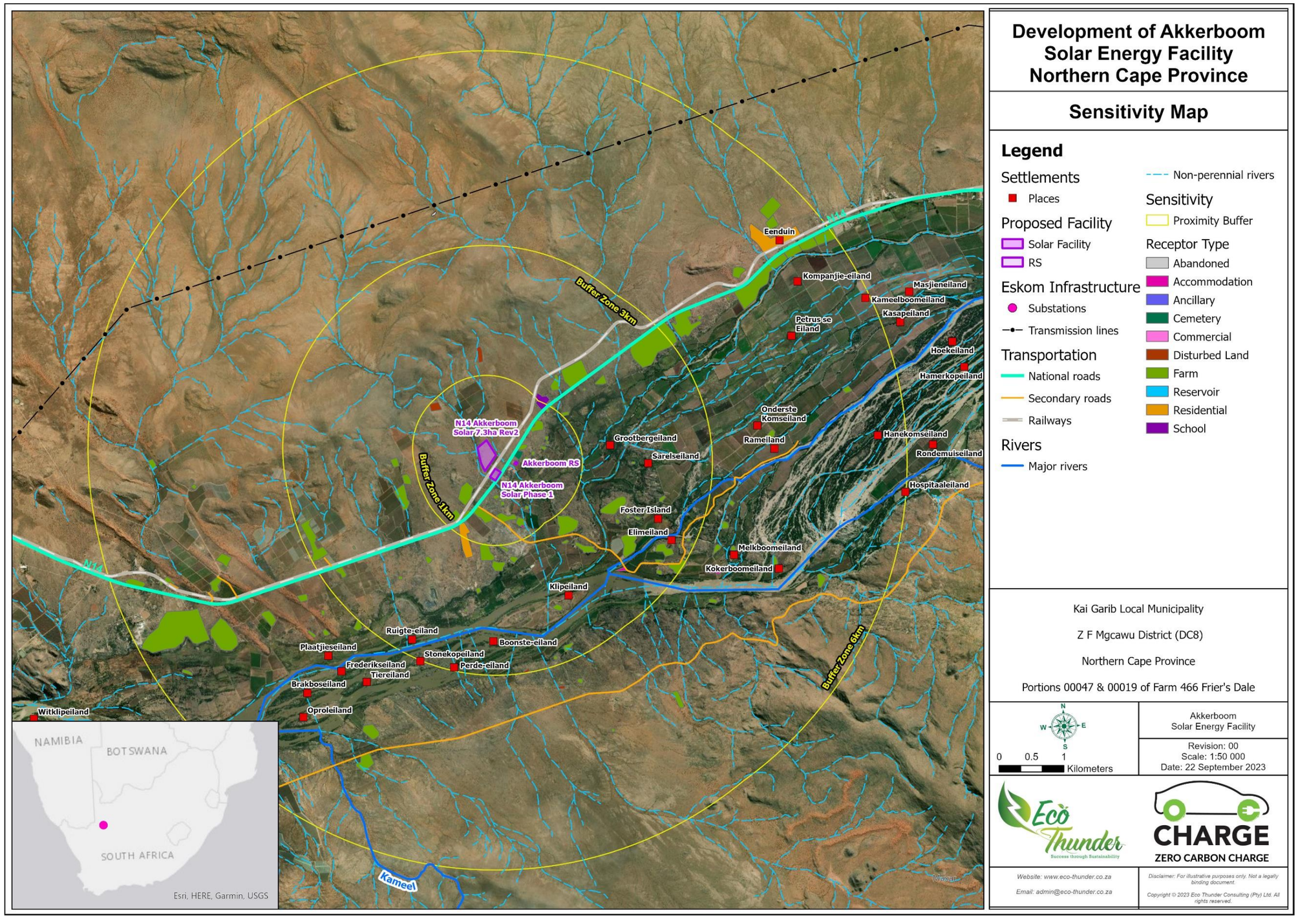


Figure 1: Sensitive Receptors for Akkerboom Solar Powered EV Charging Station & PV Facility

Table 2: Key Socio-Economic Elements for Akkerboom

Element Classification	Description	Vulnerability Class[5]
Eskom Overhead Lines	Overhead power lines are present in the vicinity of the site.	Economic
Railway Lines	Unused railway line runs by the development area.	Physical
Rivers and Wetlands	The site is located near multiple non-perennial rivers, with the closest major river being the Orange river, to the south of the development area.	Environmental
Main Access Roads	The main access road to the site is the N14.	Social
Existing businesses or farmstalls	Beesmond Boedery, Ukuvuka Padstal, Akkerboom Plaasstal, Prosperitas foods, Omnia Friersdale, Marvin Liquor, Oasis Kafee, Agrimark Keimoes, USave Keimoes, Brays Keimoes Spar, Bakes Bakery, Orange River Wines/Cellars, S M B Boerdery	Economic
Other filling stations / EV charging in the area	The presence of other EV charging facilities can influence the demand and utilization of the Akkerboom Solar Powered EV Charging Station & PV Facility, not within 300km	Economic
Guest Houses and Accommodation	Die Akker Gastehuis, Die Punk Caravan, Elim Guesthouse, Da Villa Lodge, Keimoes Hotel, Tkabies Camping & Self Catering, Kokerboom Lodge, La Palma Lodge	Economic
Internal Farm Gravel roads	Existing gravel roads found within the site.	Environmental
Cattle Pens	Cattle grazing areas identified near the development area.	Environmental
Agricultural Development	Agricultural lands surround the development area.	Socio-Economic
Informal Settlements	None identified in close proximity to the development area.	N/A

[5] Vulnerability Criteria is classified as follow: **Physical Vulnerability**: Susceptibility to physical harm or damage (e.g., buildings in flood-prone areas), **Economic Vulnerability**: Susceptibility to financial loss or economic instability (e.g., low-income families), **Social Vulnerability**: Susceptibility to social exclusion or marginalisation (e.g., minority groups), **Environmental Vulnerability**: Susceptibility to environmental degradation or climate change (e.g., ecosystems), and **Cultural Vulnerability**: Susceptibility to loss of cultural identity or heritage (e.g., indigenous communities)

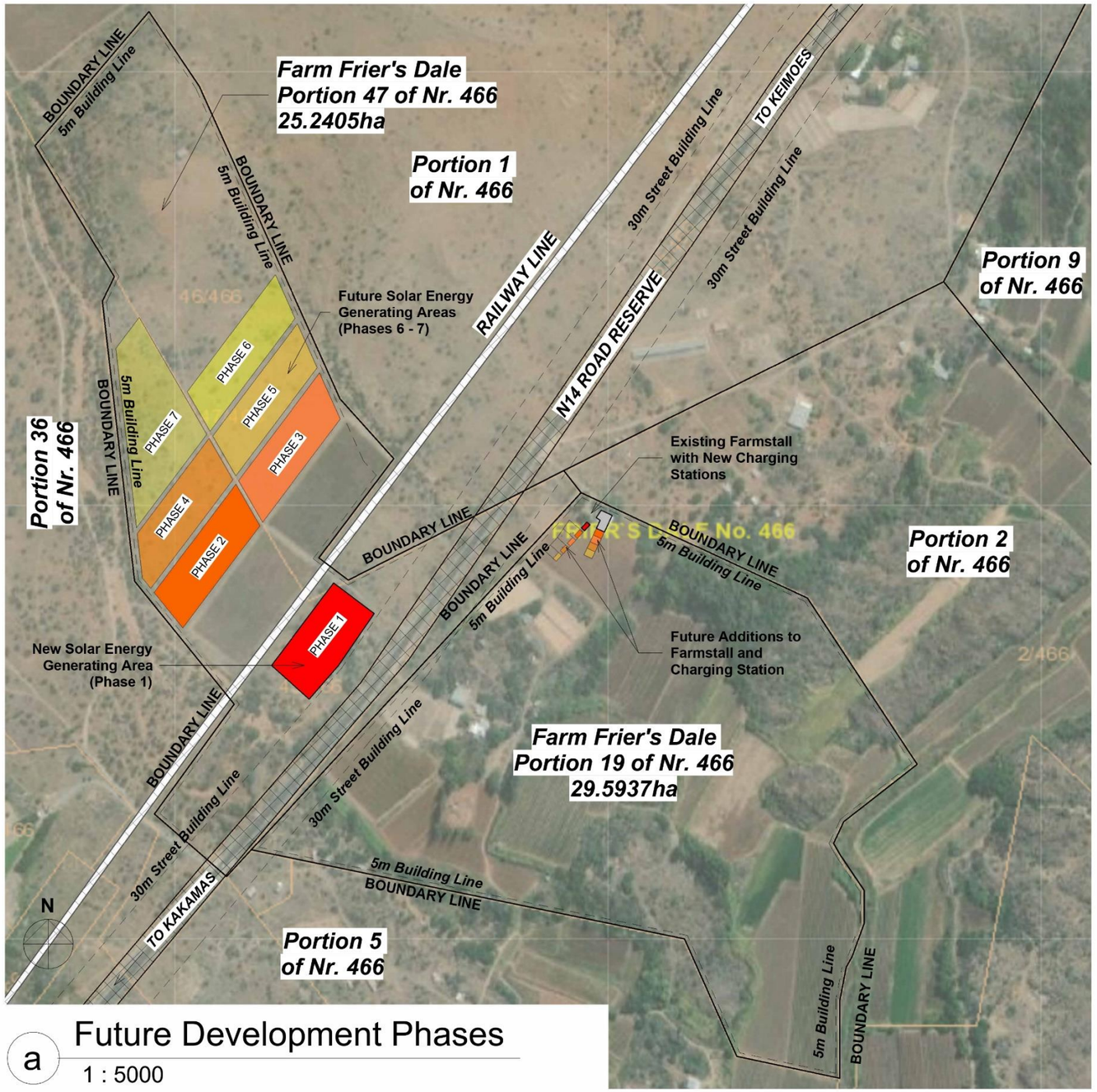
Mixed residential	Mixed residential areas are located at a distance from the site.	Social
Towns and Settlements	Loxtonvale is the nearest town to the development area.	Socio-Economic
Indigenous Peoples	No known indigenous communities in the area.	N/A
Cultural Heritage	Potential heritage sites in the region, such as small family grave sites.	Social

3.2 Socio Economic Baseline

In SEIA, the baseline should be used as a platform for understanding how wellbeing may be affected and the vulnerability of groups, so that more attention can be spent on mitigation and enhancement.

Baseline conditions were determined by consulting and reviewing information sourced from literature, websites, and publicly available documents, collected through a desktop review.

A field assessment was conducted on 7th September 2023. The key findings from both the baseline profile and the field assessment that informed this study were as follows:



LEGEND		
Phase 1	Solar panels	8500m²
	Charging bays	52m²
	Parking	580m²
	Storage Container	36m²
	Total Phase 1	9168m²
Phase 2	Solar panels	9000m²
	Charging bays	52m²
	Parking	300m²
	Addition to Farmstall	100m²
	Storage Container	36m²
	Total Phase 2	9488m²
Phase 3	Solar panels	9000m²
	Charging bays	52m²
	Parking	260m²
	Addition to Farmstall	100m²
	Storage Container	36m²
	Total Phase 3	9448m²
Phase 4	Solar panels	9000m²
	Charging bays	52m²
	Parking	245m²
	Addition to Farmstall	100m²
	Storage Container	36m²
	Total Phase 4	9433m²
Phase 5	Solar panels	9000m²
	Charging bays	52m²
	Parking	200m²
	Addition to Farmstall	100m²
	Storage Container	36m²
	Total Phase 5	9388m²
Phase 6	Solar panels	9400m²
	Storage Container	36m²
	Total Phase 6	9436m²
Phase 7	Solar panels	15000m²
	Storage Container	36m²
	Total Phase 7	15036m²
	Total Future Development	71 397m²

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Project Title

Farm Frier's Dale Nr 466, Portions 47&19

New Energy Generating Area on Portion 47, and New Charging Station on Portion 19 of Farm 466

Drawing Title

Basic Application_Proposed Future Phases

scale @ A1:	proj. no:	dwg.no:	rev.no:
As indicated	C-N014-08	711-210-10	A
date: 06/07/23 / drawn: EvdM			

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Figure 2: Akkerboom Proposed Development Area

Table 3: Key Findings for the Kai !Garib Local Municipality

Category	Topic	Findings	SEIA Relevance
Demographic Profile	Population size	65 869	The population size and growth rate indicate that the municipality is moderately populated. The diverse population composition, with a majority being Coloured, and the presence of informal housing, suggests potential socio-economic challenges.
	Population density	2 persons/km2	
	Population growth rate	1.16%	
	Population group/composition	• 28.3% Black African • 62.2% Coloured • 0.8% Indian/Asian • 6.3% White • 2.3% Other	
	Predominant gender	Male 52%	
	Household	• 76% Formal Housing • 11.4% Informal Housing or Traditional Dwelling • 67% Male Lead Households	
	Education/literacy levels	• 8.9% of Adults have completed Matric or Higher Levels of Education. • 86.8% Secondary Incomplete • 4.3% No Schooling	
Economic Profile	Unemployment rate	• 10%	Higher unemployment rates could mean increased susceptibility to environmental hazards as unemployed individuals may lack resources for mitigation or adaptation. Job creation from projects could be a focal area, especially if those jobs are in sectors that are environmentally sustainable. Lower income groups (e.g., 6.1% with no income) may be disproportionately affected by environmental issues like pollution or lack of access to clean water. A skewed income distribution can exacerbate social inequalities, which may require targeted social interventions. The dominance of agriculture (51.8%) suggests a significant reliance on natural resources, making sustainable practices crucial. The sectors also indicate where job opportunities may lie, guiding education and training programs. Higher poverty rates often correlate with less capacity to adapt to environmental changes or contribute to mitigation efforts. Poverty alleviation could be an essential focus in social programs. A larger labour force could mean more pressure on local resources unless managed sustainably. The size of the labour force can indicate the community's capacity for economic development, which may be harnessed for social betterment and more sustainable practices.
	Income levels/distribution	• 6.1% No Income • 2.3% R1 – R4 800 • 4.5% R4 801 – R9 600 • 25.7% R9 601 – R19 600 • 26.7% R19 601 – R38 200 • 18.1% R38 201 – R76 400 • 8.1% R76 401 – R153 800 • 4.9% R153 801 – R307 600 • 2.6% R307 601 – R614 400 • 0.6% R614 001 – R1 228 800 • 0.3% R1 22 801 – R2 457 600 • 0.2% R2 457 601+	
	Economic sectors	• 51.8% Agriculture • 15.9% Community and Government Services • 11.3% Wholesale and Retail • 7.6% Financial Services • 5.1% Manufacturing	
	Poverty rates	27.7%	

Category	Topic	Findings	SEIA Relevance
	Size of labour force	68.09%	
Socio-Cultural Profile	Healthcare	Although there are facilities, there is an insufficiency of qualified staff, equipment, and medication. Mobile clinics fail to render regular and sufficient service.	Insufficient healthcare facilities and staff can exacerbate the impacts of environmental health hazards. Lack of regular and sufficient mobile clinic services also indicates limited access to healthcare, especially in remote areas. The deficiencies in healthcare could necessitate targeted interventions to improve healthcare infrastructure and personnel training. Increased crime rates may signify social unrest, possibly aggravated by environmental factors like pollution or lack of resources, which can, in turn, become social stressors. A rise in crime rates may require enhanced safety measures, potentially diverting resources from other social services. Different cultural groups may have unique environmental practices or attitudes toward natural resources, which could impact how environmental initiatives are received. Understanding the rich cultural diversity can help in formulating culturally sensitive and inclusive social interventions. Religious and traditional beliefs can greatly influence attitudes toward environmental stewardship. For instance, some Christian denominations may emphasize stewardship of the Earth, while Traditional African Religions may have specific practices related to natural resources. The diversity in beliefs suggests that religious and cultural considerations should be taken into account when implementing social programs.
	Crime Rates	Since 2006, crime rates have increased by 4%.	
	Cultures, Social Norms/Values	The rich cultures of Kai !Garib municipality include: • The so called 'coloureds' who descent from the original Khoi-khoi and Korannas; • The Namas situated in Riemvasmaak and surrounding areas; • The Xhosas especially from Vredesvallei; as well as • The White Afrikaner mainly concentrated in the three towns and on commercial farms.	
	Beliefs	• Christianity • Traditional African Religions • Muslim	
Environmental / Geographical Profile	Land use/zoning	• 64.9% Urban • 0% Tribal/Traditional • 35.1% Agricultural Land	The large percentage of urban land (64.9%) may necessitate targeted efforts to manage urban environmental challenges such as waste disposal, air pollution, and water quality. Conversely, the 35.1% agricultural land implies a potential for land-use conflicts and necessitates careful environmental management of farming practices. The predominance of urban land may also indicate where the bulk of social infrastructure like schools, healthcare facilities, and employment centres are or should be located. Being ~6km from Loxtonvale suggests a close interconnection with another urban area, potentially impacting regional environmental factors such as air and water quality. This close proximity could also lead to increased traffic and consequently higher emissions. The close proximity to Loxtonvale may mean that residents have alternative avenues for accessing social services, jobs, or educational opportunities, which should be considered when planning any social initiatives.
	Proximity to urban areas	~6km from Loxtonvale	

Category	Topic	Findings	SEIA Relevance

Social / Institutional Profile	Access to basic services	• Water:
		  ○ 78% Service Provider
		  ○ 11% Natural Resource
		  ○ 7% Own Service
		  ○ 2% Water Scheme
		  ○ 2% Other
		• Electricity:
		  ○ 62% In-house Prepaid Meter
		  ○ 19% In-house Conventional Meter
		  ○ 10.4% No Access
		  ○ 3% Other-source (not paying for)
		  ○ 5% Other
		• Toilet Facilities:
		  ○ 73% Flush Toilet
		  ○ 14% Pit Toilet
		  ○ 8% No Access
		  ○ 3% Bucket Toilet
		  ○ 2% Other
		• Refuse Disposal:
			The high dependence on service providers (78%) suggests a centralized water system that should be assessed for its sustainability, especially when introducing a facility that could potentially consume water for operations or cooling. The 11% relying on natural resources may be vulnerable to water scarcity or pollution, which should be considered in the planning of the new facility.
			The existing electrical infrastructure (81% have in-house meters) would likely support the integration of a Solar PV EV Charging Facility. However, the 10.4% with no access to electricity may be marginalized further if not considered. An EV Charging Facility could contribute to energy diversification, but its impact should be assessed in the context of current access to electricity.
			The types of toilet facilities indicate the level of sanitation infrastructure, The 8% with no toilet access are a vulnerable group who might also be left out of the benefits of new technological developments like an EV Charging Facility. which has implications for groundwater contamination and waste treatment.
			Information on refuse disposal is vital for understanding waste management practices in the area, which could be impacted by the installation of a new facility. Effective waste management services are essential for community well-being and should be integrated into the SEIA planning.
			The governance by ANC and the administration under Z.F. Mgcawu District Municipality provides context for regulatory and permitting considerations. Understanding the local political landscape is crucial for stakeholder engagement and the successful implementation of the facility.

	Administrative area	• Kakamas, Ward 10	
	Local government	ANC, Z.F. Mgcawu District Municipality, Northern Cape	
Capacity to Absorb Changes	Resilience to change	High	
	Adaptive capacity	High	

4 Verification

As part of the project's Socio-Economic SSV, it is crucial to understand the potential impacts and vulnerabilities associated with the development. This assessment seeks to provide a comprehensive yet concise overview of these factors, considering both the local context and the specific elements of the proposed development site. This section is structured around five key profiles— Demographic, Economic, Socio-Cultural, Geographical and Institutional to offer a nuanced analysis that takes into account both the local context and the specific elements of the development site.

The Integrated Outcomes Matrix is designed to offer a consolidated view of the project's potential impacts with the following key components:

- **Key Elements**: These are specific features or aspects of the Akkerboom Solar Powered EV Charging Station & PV Facility, such as Eskom overhead lines or rivers and wetlands. They are derived from Table 2 and represent elements that could have an impact on the local community or environment.
- **Local Context Highlights**: This column provides a snapshot of relevant data from the Kai !Garib Local Municipality, such as unemployment rates or land use statistics. These are extracted from Table 3 and offer context for understanding how the key elements might interact with existing local conditions.
- **Anticipated Impact:** This column indicates the impact of each key element on the local context
- **Synergies**: This column identifies areas where the project's key elements and the local context align well, potentially leading to enhanced positive impacts.
- **Conflicts**: Conversely, this column highlights areas where the project's key elements could clash with the local context, leading to negative impacts that may require mitigation.
- **Sensitivity Rating**: This is an assessment of how sensitive each key element is within its Vulnerability Class. The rating is determined based on the anticipated impact, synergies, and conflicts, and can be Very High, High, Moderate, or Low.
- **Actionable Insights**: This column provides targeted recommendations or insights based on the analysis. These could be specific mitigation measures, community engagement strategies, or suggestions for further studies.

By organising the data in this manner, the matrix allows for a nuanced understanding of the project's potential impacts across different dimensions of vulnerability. It also facilitates the development of targeted recommendations that are grounded in both the specific elements of the development site and the broader local context.

Table 4: Integrated Outcomes Matrix

Economic Vulnerability

Key Elements	Local Context Highlights	Anticipated Impact	Synergies	Conflicts	Sensitivity Rating	Actionable Insights
Agricultural Development	Economic sectors: 51.8% Agriculture	Potential disruption to existing farming activities (N) Broaden and diversify the local economic sector (P)	Encouragement for farmers to use EVs due to reliable charging points	Disruption to farming	High	Conduct a detailed agricultural impact assessment. Explore partnerships with local farmers for EV adoption
Existing businesses or farmstalls	Size of labour force: 68.09%; Economic sectors: 15.9% Community and Government Services; Unemployment rate: 10%	Potential increase in customer footfall due to increased local activity (P) ZCC anticipates collaborating with local businesses in this regard, stimulating the local economy (P)	Increased business Stimulation of the local economy	Market competition	Moderate	Engage with local businesses to assess impact and opportunities
Guest Houses and Accommodation	Economic sectors: 15.9% Community and Government Services	Potential increase in occupancy rates due to influx during construction and operation	Increased occupancy Stimulation of the local economy	None	Moderate	Collaborate with local businesses to inform them of the benefit the charging station facility can have on their operations.

Environmental Vulnerability

Key Elements	Local Context Highlights	Anticipated Impact	Synergies	Conflicts	Sensitivity Rating	Actionable Insights
Rivers and Wetlands	Land use: 35.1% Agricultural Land	Potential degradation of local ecosystems (N)	None	Ecosystem degradation	High	Conduct an environmental impact assessment with relevant specialist assessment
Internal Farm Gravel Roads	Land use: 35.1% Agricultural Land	Reduced environmental disturbance by utilizing existing roads (P)	Reduced environmental disturbance	None	Moderate	Utilize existing roads to minimize land use change
Cattle Pens	Land use: 35.1% Agricultural Land	Disruption to existing cattle grazing activities (N)	None	Disruption to grazing	Low	Collaborate and provide feedback to surrounding farmers

Social Vulnerability

Key Elements	Local Context Highlights	Anticipated Impact	Synergies	Conflicts	Sensitivity Rating	Actionable Insights
Main Access Roads	Proximity to urban areas: ~6km from Loxtonvale	Increased traffic congestion and potential road degradation (N) Enhanced accessibility for EV users (P)	Increased use of EVs due to convenient location Potential boost to local economy and tourism	Increased traffic	Moderate	Develop a traffic management plan Promote the station as an eco-friendly stop for tourists
Mixed Residential	Predominant gender: Male 52%	Potential noise and visual disturbances to nearby residential areas (N)	None	Noise or visual changes	Low	Adhere to general EMPr guidelines to reduce noise and visual impact

Cultural Heritage	Cultures: Diverse, including 'coloureds', Namas, Xhosas, and White Afrikaners	Potential disturbance to cultural or heritage sites (N);	None	Disturbance to cultural or heritage sites	Moderate	Engage with local communities to identify and protect heritage sites; Conduct a Heritage Impact Assessment

Physical Vulnerability

Key Elements	Local Context Highlights	Anticipated Impact	Synergies	Conflicts	Sensitivity Rating	Actionable Insights
Railway Lines	Proximity to urban areas: ~6km from Loxtonvale	No immediate impact but potential for future conflicts if railway is reactivated (N)	None	None	Low	Monitor for future railway development plans
Eskom Overhead Lines (Not Managed by ZCC)	Proximity to community: ~5km	No direct impact on ZCC project, but awareness of potential local grid instability due to external factors	None	None	Low	No direct action required; maintain situational awareness for project planning
EV charging in the area	Proximity to urban areas: ~6km from Loxtonvale No other EV stations within 50-100km	Potential market competition (N) Encouragement for EV adoption and eco-tourism (P)	Unique selling point for the area, increased adoption of EVs, potential boost to local economy	Competition with traditional filling stations	Moderate	Conduct a market analysis. Develop marketing strategies to promote the unique selling point of the EV station

Cultural Vulnerability

Key Elements	Local Context Highlights	Anticipated Impact	Synergies	Conflicts	Sensitivity Rating	Actionable Insights

Towns and Settlements	Cultures: Diverse, including 'Coloureds', Namas, Xhosas, and White Afrikaners	Enrichment of local culture through increased interaction and integration (P); Potential for cultural clashes or misunderstandings (N)	Cultural enrichment	Potential for cultural misunderstandings	Moderate	Engage with local communities for cultural integration; Conduct cultural sensitivity training for staff

4.1 Overall Sensitivity Rating

Overall Sensitivity Rating: **Moderate**

Justification:

The overall sensitivity rating for the Akkerboom Solar Powered EV Charging Station & PV Facility is determined as "**Moderate**" based on a comprehensive analysis of economic, environmental, social, physical, and cultural vulnerabilities. The site presents a balanced profile with moderate to high sensitivities in economic and environmental aspects, which are counterbalanced by low to moderate sensitivities in social, physical, and cultural aspects.

- Economically, the project offers a dual benefit: it aligns well with the local unemployment rate of 10% and provides opportunities for job creation and skills development. Furthermore, it has the potential to stimulate local businesses, including existing farm stalls and guest houses, thereby contributing positively to the local economy.
- From an environmental standpoint, the project's proximity to rivers and wetlands poses potential risks to local ecosystems. This however can be offset through mitigations and rehabilitation The project's internal farm gravel roads offer an opportunity to minimize additional environmental disturbance.
- Socially, the project has both positive and negative aspects. While it may result in increased traffic, it also promotes the use of eco-friendly electric vehicles and has the potential to boost local tourism.
- Physically, the project presents low to moderate risks. Its proximity to existing infrastructure like railway lines and Eskom overhead lines is noted but considered manageable. The unique selling point of being the only EV charging station within a 50-100km radius adds value to the project.
- Culturally, the project is situated in a culturally diverse area. While there is potential for cultural misunderstandings, there is also an opportunity for cultural enrichment and community integration.

- Given these multi-faceted considerations, which include SEIA relevance, no further SEIA studies are deemed necessary if the following recommendations and mitigation measures are diligently implemented.

4.2 Recommendations

- Engage with local businesses, especially existing farm stalls and guest houses, to assess impact and explore collaborative opportunities for stimulating the local economy.
- Adhere to general Environmental Management Programme (EMPr) guidelines to mitigate noise and visual impacts in mixed residential areas.
- No direct action required for Eskom overhead lines, but maintain situational awareness for potential local grid instability.
- Develop marketing strategies to promote the unique selling point of the EV charging station, considering its potential to boost local economy and tourism.
- Implement skills development programs targeting the local community to prepare them for job opportunities in construction and maintenance.
- Engage with local agricultural stakeholders to minimize disruption and explore opportunities for collaboration.
- Utilize existing internal farm gravel roads to minimize land use change.
- Develop a comprehensive traffic management plan to manage increased traffic during construction and operational phases.
- Confirm with SANRAL that no future railway development plans are anticipated that may create potential conflicts.
- Engage with local communities to identify and protect cultural and heritage sites.

5 Conclusion

The Site Sensitivity Verification (SSV) for the Akkerboom Solar Powered EV Charging Station & PV Facility offers a detailed insight into the socio-economic landscape of the Kai !Garib Local Municipality. Conducted in alignment with the 2014 EIA Regulations and the Protocols published in GN 320 on 20 March 2020, the assessment underscores potential social, economic, and cultural impacts of the proposed development.

Kai !Garib's diverse demographic profile, economic challenges, socio-cultural nuances, and geographical attributes emphasize the need for a meticulous approach to the project's planning and execution.

The overall sensitivity rating for the Akkerboom site is determined as moderate. This rating is a balanced assessment of the anticipated impacts in relation to the local context. Given this moderate sensitivity rating, further SEIA studies are not required if specific recommendations and mitigations are implemented.

The findings from this process will guide the project's next phases, ensuring that all potential impacts are addressed comprehensively. By adhering to these recommendations, the project can proceed in a manner that is both socially and environmentally responsible, aligning with local, national, and international standards and best practices.

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