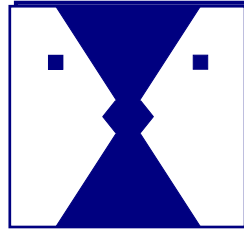


Proposed D3 Energy Production Right Application

Social Impact Assessment



Prepared by:

Equispectives Research & Consulting Services

Contact person: Dr Ilse Aucamp

Prepared for:

EIMS

June 2026



Executive Summary

This report presents a Social Impact Assessment (SIA) for the proposed D3 Energy (previously Motuoane) Production Right 16. It provides a baseline description of the socio-economic environment surrounding the project and identifies, assesses and proposes mitigation for the social impacts associated with the development. The proposed project is located approximately 15 km south-east of Virginia in the Free State Province, within a 14 440 hectares (ha) production right area that straddles the Matjhabeng and Masilonyana Local Municipalities in the Lejweleputswa District Municipality. The closest towns are Welkom, Virginia, Theunissen, Hennenman and Ventersburg.

The development will comprise up to 43 production wells, supported by ongoing exploration activities, a central helium recovery and methane processing facility (with CNG and/or LNG capability), and associated infrastructure including gathering pipelines, access roads and a maintenance workshop. Initial drilling and construction are scheduled for 2027, with production expected to commence in 2028. The project has an anticipated operational life of approximately 30 years. Operations will be based locally, with provision for the use of local services, contractors and workforce where feasible.

The regional economy has historically relied on gold mining and commercial agriculture. The protracted decline of the gold sector, with mining employment in the goldfields falling from roughly 157 000 in 2010 to under 94 000 by 2022, has left a legacy of high unemployment, poverty, infrastructure decay and dependence on social grants. Against this backdrop communities are strongly pro-development and place very high expectations on any new project to create jobs, while landowners are primarily concerned with the protection of farming livelihoods, water, safety and land-use rights.

Stakeholder engagement undertaken for this study (key-informant interviews with ward councillors, directly affected and neighbouring landowners, a local business forum and an environmental-justice network) confirmed that the project presents both opportunities and risks. The principal opportunity is local economic stimulation through procurement, skills development and the proponent's Social and Labour Plan (SLP). It must be emphasised, however, that the direct permanent workforce is very small – the SLP projects between seven



and ten permanent positions over the first five years – so the realistic local benefit lies in secondary procurement, enterprise development and skills transfer rather than mass employment. Managing the resulting expectation gap is one of the most important social tasks of the project. Indirect and induced employment linked to local procurement, services and enterprise development adds further to this benefit, although these secondary effects are described qualitatively rather than quantified (see Section 7).

Key potential social impacts identified and assessed in this report are:

- Interference with farming livelihoods and existing land uses (productive land, grazing, hunting and game operations);
- Water contamination and pressure on already-stressed groundwater resources;
- Damage to farm roads, services and infrastructure from heavy vehicles;
- Uncertainty around servitudes, property values and long-term land-use rights;
- Safety and security risks to residents, farm workers, livestock and project personnel;
- Increased poaching and stock theft associated with greater access and outsider presence;
- Veld-fire risk to farming operations, grazing, wildlife and energy infrastructure;
- Nuisance impacts (dust, noise, visual intrusion) and changes to sense of place;
- Community perceptions and fears regarding gas safety (methane, pipelines and explosions);
- Social pathologies linked to a temporary workforce and contractor behaviour;
- Cumulative and overlapping land-use pressures from numerous approved renewable-energy projects in the same area;
- Distrust arising from the experience of previous development projects in the area;
- Gender and social-inclusion risks; and
- Job creation, local procurement and economic expectations (the principal positive impact).

The significance of each assessed impact, before and after mitigation, is summarised in



Table 0-1. All impacts are negative in nature except job creation, local procurement and economic expectations, which is the principal positive impact to be enhanced.

**Table 0-1: Summary of assessed social impacts and their significance.**

Impact	Pre-mitigation	Post-mitigation	Final significance
Farming livelihoods and interference with existing land uses	Medium-High negative	Medium-Low negative	Medium-Low negative (-8.25)
Water contamination and groundwater safety	Medium-High negative	Medium-Low negative	Medium-Low negative (-6.75)
Damage to farm roads, services and infrastructure	Medium-High negative	Medium-Low negative	Medium-Low negative (-6.75)
Uncertainty around servitudes, property values and land-use rights	Medium-High negative	Medium-Low negative	Medium-Low negative (-5.62)
Safety and security of local residents	Medium-High negative	Medium-Low negative	Medium-Low negative (-7.50)
Increase in poaching incidents and stock theft	Medium-High negative	Medium-Low negative	Medium-Low negative (-6.19)
Veld fire risk	Medium-High negative	Low negative	Medium-Low negative (-5.00)
Nuisance factors (dust, noise, visual intrusion, sense of place)	Medium-Low negative	Low negative	Low negative (-3.38)
Community perceptions and fears regarding gas safety	Medium-Low negative	Low negative	Low negative (-4.00)
Social pathologies linked to a temporary workforce	Medium-High negative	Low negative	Medium-Low negative (-4.50)
Overlapping land use and cumulative impacts (renewable energy)	Medium-High negative	Medium-Low negative	Medium-High negative (-9.38)
Distrust arising from previous development projects	Medium-High negative	Medium-Low negative	Medium-Low negative (-6.75)
Gender and social inclusion impacts	Medium-Low negative	Low negative	Low negative (-4.00)
Job creation, local procurement and economic expectations	Medium-Low positive	Medium-High positive	Medium-High positive (+13.00)

None of these impacts is regarded as a fatal flaw, and all can be managed or mitigated provided that mitigation begins early in the project cycle. Because the parties who carry the social cost of the development (directly affected farmers and farm workers) are largely not the parties who will receive its direct benefits, diligent management and monitoring of local social impacts is essential. The situation is further complicated by the concentration of approved renewable energy developments over the same land, which heightens concerns about land access, cumulative effects and the coexistence of multiple energy developments.



The study recommends, among other measures, that D3 Energy:

- Appoint a dedicated Community Liaison Officer to maintain relations with affected landowners and communities.
- Conclude fair, written access and compensation agreements before any activity on a property.
- Conduct baseline and ongoing groundwater monitoring and implement a spill-prevention plan.
- Formalise road maintenance and infrastructure reinstatement agreements, with the relevant road authority (SANRAL for national roads or the district or local municipality for municipal roads) or the landowner for private farm roads.
- Register servitudes only where strictly necessary and de-register them at closure.
- Develop a farm access and security protocol with affected landowners and local security structures.
- Compile a veld fire prevention and response plan and join the local fire protection association.
- Implement a transparent, locally anchored recruitment and procurement plan through recognised community structures — principally ward committees, ward councillors and established community development forums identified in Section 6 — and the municipalities.
- Include women and youth in employment, procurement and skills initiatives.
- Maintain honest, continuous communication with stakeholders; and
- Establish an accessible grievance mechanism.

Implementing these measures will help D3 Energy secure and retain a social licence to operate while protecting the wellbeing of host communities.



Declaration of Independence

Equispectives Research and Consulting Services declare that:

- All work undertaken relating to the proposed project was done as independent consultants.
- They have the necessary required expertise to conduct social impact assessments, including the required knowledge and understanding of any guidelines or policies that are relevant to the proposed activity.
- They have undertaken all the work and associated studies in an objective manner, even if the findings of these studies were not favourable to the project proponent.
- They have no vested interest, financial or otherwise, in the proposed project or the outcome thereof, apart from remuneration for the work undertaken under the auspices of the above-mentioned regulations.
- They have no vested interest, including any conflicts of interest, in either the proposed project or the studies conducted in respect of the proposed project, other than complying with the relevant required regulations; and
- They have disclosed any material factors that may have the potential to influence the competent authority's decision and/or objectivity in terms of any reports, plans or documents related to the proposed project as required by the regulations.

Record of Experience

Ilse Aucamp and San-Marié Aucamp compiled this report.

Ilse Aucamp holds a Doctor of Philosophy (D Phil) in Social Work from the University of Pretoria (2015) and a master's degree in environmental management (Cum Laude) from the Potchefstroom University (2004), following a BA in Social Work from the University of Pretoria. She is frequently a guest lecturer in pre- and post-graduate programmes at various tertiary institutions and specialises in social impact assessments, social management plans, social and labour plans, social auditing, training and public participation. She is a co-author of the IAIA's guidance document Social Impact Assessment: Guidance for assessing and managing the social impacts of projects (2015).



San-Marié Aucamp is a registered Research Psychologist with more than 20 years' experience in social research and is active in guest lecturing on social impact assessment. Her work spans sectors such as mining, manufacturing, utilities, government, automotive, financial services, telecommunications and FMCG, focusing on social impact assessments and social and labour plans. She contributed to the IAIA's 2015 international guidance document on assessing and managing the social impacts of projects and is currently pursuing her PhD in Consulting Psychology.



Table of Contents

Executive Summary	i
Declaration of Independence	v
Record of Experience	v
Table of Contents	vii
List of Figures	viii
List of Tables	ix
1 Introduction	1
2 Scope of Work	5
3 Methodology	5
3.1 Information base	5
4 Legislative and Policy Framework	7
4.1 National Legislative and Policy Framework	7
4.2 Provincial and Municipal Frameworks	8
4.3 International and Social Performance Policies	9
5 Receiving Environment	10
5.1 Description of the area	11
5.1.1 Free State Province	11
5.1.2 Lejweleputswa District Municipality	11
5.1.3 Matjhabeng Local Municipality	12
5.1.4 Masilonyana Local Municipality	12
5.2 Description of the population	12
5.2.1 Population and household sizes	13
5.2.2 Population composition, age, gender and home language	15
5.2.3 Gender	17
5.2.4 Language	18
5.2.5 Education	19
5.2.6 Employment	20
5.2.7 Household Income	22
5.2.8 Housing	22
5.2.9 Household Size	24
5.2.10 Access to water and sanitation	25
5.2.11 Energy	28
5.2.12 Refuse removal	28
6 Stakeholder Identification and Analysis	30
6.1 Approach	30
6.2 List of stakeholders	30



6.2.1	Stakeholder perspectives	32
6.3	Stakeholder Groups and Issues Raised	34
7	Description of Potential Impacts	37
7.1	Social Impact Assessment	37
7.1.1	Impact assessment criteria	38
7.1.2	Social impacts and mitigation	39
7.2	Impact Ratings	62
8	Social Impact Management Plan	65
9	Stakeholder Engagement Plan	67
10	Proposed Grievance Mechanism	69
11	Conclusion and Recommendations	70
12	References	74

List of Figures

Figure 1-1: Location of the proposed Motuane Production Right showing social infrastructure and 2016 ward boundaries.	2
Figure 1-2: Affected farm portions within the Motuane Production Right.	3
Figure 1-3: Renewable-energy EIA applications within and around the production right. (EGIS, 29 May 2026 DEA Renewable Energy Applications)	3
Figure 5-1: Population distribution (percentage; sources: Census 2011, Census 2022).	16
Figure 5-2: Age distribution (percentage; sources: Census 2011, Census 2022).	17
Figure 5-3: Gender distribution (percentage; sources: Census 2011, Census 2022).	18
Figure 5-4: Home language distribution (percentage; sources: Census 2011, Census 2022).	19
Figure 5-5: Education profile, aged 20+ (percentage; sources: Census 2011, Census 2022).	20
Figure 5-6: Labour status, aged 15–65 (percentage; source: Census 2011).	21
Figure 5-7: Employment sector (percentage; source: Census 2011).	21
Figure 5-8: Annual household income (percentage; source: Census 2011).	22
Figure 5-9: Dwelling types (percentage; sources: Census 2011, Census 2022).	23
Figure 5-10: Tenure status (percentage; sources: Census 2011, Census 2022).	24
Figure 5-11: Household size (percentage; sources: Census 2011, Census 2022).	25
Figure 5-12: Main water source (percentage; sources: Census 2011, Census 2022).	26
Figure 5-13: Sanitation (percentage; source: Census 2011).	27
Figure 5-14: Energy source for lighting (percentage; sources: Census 2011, Census 2022).	28
Figure 5-15: Refuse removal (percentage; sources: Census 2011, Census 2022).	29
Figure 7-1: Social sensitivity of the production right area (areas of concern and social no-go areas).	41



List of Tables

Table 0-1: Summary of assessed social impacts and their significance.....	iii
Table 4-1: National legislative, policy and strategic framework applicable to the Motuane Production Right.....	7
Table 4-2: Provincial and municipal frameworks.....	8
Table 4-3: International and social-performance frameworks.....	10
Table 5-1: Population density and growth estimates (sources: Census 2011, Census 2022).....	14
Table 5-2: Household sizes and growth estimates (sources: Census 2011, Census 2022).	14
Table 5-3: Dependency ratios (source: Census 2011; 2022).....	14
Table 5-4: Poverty and SAMPI scores (sources: Census 2011 and Community Survey 2016).....	15
Table 5-5: Average age (source: Census 2011, Census 2022).....	16
Table 5-6: Geotypes (source: Census 2011, households, %).	22
Table 6-1: Detail of stakeholder groups.....	30
Table 6-2: Stakeholder matrix.....	31
Table 6-3: Summary of stakeholder groups and issues raised.	34
Table 7-1: Criteria for determination of impact consequence.	38
Table 7-2: Probability / likelihood scoring.	38
Table 7-3: Significance score classes (absolute value; sign indicates positive or negative).	39
Table 7-4: Determination of the prioritisation factor.....	39
Table 7-5: Final significance rating classes.....	39
Table 7-6: Mitigation for impact on farming livelihoods and interference with existing land uses....	42
Table 7-7: Mitigation for water contamination and groundwater safety.	44
Table 7-8: Mitigation for damage to farm roads, services and infrastructure.	45
Table 7-9: Mitigation for uncertainty around servitudes, property values and land-use rights.	46
Table 7-10: Mitigation for impacts on safety and security of local residents.....	47
Table 7-11: Mitigation for increase in poaching incidents and stock theft.	48
Table 7-12: Mitigation for veld fire risk.	49
Table 7-13: Mitigation for nuisance factors (dust, noise, visual intrusion and sense of place).	51
Table 7-14: Mitigation for community perceptions and fears regarding gas safety.	52
Table 7-15: Mitigation for social pathologies associated with a temporary workforce and contractor behaviour.	54
Table 7-16: Mitigation for overlapping land use and cumulative impacts with renewable-energy projects.	55
Table 7-17: Mitigation for distrust arising from previous development projects.	57
Table 7-18: Mitigation for gender and social inclusion impacts.....	59
Table 7-19: Mitigation for job creation, local procurement and economic expectations.....	61
Table 7-20: Consolidated impact rating table.....	62
Table 8-1: Consolidated Social Impact Management Plan.	65
Table 9-1: Stakeholder engagement plan.....	68



1 Introduction

D3 Energy (Pty) Ltd (hereafter “D3 Energy”) proposes to develop a gas production operation for the recovery of saleable gases, principally methane and helium, within its production right area in the Free State Province. The proposed project is located approximately 15 km south-east of Virginia, within a 14 440 hectares (ha) production right area. The development will comprise up to 43 production wells, supported by ongoing exploration activities, a central helium recovery and methane processing facility (with compressed natural gas (CNG) and/or liquefied natural gas (LNG) capability), and associated infrastructure including gathering pipelines, access roads and a maintenance workshop.

Initial drilling and construction are scheduled for 2027, with production expected to commence in 2028. The project has an anticipated operational life of at least 30 years. Operations will be based locally, with provision for the use of local services, contractors and workforce where feasible. Once several wells have been established in an area, gas will be gathered and piped to the central processing facility, where membrane technology will be used to separate and recover helium and methane for sale in compressed or liquefied form.

The production right area straddles the Matjhabeng and Masilonyana Local Municipalities within the Lejweleputswa District Municipality. [Figure 1-1](#) show the location of the proposed project within its municipal context, together with the surrounding social and physical infrastructure.

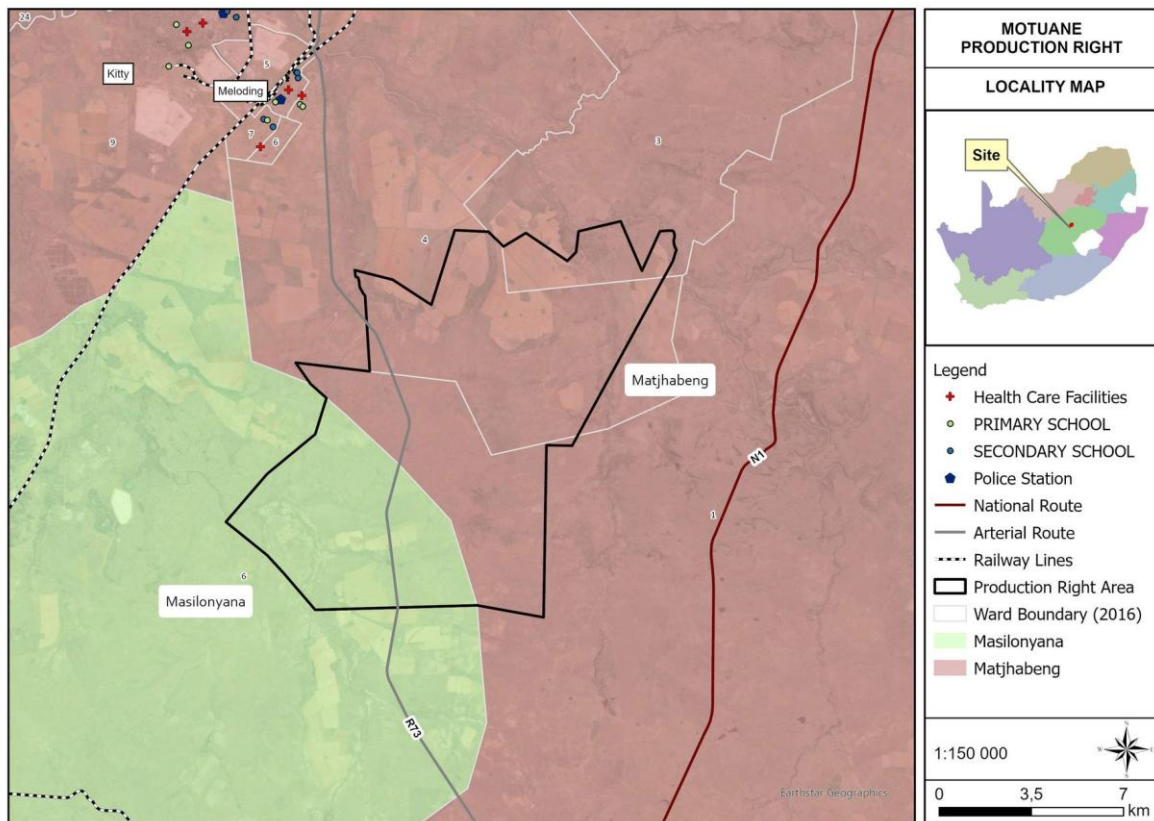


Figure 1-1: Location of the proposed D3 Energy Production Right showing social infrastructure and 2016 ward boundaries.

The farm portions affected by the proposed wells, gathering lines and associated infrastructure are shown in [Figure 1-2](#). The approved and applied-for renewable energy developments in the surrounding area, several of which overlap the production right, are shown in [Figure 1-3](#).

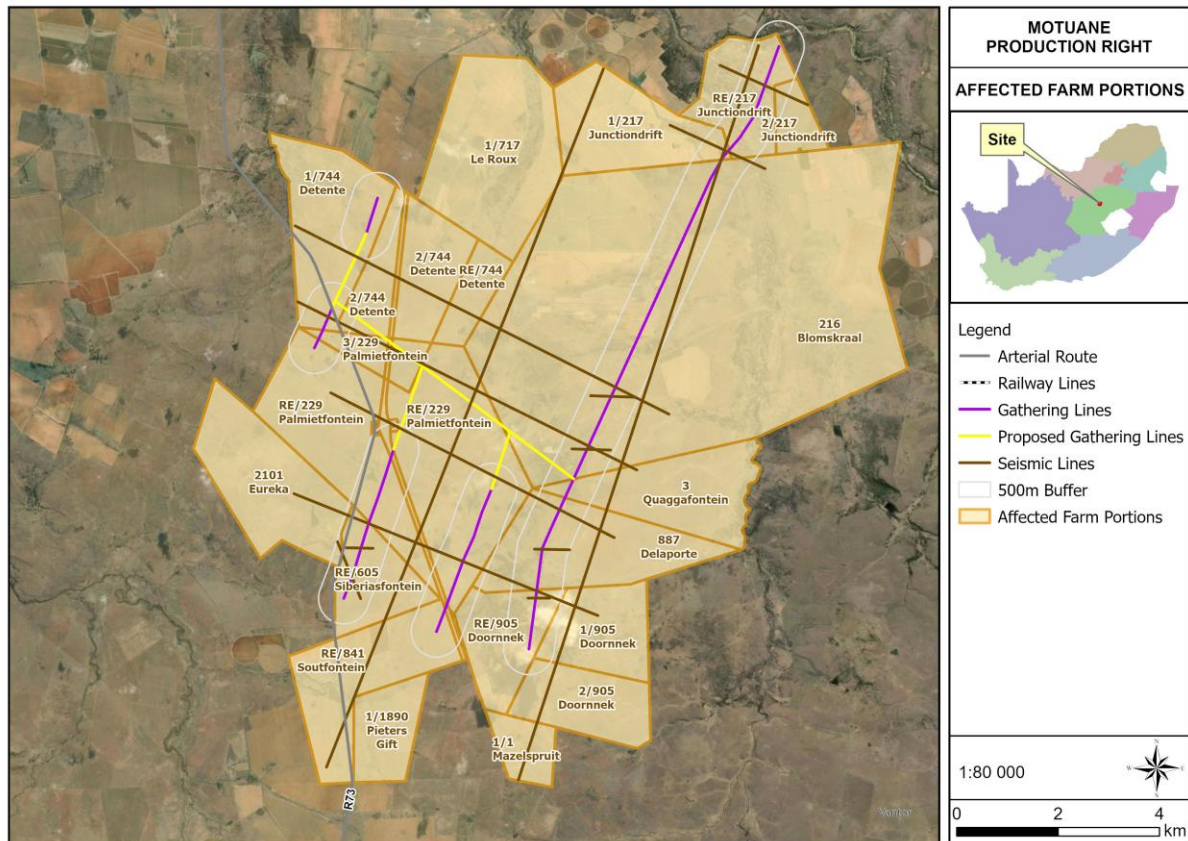


Figure 1-2: Affected farm portions within the D3 Energy Production Right.

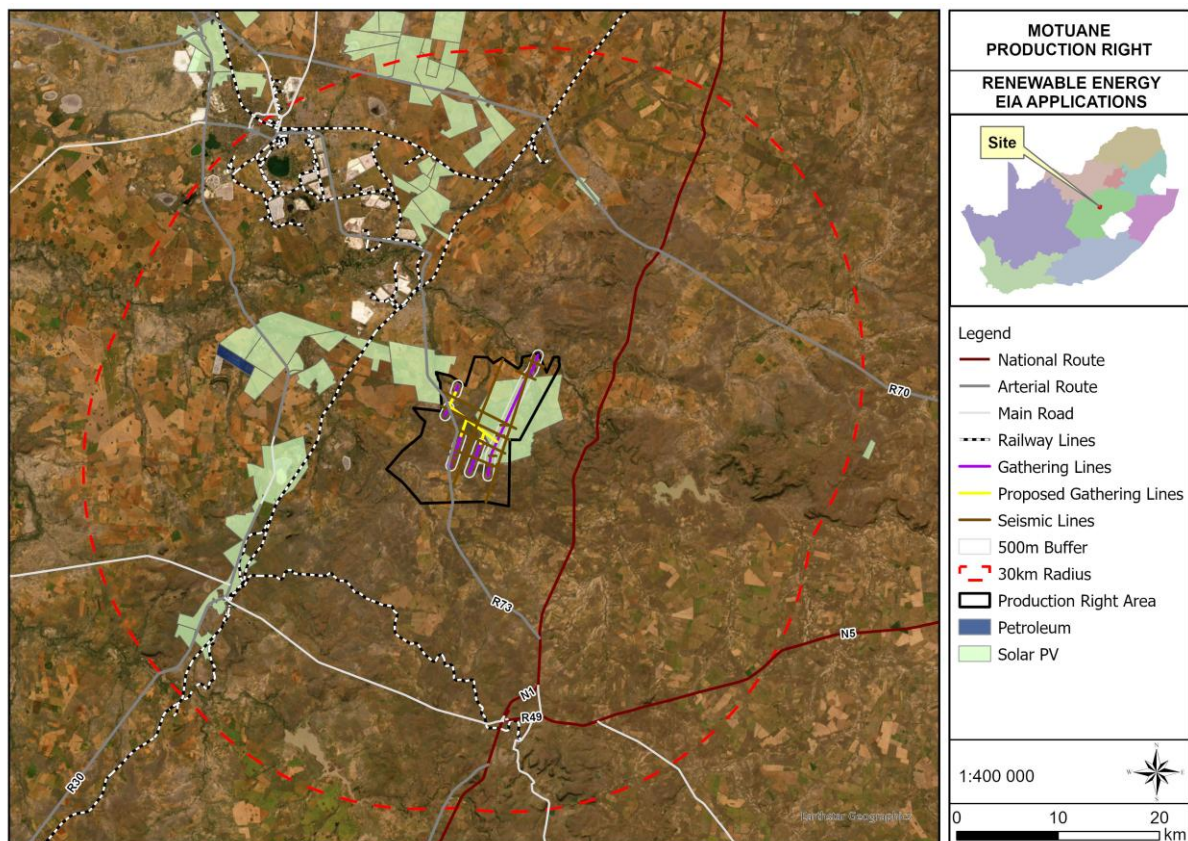


Figure 1-3: Renewable-energy EIA applications within and around the production right. (EGIS, 29 May 2026 DEA Renewable Energy Applications)



The purpose of this report is to provide baseline information regarding the socio-economic environment, to identify possible social and economic impacts and to suggest ways in which these impacts can be mitigated. This will assist the Competent Authority on the project in making informed decisions by providing information on the potential or actual consequences of the proposed activities. The process entailed the following:

- A baseline socio-economic description of the affected environment;
- Identification of potential social and economic change processes that may occur as a result of the project; and
- Identification, assessment and mitigation of potential social and economic impacts.

One of the ways in which social risk can be managed is by conducting a social impact assessment (SIA). Such an assessment can assist with identifying possible social impacts and risks. Disregarding social impacts can alter the cost-benefit equation of development and in some cases even undermine the overall viability of a project. A proper social impact assessment can have many benefits for a proposed development (UNEP, 2002) such as:

- Reduced impacts on communities and individuals.
- Enhanced benefits to those affected.
- Avoiding delays and obstruction – helping to gain development approval (social licence).
- Lowered costs.
- Better community and stakeholder relations; and
- Improved proposals.

It is important to note that there are numerous approved renewable energy (mainly solar photovoltaic) developments located within and adjacent to the production right area. A review of renewable energy environmental authorisation applications on record for the Matjhabeng and Masilonyana Local Municipalities identified more than forty such applications in the broader area ([Figure 1-3](#)). D3 Energy and the affected renewable energy applicants will need to engage one another and make the necessary arrangements to coexist, and the cumulative implications of these overlapping land uses are considered in this assessment.

EIMS was appointed to manage the Environmental Impact Assessment (EIA) for the project, and sub-appointed Equispectives Research and Consulting Services to undertake a social



impact assessment. This report represents the findings and recommendations of that assessment, undertaken during the EIA phase and informed by a programme of stakeholder consultation in the project area.

2 Scope of Work

The purpose of the SIA is to provide input into the EIA and Environmental Management Programme (EMPr) for the proposed D3 Energy Production Right application. The scope of work for this Social Impact Assessment included the following key components:

- A desktop description of the baseline receiving environment specific to the field of expertise (the general surrounding as well as the site-specific environment).
- Identification of individuals or groups within the project area of influence with existing vulnerabilities, or who may experience adverse impacts from the project more acutely than others.
- A field visit to collect qualitative data through key stakeholder interviews with landowners, local residents and other key stakeholders.
- An in-depth analysis of the potential social impacts, both positive and negative, of the D3 Energy Production Right application.
- The identification and provision of mitigation measures for negative impacts, along with recommendations for enhancing positive outcomes; and
- Preparation of a Social Impact Assessment report, including a social impact management plan that details the findings, recommendations and conclusions of the assessment.

3 Methodology

Scientific social research methods were used for this assessment. To clarify the process to the reader, this section provides a brief explanation of the methods that have been used in this study.

3.1 Information base

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

- A literature review (see the list provided in the References section);



- Data from Statistics South Africa (Census 2011, Community Survey 2016 and Census 2022), Census 2022 being the most recent official national census and the primary demographic baseline, with the Community Survey 2016 and Census 2011 used for trend analysis and for variables not yet released at the required geographic level in Census 2022, in line with standard SIA baseline practice;
- Primary qualitative fieldwork in the project area, including key-informant interviews with ward councillors, directly affected and neighbouring landowners, a local business forum and an environmental-justice network; and
- Professional judgement based on experience gained with similar projects.

Fieldwork was undertaken in the project area during early June 2026. An interview schedule (a list of topics, rather than a structured questionnaire) was used to allow respondents the freedom to elaborate on their views. In-depth interviews and in-the-moment discussions were held with key stakeholders, and field notes were kept of all interviews (see Sections 6.2 and 6.3 for the categories of stakeholders engaged). The consultation undertaken for this SIA supplements the broader public participation process being managed for the EIA, and the findings of that process feed into this report.

It is believed that a participatory approach is the best way to approach social research in the South African context. The World Bank Environmental and Social Standards, the IFC Performance Standards, the Equator Principles, the International Principles for Social Impact Assessment, and the IAIA guidance document for assessing and managing the social impacts of projects guided the study. International standards and principles were adapted to ensure that they can be applied in the local social context. Apart from obtaining environmental permits as required by law, any proposed project also requires a “social licence to operate” from the community in which it is situated. A social licence to operate refers to the ongoing acceptance and approval of a project by host communities and stakeholders. Unlike a statutory permit it is informal and dynamic, cannot be issued by an authority, and is earned and retained through trust, procedural fairness, transparency and perceived legitimacy; it can be granted, withheld or withdrawn over time. In this study its status is inferred from stakeholder engagement rather than measured directly. This is a crucial element in ensuring the successful implementation of the recommendations resulting from the environmental



studies. The methodology therefore focuses on involving the affected public in the research and planning where it is realistically possible and executable, using methods that are most appropriate to the community. Information obtained through the public processes informs the writing of the social report.

4 Legislative and Policy Framework

Legislation and policies reflect societal norms and values, and the legal and policy context plays an important role in identifying and assessing the potential social impacts of a proposed development. Although no single act deals explicitly with social impact assessment, numerous instruments require specific social outcomes relevant to this project. The tables below summarise the key national, provincial, municipal and international frameworks applicable to the proposed D3 Energy Production Right and their relevance to the project.

4.1 National Legislative and Policy Framework

The following table outlines the key national legislation and policy instruments guiding petroleum development, environmental management and sustainable development in South Africa, and their relevance to the proposed project.

Table 4-1: National legislative, policy and strategic framework applicable to the D3 Energy Production Right.

Policy / Framework	Purpose and Strategic Focus	Relevance to the D3 Energy Production Right
Constitution of the Republic of South Africa, 1996 (Bill of Rights)	Guarantees fundamental rights, including the right to a healthy environment, access to land and security of tenure, and just administrative action.	Underpins the SIA's focus on human rights, the equitable distribution of project costs and benefits, and the protection of affected landowners and communities.
National Environmental Management Act (NEMA), 107 of 1998	Provides the overarching framework for environmental governance and integrated, sustainable development, and requires impact assessment and public participation.	The project is subject to an EIA under NEMA; this SIA forms part of that process, ensuring social risks are identified and mitigated and that affected parties participate.
Mineral and Petroleum Resources Development Act (MPRDA), 28 of 2002	Governs petroleum-resource development; requires assessment of socio-economic impacts and a Social and Labour Plan (SLP).	D3 Energy requires a production right and SLP under the MPRDA, which obliges the holder to contribute to local socio-economic development, employment and skills/enterprise development.
National Water Act, 36 of 1998	Protects water resources on the principles of sustainability and equity	Directly relevant given farmers' heavy reliance on groundwater and concerns over abstraction pressure and



	and secures basic human and ecological water needs.	contamination; water use must be authorised and managed.
National Heritage Resources Act, 25 of 1999	Protects cultural and heritage resources and requires that affected communities be consulted in their management.	Any heritage resources encountered during drilling and construction must be managed appropriately and affected communities consulted.
Promotion of Administrative Justice Act (PAJA), 3 of 2000	Gives effect to the right to lawful, reasonable and procedurally fair administrative action.	Requires that affected parties be given a fair opportunity to comment, reinforcing the public participation that underpins this SIA.
Gas Act, 48 of 2001 (with the Gas Amendment Bill, 2024 and Piped Gas Regulations)	Promotes the orderly development of the piped-gas industry and establishes the national gas regulatory framework.	Governs the licensing and regulation of the gas gathering, processing and sale activities proposed for the project.
National Development Plan (NDP) 2030	National vision to eliminate poverty and reduce inequality through job creation, infrastructure and a transition to a low-carbon economy.	The project contributes to NDP objectives of energy development and local economic stimulation in a region affected by mining decline.

4.2 Provincial and Municipal Frameworks

The table below summarises the provincial and municipal planning frameworks that shape development priorities within the Free State, the Lejweleputswa District, and the Matjhabeng and Masilonyana Local Municipalities, and their alignment with the project.

Table 4-2: Provincial and municipal frameworks.

Policy / Framework	Purpose and Strategic Focus	Relevance to the D3 Energy Production Right
Free State Provincial Growth and Development Strategy (FGDS) / Vision 2030	Seeks inclusive economic growth, sustainable job creation, diversification away from the declining mining sector, and skills development.	The project supports diversification and job creation in the goldfields and aligns with provincial priorities for the green economy.
Free State Spatial Development Framework (FSDF)	Guides the sustainable use of provincial resources and integrated spatial development.	Informs the spatial integration of the project within the provincial development context.
Lejweleputswa District Municipality IDP (2022–2027)	Prioritises agro-processing, manufacturing, renewable energy, tourism, and basic service delivery and infrastructure.	The project aligns with district priorities for energy investment and economic diversification in a mining-dependent district.
Matjhabeng Local Municipality IDP (2024/2025)	Prioritises water, sanitation, roads, local economic development and SMME support, skills development, safety, and infrastructure renewal.	The project can support LED, SMME and skills priorities; impacts on roads, water and safety must be managed in line with municipal plans.



Masilonyana Local Municipality IDP (2024/2025)	Prioritises bulk-infrastructure upgrades, critical roads, LED, tourism, and partnerships with the mining sector.	The project can contribute to LED and partnership priorities; the municipality's small revenue base heightens the importance of local benefit.
--	--	--

4.3 International and Social Performance Policies

The following international frameworks and standards provide global benchmarks for environmental, social and ethical performance and inform the project's approach to sustainability, social responsibility and stakeholder engagement.

**Table 4-3: International and social-performance frameworks.**

Policy / Framework	Purpose and Strategic Focus	Relevance to the D3 Energy Production Right
United Nations Sustainable Development Goals (SDGs) (2015–2030)	Global framework to end poverty and ensure sustainable, inclusive development through 17 interlinked goals.	The project contributes to SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth) and SDG 13 (climate action). Natural gas is assessed as a lower-carbon transition fuel rather than a clean-energy source; the reference to SDG 7 (whose official title is “Affordable and Clean Energy”) concerns the project’s potential contribution to affordable and reliable energy supply during the energy transition and is not intended to characterise the project as a source of clean energy.
IFC Performance Standards (2012)	Global benchmarks for managing environmental and social risks, including labour, community health and safety, land use and resettlement.	The SIA and management measures are aligned with IFC PS1–PS8 for responsible social risk management and equitable benefit-sharing.
Equator Principles (2020)	Risk-management framework for assessing and managing environmental and social risks in project finance.	Relevant where project finance is sought; ensures internationally recognised due-diligence standards are met.
ISO 26000 / SANS 26000: Social Responsibility	Guides organisations to operate ethically and transparently and to contribute to the health and welfare of society.	Informs D3 Energy’s approach to ethical operations, fair labour practices and meaningful community engagement.
International Principles for Social Impact Assessment (IAIA, 2015)	Defines the core values and principles underpinning good SIA practice, including equity, participation and sustainability.	Informs the methodology of this SIA, ensuring a participatory, transparent and equitable assessment and management of social impacts.

5 Receiving Environment

According to NEMA (1998), the environment refers to the surroundings in which humans exist. Human social environments encompass the immediate physical surroundings, social relationships and cultural milieus within which defined groups of people function and interact, including built infrastructure, the occupational structure, labour markets, social and economic processes, services, power relations, government, social inequality, cultural practices, and beliefs about place and community (Barnett & Casper, 2001). Environment–behaviour relationships are interrelationships: the environment influences and constrains the behaviour of people, but behaviour also changes the environment (Bell, Fisher, Baum &



Greene, 1996). The impacts of a project on people can only be truly understood if their environmental context is understood. The baseline description below describes the area within a provincial, district and local context and the population on a number of demographic, social and economic variables.

5.1 Description of the area

The proposed project is located in Wards 1, 3 and 4 of the Matjhabeng Local Municipality and Ward 6 of the Masilonyana Local Municipality, both of which form part of the Lejweleputswa District Municipality in the Free State Province (2016 municipal boundaries). The baseline description focuses on these areas.

5.1.1 Free State Province

The Free State province lies in the centre of South Africa between the Vaal River in the north and the Orange River in the south. With a total area of 129 825 km², the Free State is the country's third largest province but has the second smallest population. It is a rural province whose economic activities are dominated by mining, agriculture and manufacturing; it is the fifth-largest producer of gold in the world and home to Sasol. About 90% of the Free State is used for crop production, contributing a significant share of national maize, wheat, sorghum and other outputs. Bloemfontein is the provincial capital. The province is divided into one metropolitan municipality (Mangaung) and four district municipalities: Fezile Dabi, Lejweleputswa, Xhariep and Thabo Mofutsanyane.

5.1.2 Lejweleputswa District Municipality

The Lejweleputswa District Municipality (LDM) is situated in the north-western part of the Free State and is accessible from Johannesburg, Cape Town, Klerksdorp and Kimberley via the N1. The district covers 32 286 km², almost a third of the province, and consists of the Masilonyana, Matjhabeng, Nala, Tokologo and Tswelopele Local Municipalities. The economy of the district relies heavily on the gold mining sector, which is dominant in the Matjhabeng and Masilonyana Local Municipalities. The mining sector is on a downward trend, and many businesses that traditionally depended on mining have closed or are closing; the other municipalities are dominated by agriculture.



5.1.3 Matjhabeng Local Municipality

The main towns in the Matjhabeng Local Municipality are Welkom, Odendaalsrus, Virginia, Hennenman, Allanridge and Ventersburg. The economy is centred on mining activities in and around Welkom, Allanridge, Odendaalsrus and Virginia. Manufacturing aimed at the mining sector exists to a limited extent, and other main economic sectors include tourism, agriculture, gold jewellery, transportation (logistics) and retail.

5.1.4 Masilonyana Local Municipality

The main towns in the Masilonyana Local Municipality are Theunissen, Brandfort, Winburg, Verkeerdevlei and Soutpan. It is a semi-rural municipality whose economy is primarily driven by mining and agriculture. Mining remains the largest contributor to economic output (about 40.2% of Gross Value Added in 2022) but provides only around 8% of local employment due to its capital-intensive nature. Agriculture dominates land use and contributes significantly to rural livelihoods. The largest sources of employment are trade, community services, agriculture and private households. The municipality's current development focus is on infrastructure upgrades, financial sustainability and partnerships with the mining sector to support inclusive growth.

5.2 Description of the population

The baseline description of the population takes place on three levels – provincial, district and local. Impacts can only truly be comprehended by understanding the differences and similarities between these levels. The data used were sourced from Census 2022, Community Survey 2016 and Census 2011. Where possible, data are reviewed at ward level. Census 2022 data released to date are available only to local-municipal level, so ward-level data are drawn from Census 2011 (categorised according to the 2016 ward delineations) and supplemented by Community Survey 2016. A notable feature of Census 2022 is a very high undercount (about 31% of people and 30% of households); at aggregate level it is robust, but at sub-provincial level it should be treated as indicative rather than absolute. Labour market indicators across censuses are not strictly comparable over time owing to changes in questionnaires.



5.2.1 Population and household sizes

The greatest increase in population since 2011 has occurred at local level, though still below the national average of 19.8%. Population density has increased across the study area, with the highest density in the Matjhabeng LM ([Table 5-1](#)).

**Table 5-1: Population density and growth estimates (sources: Census 2011, Census 2022).**

Area	Size (km ²)	Population 2011	Population 2022	Density 2011	Density 2022	Growth (%)
Free State Province	129 825	2 745 590	2 964 412	21.15	22.83	7.97
Lejweleputswa DM	31 930	624 746	679 746	19.35	21.05	8.80
Matjhabeng LM	5 155	407 020	439 034	71.53	77.16	7.87
Masilonyana LM	6 618	59 895	63 800	9.05	9.64	6.52

The number of households has increased on all levels (Table 5-2). The average household size has increased across the study area, meaning households have more members – a finding relevant to dependency and livelihood pressures.

Table 5-2: Household sizes and growth estimates (sources: Census 2011, Census 2022).

Area	Households 2011	Households 2022	Avg size 2011	Avg size 2022	Growth (%)
Free State Province	823 285	845 250	3.33	3.51	2.67
Lejweleputswa DM	182 247	189 807	3.43	3.58	4.15
Matjhabeng LM	123 382	126 068	3.30	3.48	2.18
Masilonyana LM	16 476	17 853	3.64	3.57	8.36

The total dependency ratio measures the pressure on the productive population. In 2011 the total dependency ratio in the Matjhabeng LM was lower than at district or provincial level, while in the Masilonyana LM it was higher. Census 2022 showed the total dependency ratio decreasing in the Free State but increasing in the Matjhabeng LM. Ward 6 of the Masilonyana LM, despite a low total dependency ratio, recorded the highest employed dependency ratio (88.16), pointing to a heavy burden on the few who are employed (Table 5-3).

Table 5-3: Dependency ratios (source: Census 2011; 2022).

Area	Total	Youth	Aged	Employed
Free State Province	52.88	44.48	8.39	76.34
Free State '22	50.67	40.15	10.52	–
Lejweleputswa DM	51.33	43.71	7.61	77.16
Lejweleputswa DM '22	51.70	41.74	9.96	–
Matjhabeng LM	46.93	40.09	6.85	75.46



Matjhabeng LM '22	49.67	40.19	9.48	–
Ward 1	57.50	48.40	9.10	81.53
Ward 3	50.87	39.24	11.63	73.16
Ward 4	50.93	45.96	4.98	80.53
Masilonyana LM	54.99	45.99	9.00	82.14
Masilonyana LM '22	53.65	41.71	11.94	–
Ward 6	40.36	33.35	7.01	88.16

Poverty is multidimensional. The South African Multidimensional Poverty Index (SAMPI) assesses poverty across health, education, standard of living and economic activity. The poverty headcount increased on all levels since 2011. The SAMPI score decreased in the Matjhabeng LM between 2011 and 2016 (an improvement in some respects) but increased in the Masilonyana LM owing to a rising poverty headcount, indicating worsening poverty there (Table 5-4).

Table 5-4: Poverty and SAMPI scores (sources: Census 2011 and Community Survey 2016).

Area	Headcount 2011 (%)	Intensity 2011 (%)	SAMPI 2011	Headcount 2016 (%)	Intensity 2016 (%)	SAMPI 2016
Free State Province	5.5	42.2	0.023	5.5	41.7	0.023
Lejweleputswa DM	5.6	42.8	0.024	4.8	42.2	0.020
Matjhabeng LM	5.5	43.0	0.024	4.3	41.8	0.018
Masilonyana LM	5.3	41.8	0.022	6.5	41.8	0.027

5.2.2 Population composition, age, gender and home language

In all the areas under investigation, the majority of the population belongs to the Black African population group (Figure 5-1). The White population group is proportionally larger in Ward 3, consistent with its higher incidence of Afrikaans home-language speakers.

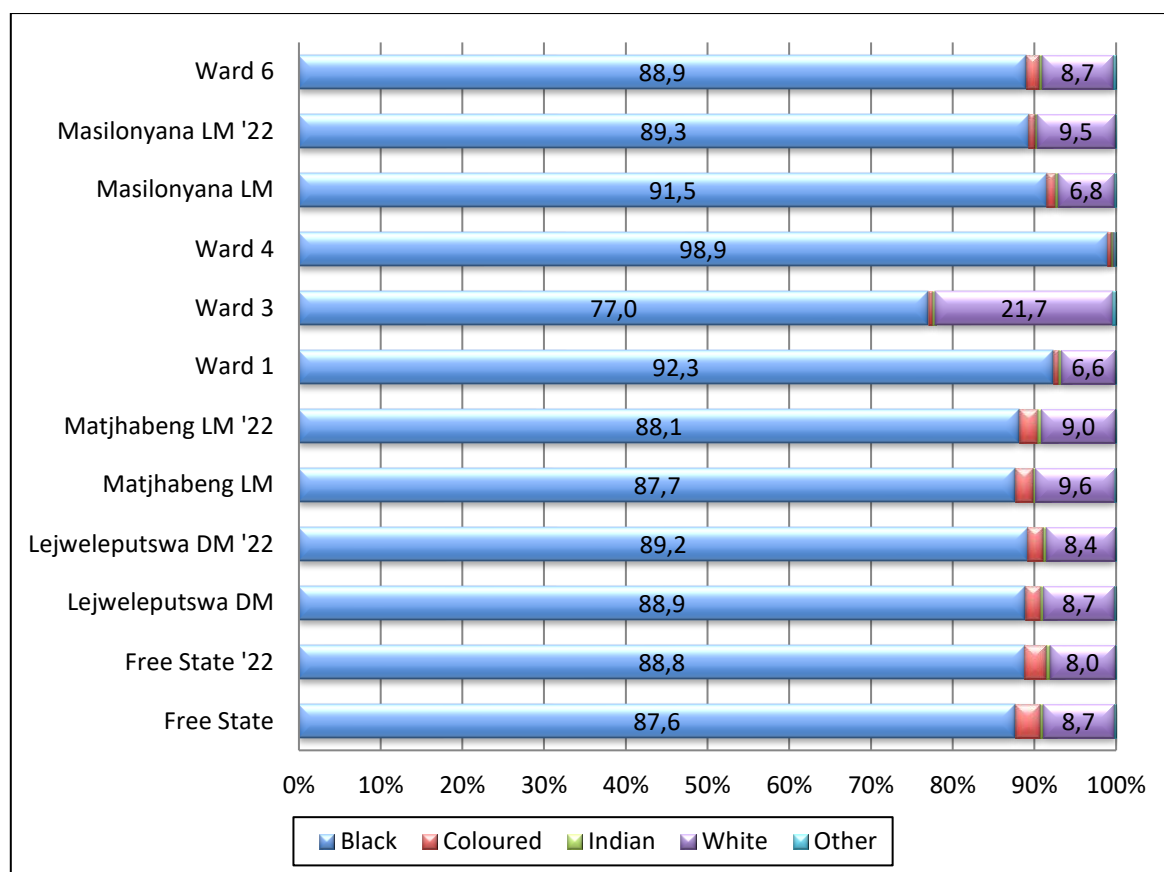


Figure 5-1: Population distribution (percentage; sources: Census 2011, Census 2022).

The average age is similar across local, district and provincial levels and has increased between 2011 and 2022, reflecting a slightly ageing population (Table 5-5). Ward 6 of the Masilonyana LM and Ward 3 of the Matjhabeng LM have older populations (Figure 5-2).

Table 5-5: Average age (source: Census 2011, Census 2022).

Area	Average age (years)	Area	Average age (years)
Free State Province	28.38	Ward 1	30.20
Free State Province '22	30.61	Ward 3	30.46
Lejweleputswa DM	28.52	Ward 4	27.93
Lejweleputswa DM '22	30.28	Masilonyana LM	28.73
Matjhabeng LM	28.89	Masilonyana LM '22	30.83
Matjhabeng LM '22	30.53	Ward 6	31.21

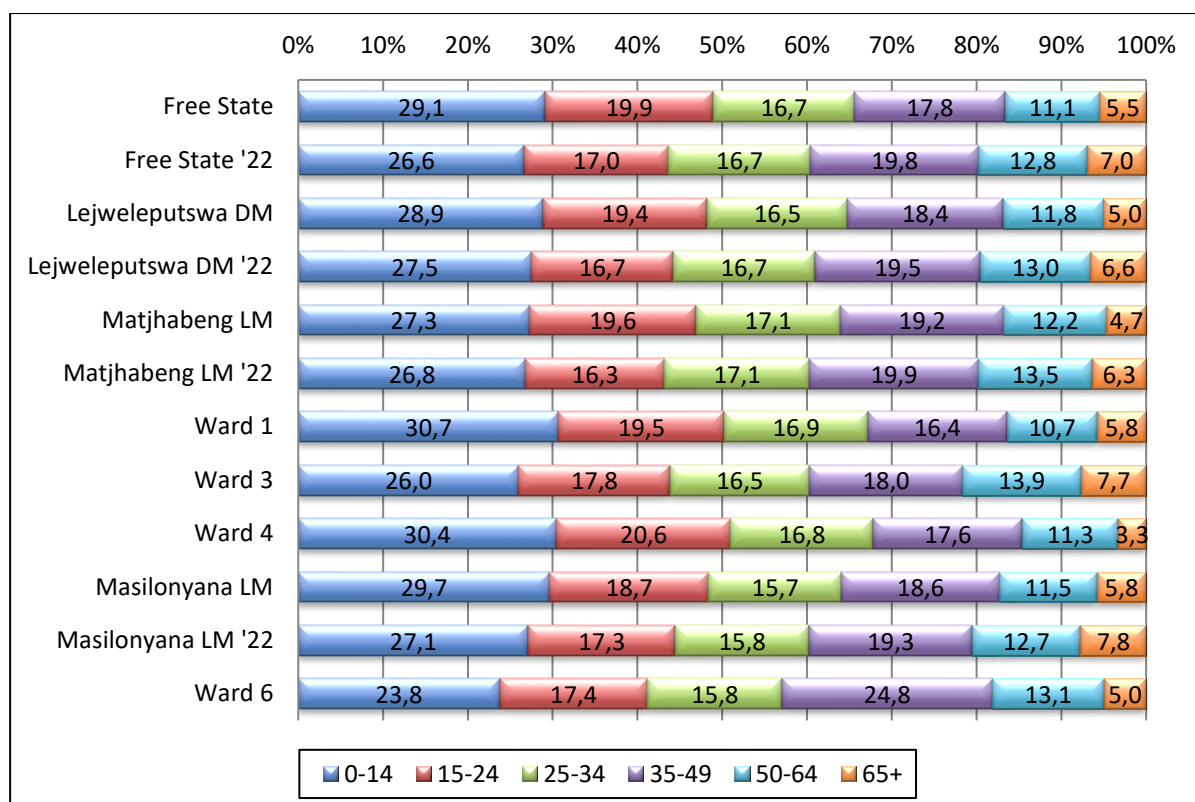


Figure 5-2: Age distribution (percentage; sources: Census 2011, Census 2022).

5.2.3 Gender

The gender distribution at provincial, district and local level is balanced (Figure 5-3). At ward level there is a slight bias towards females in most wards, except Ward 6 of the Masilonyana LM, which shows a firm bias towards males – typical of areas with mining and farm-labour migration.

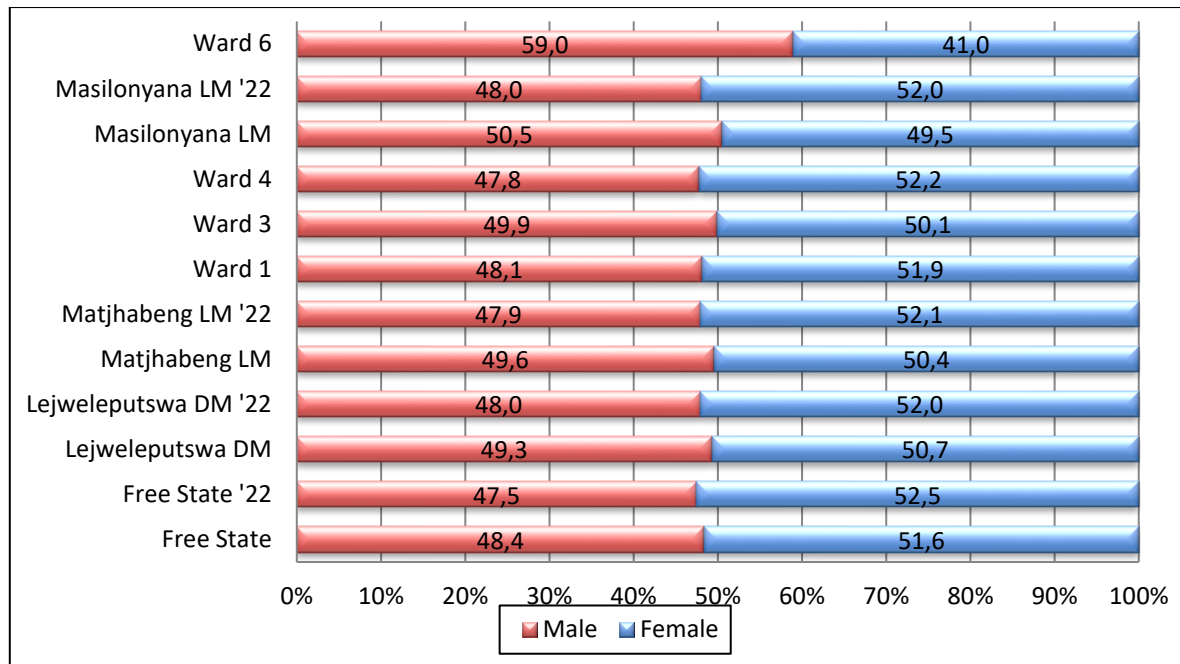


Figure 5-3: Gender distribution (percentage; sources: Census 2011, Census 2022).

5.2.4 Language

The majority of people in the area have Sesotho as their home language (Figure 5-4). Ward 3 has a relatively high incidence of Afrikaans home-language speakers. Based on the language profile, communication with local communities should take place in Sesotho, Afrikaans and English.

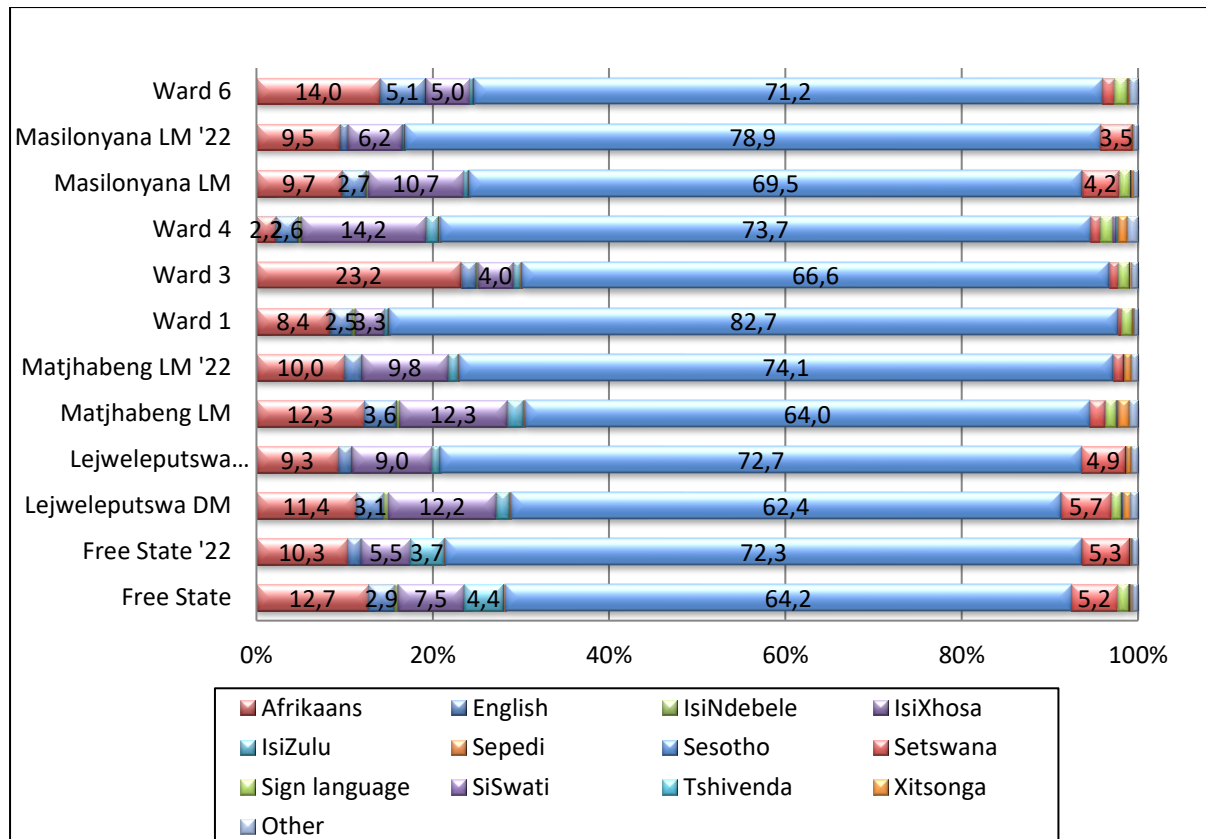


Figure 5-4: Home language distribution (percentage; sources: Census 2011, Census 2022).

5.2.5 Education

Education profiles for those aged 20 years or older are shown in Figure 5-5. In 2011 literacy levels varied at ward level, with the lowest levels in Ward 1 of the Matjhabeng LM and Ward 6 of the Masilonyana LM – a consideration for the design of recruitment, training and communication materials.

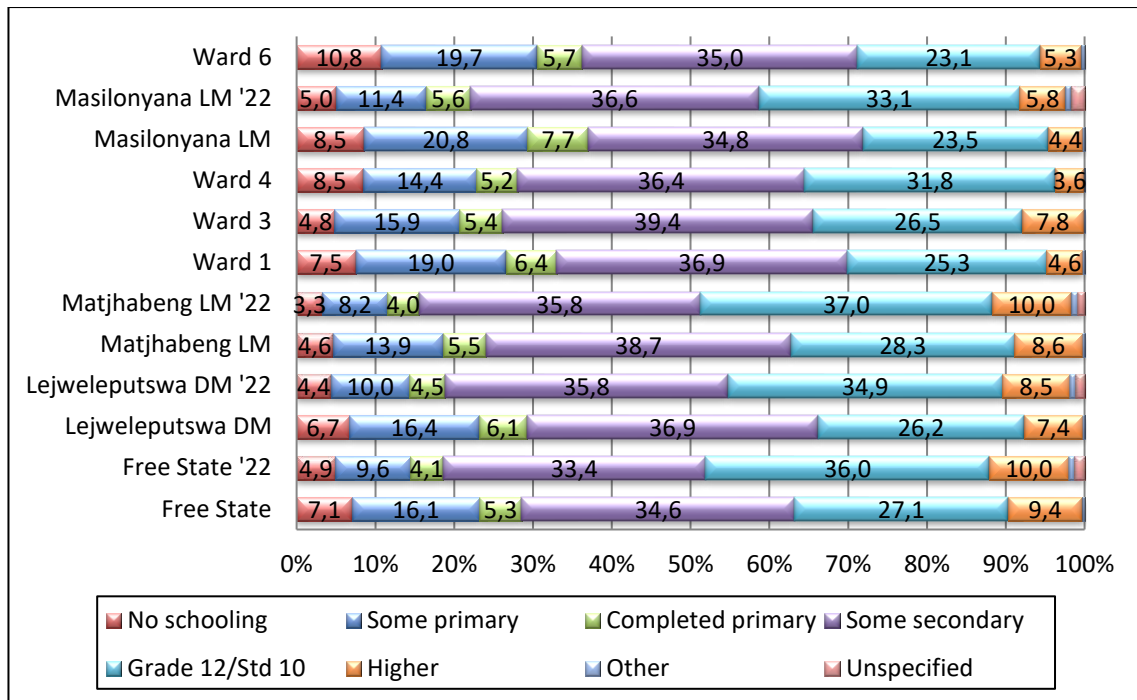


Figure 5-5: Education profile, aged 20+ (percentage; sources: Census 2011, Census 2022).

5.2.6 Employment

In 2011 Ward 3 had the highest proportion of economically active people (aged 15–65) who were employed, while Ward 6 of the Masilonyana LM had the lowest (Figure 5-6). Since 2010 employment in the gold-mining industry – a major employer in the area – declined steadily from 157 019 in 2010 to 93 841 in 2022, so the proportion of unemployed people is likely to have increased since 2011. This decline is a fundamental driver of the strong community demand for employment that the project will encounter.

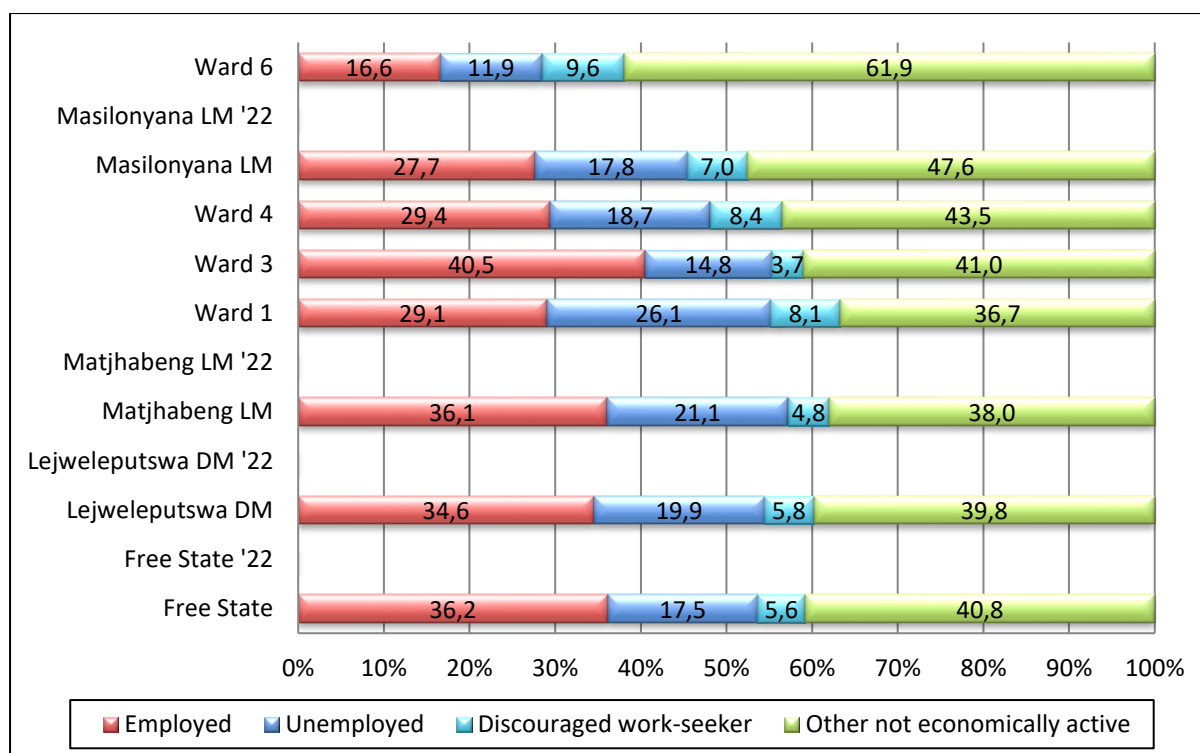


Figure 5-6: Labour status, aged 15–65 (percentage; source: Census 2011).

The majority of employed people work in the formal sector (Figure 5-7). Wards 3 and 4 had the highest proportion of people working in the formal sector, while Ward 6 had a notably higher share employed in private households.

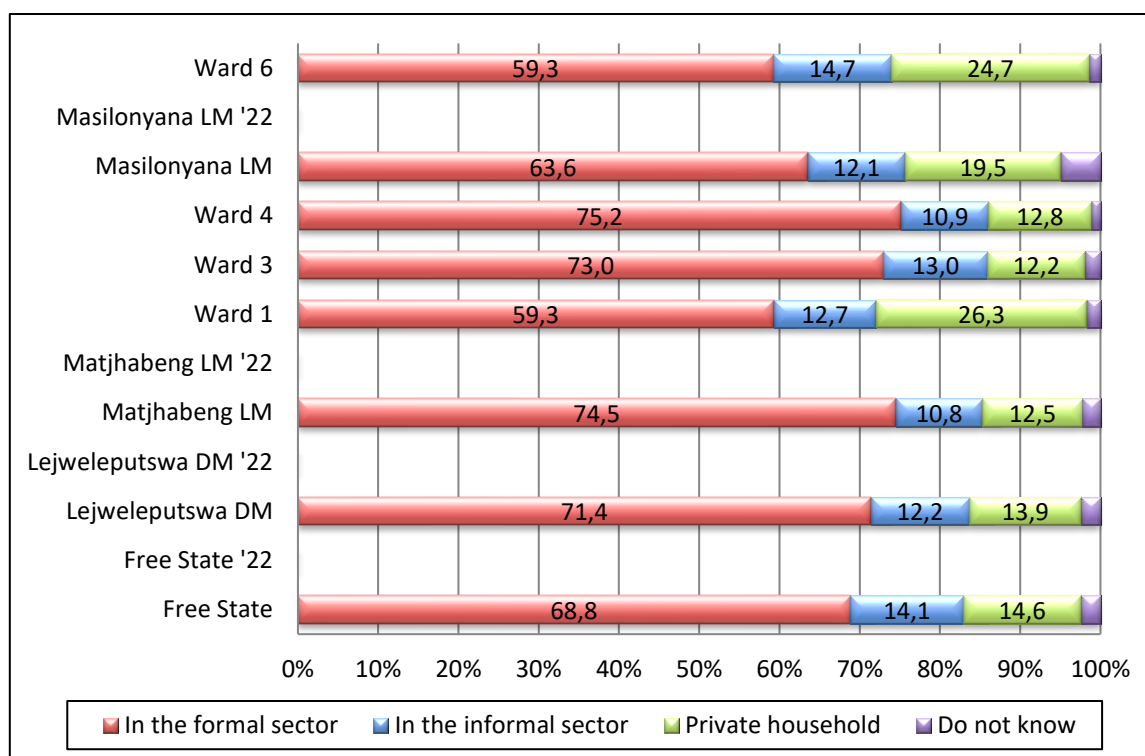


Figure 5-7: Employment sector (percentage; source: Census 2011).



5.2.7 Household Income

Household income levels are shown in Figure 5-8. Ward 3 had the highest average household income, while Ward 1 had the lowest. A substantial proportion of households reported no income, underlining dependence on social grants and the importance of any income-generating opportunities the project may bring.

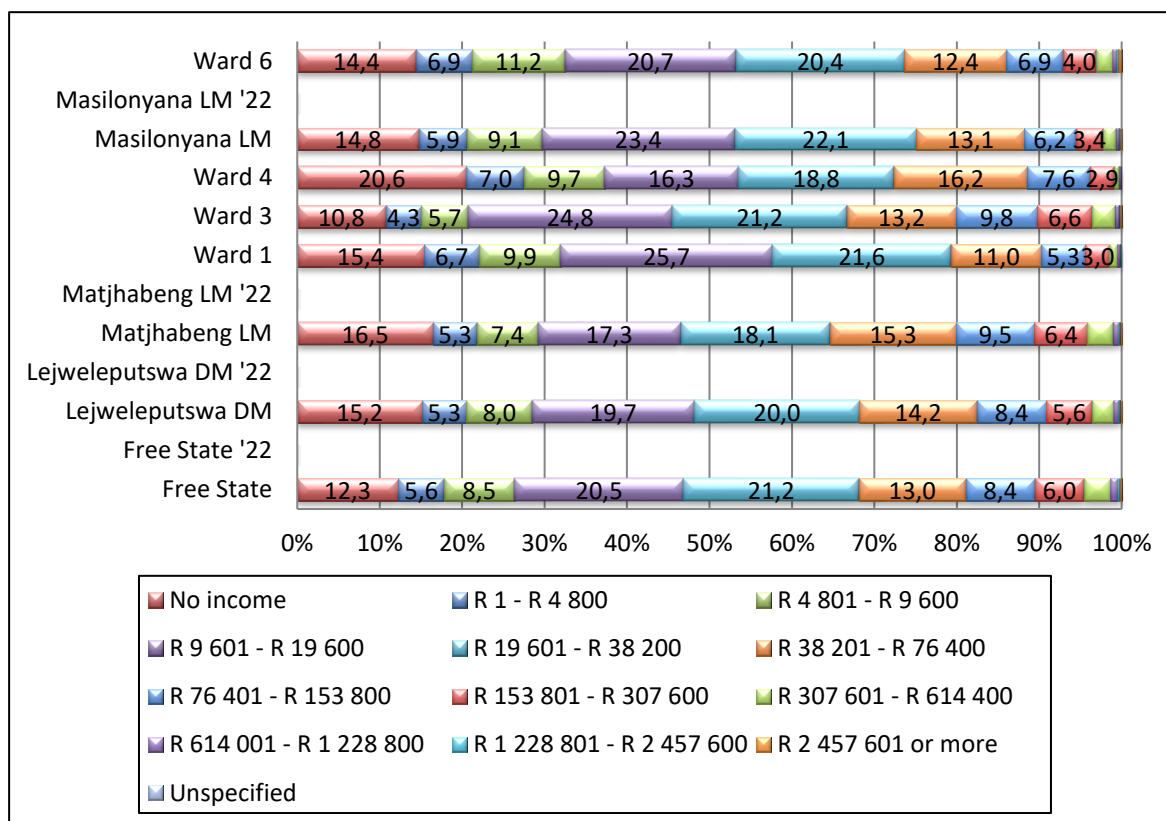


Figure 5-8: Annual household income (percentage; source: Census 2011).

5.2.8 Housing

At ward level the majority of households live in areas classified as urban; however, all wards contain households living on land classified as farmland (Table 5-6). Ward 3 (18.51%) and Ward 6 (12.65%) have the highest proportions of farm households – the residents most directly exposed to on-farm project activities.

Table 5-6: Geotypes (source: Census 2011, households, %).

Area	Urban	Tribal/Traditional	Farm
Free State Province	84.50	8.80	6.70
Lejweleputswa DM	93.86	–	6.14
Matjhabeng LM	97.67	–	2.33



Area	Urban	Tribal/Traditional	Farm
Ward 1	88.83	–	11.17
Ward 3	81.49	–	18.51
Ward 4	98.74	–	1.26
Masilonyana LM	91.40	–	8.60
Ward 6	87.35	–	12.65

Most dwellings are houses or brick/concrete-block structures on a separate stand, yard or farm (Figure 5-9). Ward 3 had the largest proportion of households renting their dwellings, with almost a quarter renting (Figure 5-10).

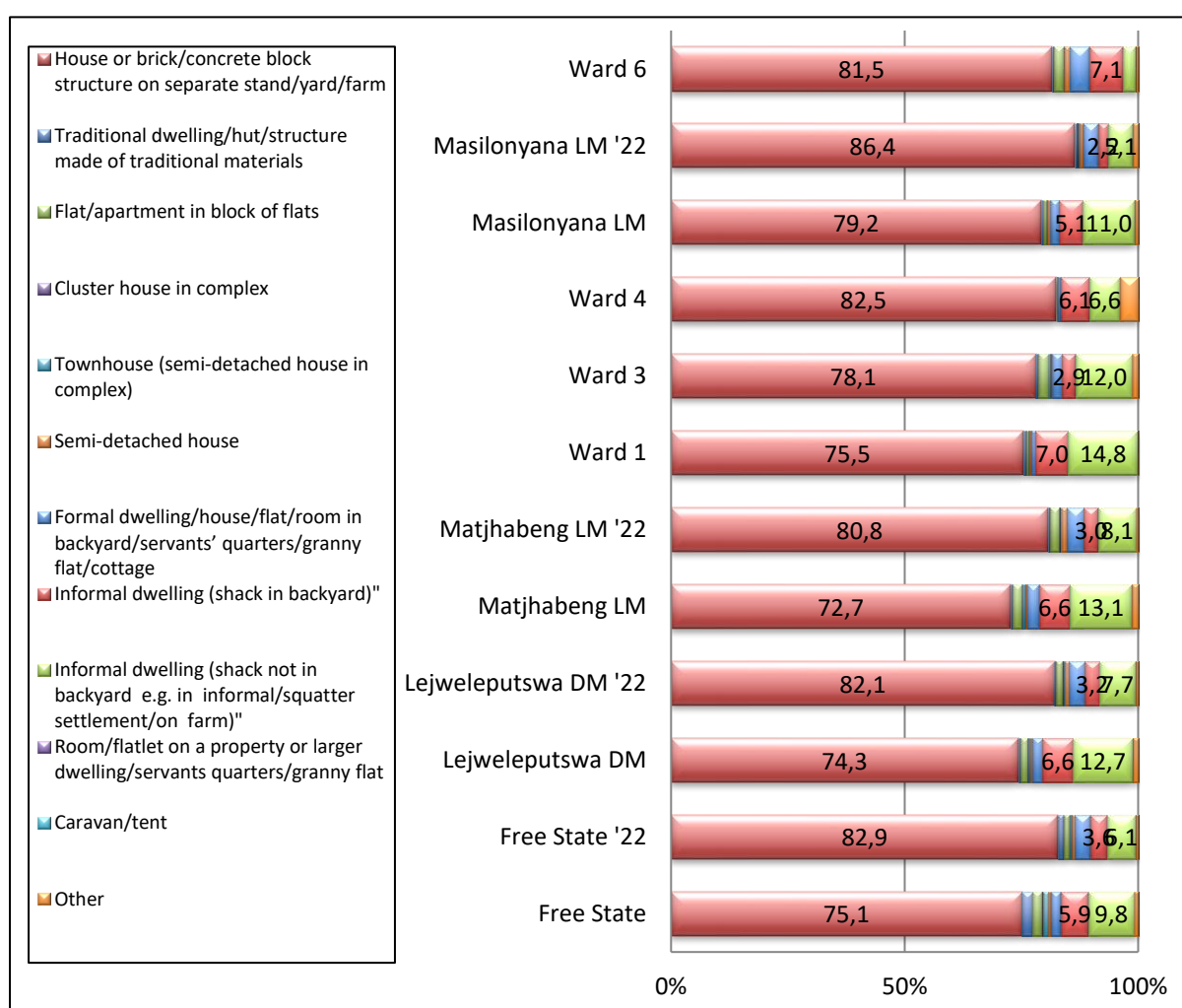


Figure 5-9: Dwelling types (percentage; sources: Census 2011, Census 2022).

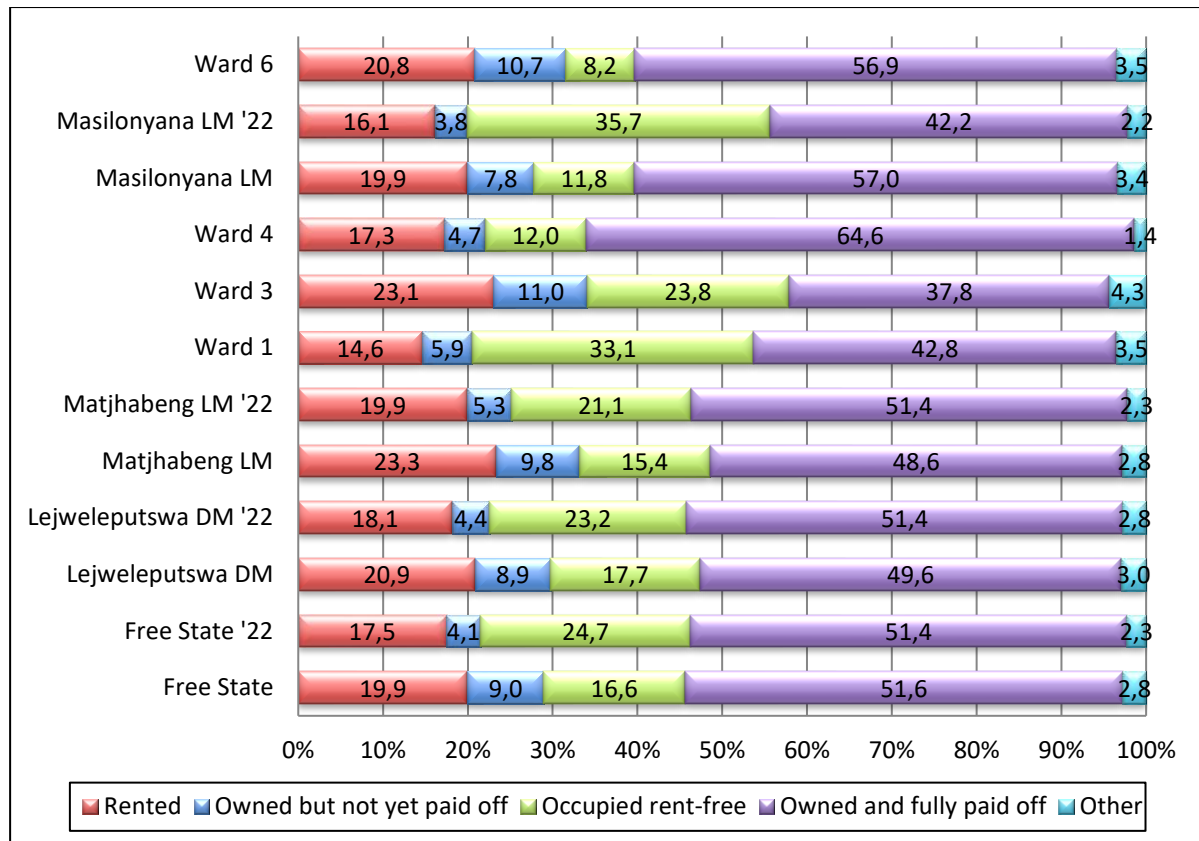


Figure 5-10: Tenure status (percentage; sources: Census 2011, Census 2022).

5.2.9 Household Size

Household sizes vary at ward level, with approximately 40% or more of households consisting of one or two people (Figure 5-11). This is typical of mining areas with migrant workers.

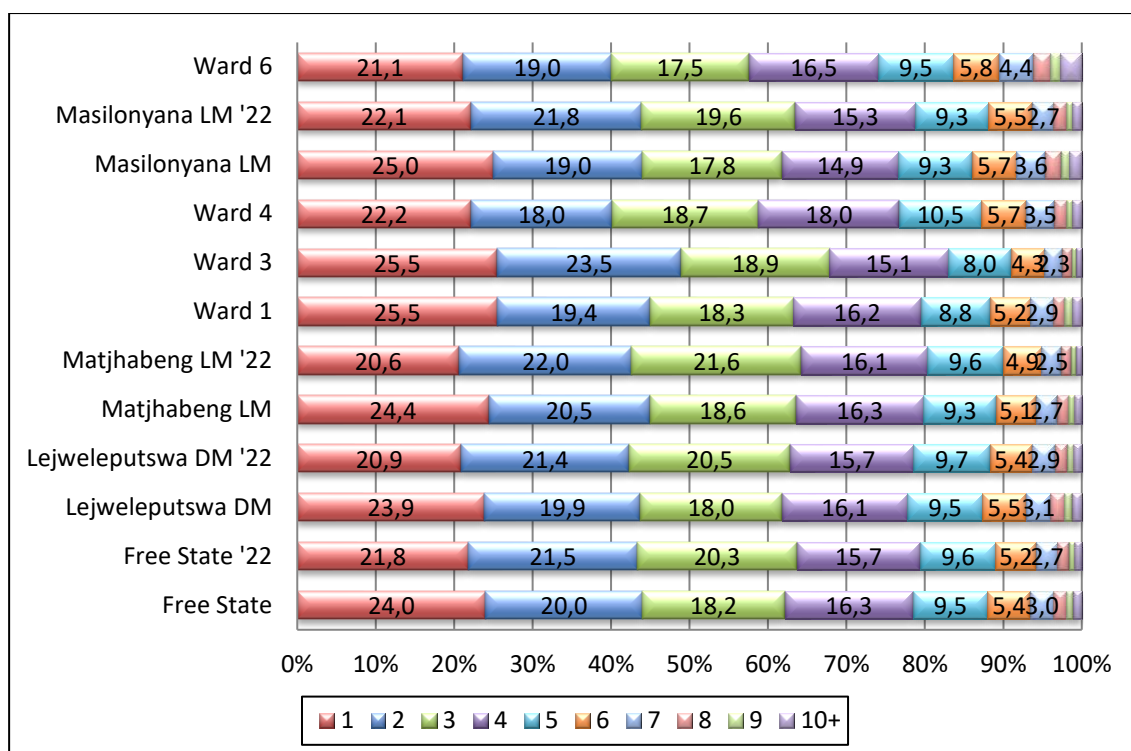


Figure 5-11: Household size (percentage; sources: Census 2011, Census 2022).

5.2.10 Access to water and sanitation

Ward 3 of the Matjhabeng LM has the lowest incidence of households accessing water from a local or regional water scheme, and the highest incidence of households obtaining water from a borehole (Figure 5-12). This reliance on groundwater is significant given the concerns raised by farmers about potential groundwater contamination and abstraction pressure.

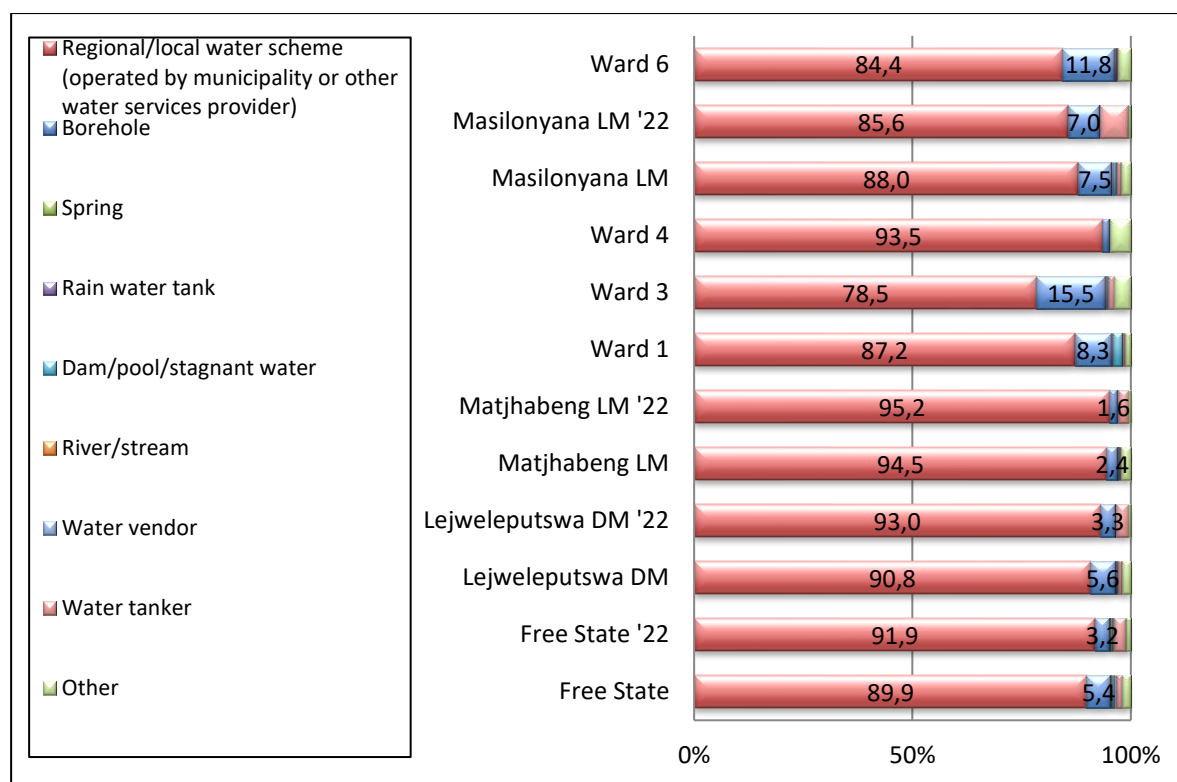


Figure 5-12: Main water source (percentage; sources: Census 2011, Census 2022).

Almost half of the households in Ward 4 have access to piped water inside the dwelling; the other wards have lower levels of in-dwelling access (Figure 5-12). Access to flush toilets connected to a sewerage system varies between wards; Ward 1 had the highest incidence of households without access to sanitation, while Ward 3 had the highest incidence of ventilated pit toilets (Figure 5-13).

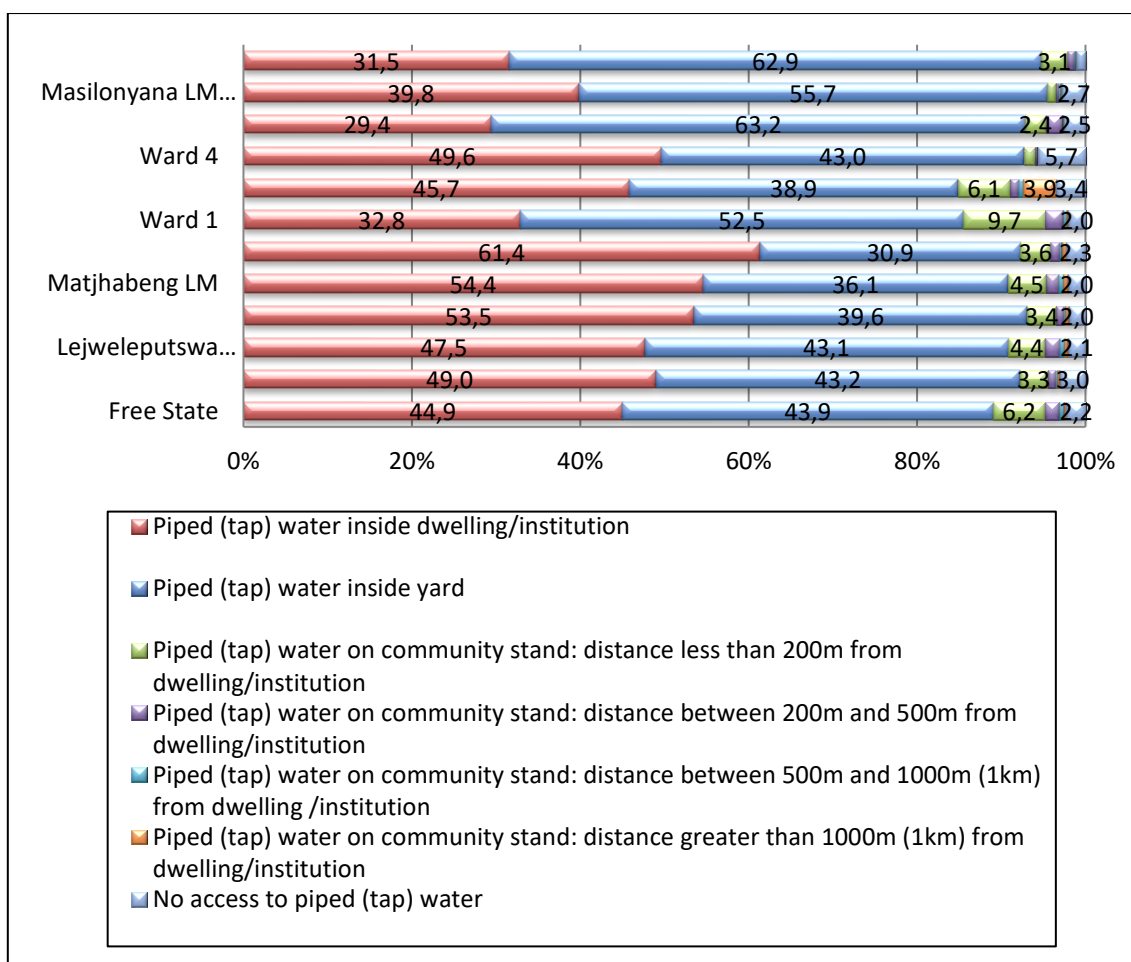


Figure 5-12: Access to piped water (percentage; sources: Census 2011, Census 2022).

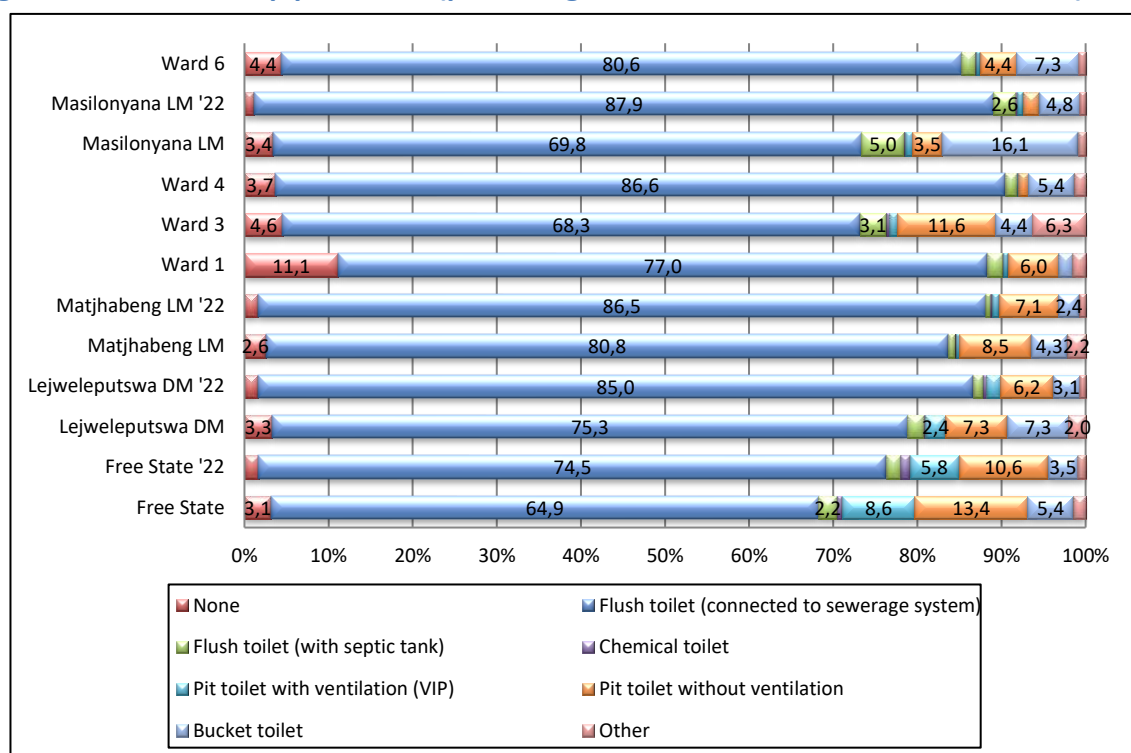


Figure 5-13: Sanitation (percentage; source: Census 2011).



5.2.11 Energy

Electricity is the preferred lighting source, and the lack of it is considered a deprivation. Wards 1 and 3 of the Matjhabeng LM, and Ward 6 of the Masilonyana LM, have the lowest proportions of households with access to electricity for lighting (Figure 5-14).

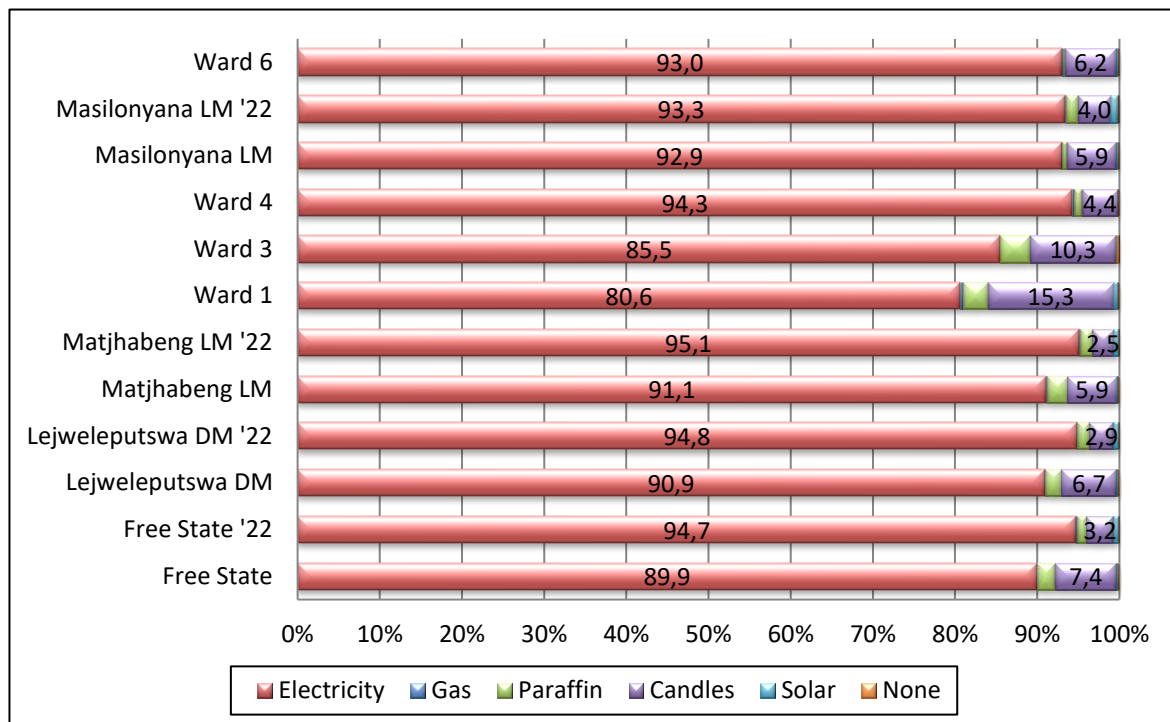


Figure 5-14: Energy source for lighting (percentage; sources: Census 2011, Census 2022).

5.2.12 Refuse removal

The incidence of households whose refuse is removed at least once a week by a local authority or private company is lowest in Ward 6 of the Masilonyana LM, where own refuse dumps and the absence of disposal are more common (Figure 5-15).

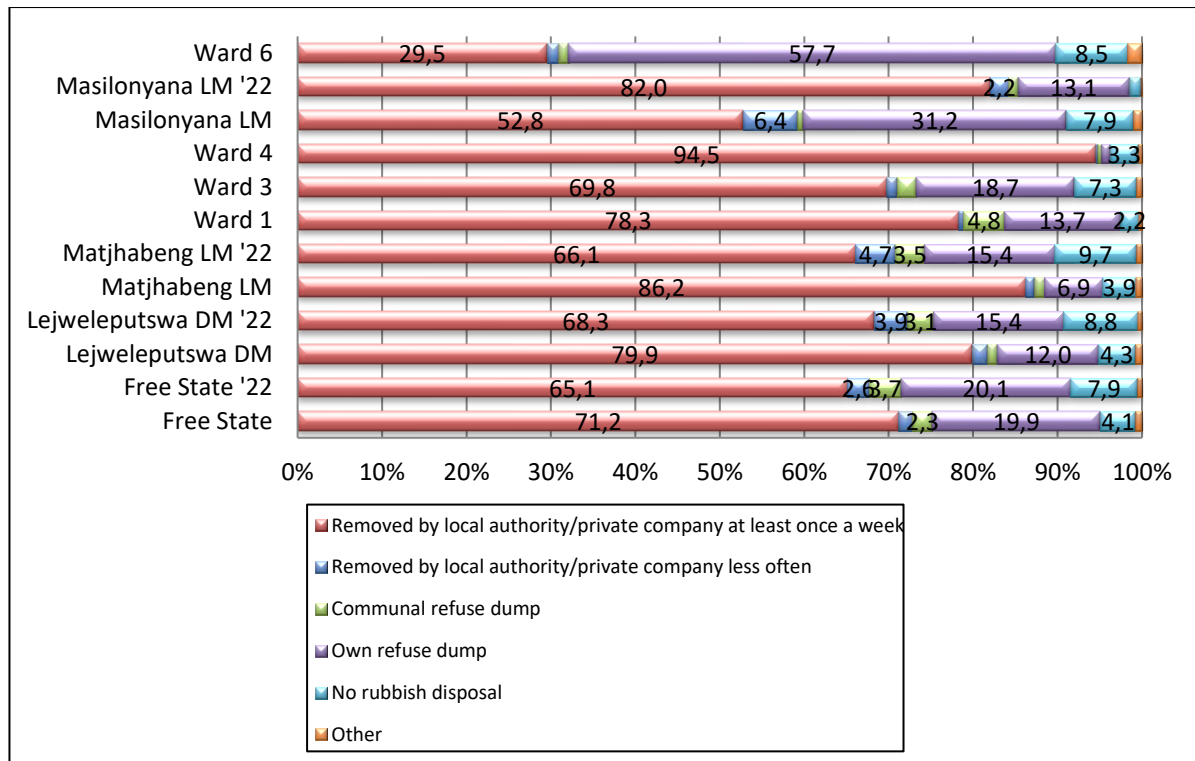


Figure 5-15: Refuse removal (percentage; sources: Census 2011, Census 2022).



6 Stakeholder Identification and Analysis

6.1 Approach

Stakeholders include all individuals and groups who are affected by, or can affect, a given operation. Stakeholder analysis is a deliberate process of identifying all stakeholders of a project – the individuals and groups likely to impact or be impacted by it – and understanding their concerns about, or relationship with, the project (Vanclay, Esteves, Aucamp & Franks, 2015). It assists the proponent in understanding the local cultural and political context. Different stakeholder groups have different interests, and there are individual differences within groups. The purpose of this section is to introduce the stakeholder groups that will be affected by the proposed project.

6.2 List of stakeholders

The following stakeholders that may have an interest in, or be affected by, the proposed D3 Energy project have been identified (Table 6-1).

Table 6-1: Detail of stakeholder groups.

Stakeholder grouping	Organisation / detail
Internal – D3 Energy South Africa (Pty) Ltd	D3 Energy staff involved with the project.
Government – departments and directorates	Free State Provincial Government; Petroleum Agency of South Africa (PASA); National Energy Regulator of South Africa (NERSA); Department of Forestry, Fisheries and the Environment; Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs; Free State Department of Water and Sanitation; Free State Department of Police, Roads and Transport; Department of Mineral and Petroleum Resources; Department of Electricity and Energy; Lejweleputswa District Municipality; Matjhabeng Local Municipality; Masilonyana Local Municipality; SAHRA; Free State Provincial Heritage Resources Authority.
State-owned entities and regulators	Eskom Holdings SOC Ltd; Eskom Distribution; National Transmission Company South Africa (NTCSA); South African National Roads Agency Limited (SANRAL).
Business – local businesses	Various businesses in Virginia, Welkom, Thabong, Theunissen, Winburg, Hennenman, Phomolong, Ventersburg, Masilo, Makeleketla, Tswelangpele, Meloding, Bronville and Riebeeckstad; Free State Goldfields Chamber of Business; local business and skills-development forums (e.g. Tikwe Business Forum).
Business – contractors / suppliers	Contractors providing sub-contracting services to D3 Energy; suppliers of goods to D3 Energy; suppliers receiving agricultural produce from, and supplying goods to, farmers in the project-affected area.
Other industries	Other applicants for renewable energy (mainly solar PV) in the area.



Stakeholder grouping	Organisation / detail
Environmental interest groups	Endangered Wildlife Trust; WESSA; BirdLife South Africa; Centre for Environmental Rights; Mining and Environmental Justice Community Network of South Africa (MEJCON-SA); Mining Affected Communities United in Action (MACUA).
Societal – social organisations	Community forums (e.g. employment, youth and women's forums); other NGOs.
Residents / community	Residents of informal settlements, homeowners and tenants in Virginia, Welkom, Thabong, Theunissen, Winburg, Riebeeckstad, Hennenman, Phomolong, Masilo, Makeleketla, Tswelangpele, Meloding, Bronville and Ventersburg. Local community groups such as Baahi Ba Dira Mmoho and Matjhabeng Community Development Committee
Local farmers	Farmers and farm workers on farms directly affected by production wells or other infrastructure and on neighbouring properties; other farmers and farm workers in the area.

The identified level of interest of each stakeholder assists with designing the stakeholder engagement strategy and deciding how much time to devote to each group. Table 6-2 plots stakeholders according to their ability to influence the company's activities (horizontal axis) and the degree to which they are affected by the proposed activities (vertical axis).

Table 6-2: Stakeholder matrix.

Degree impacted ↓ / Influence →	Low influence	Medium influence	High influence
High	Local businesses; contractors/suppliers; directly affected farm workers	Directly affected farmers / landowners	—
Medium	Neighbouring farmers and farm workers	State-owned entities and regulators; environmental interest groups	Governmental departments and directorates
Low	Social organisations; local residents	—	—

Directly affected local farmers or landowners, businesses, contractors and suppliers are most likely to experience both positive and negative impacts from the project. Despite being the most impacted, these stakeholders have limited influence over D3 Energy's decisions and operations during the planning and construction phases. There are two groups of directly affected farmers: those who have already been affected by previous gas exploration or renewable-energy developments in the area (for whom the project represents a cumulative impact), and those who will experience the impacts for the first time. Renewable energy



companies with existing environmental approvals may also be significantly affected, as overlapping activities could cause conflict and delays.

6.2.1 Stakeholder perspectives

Stakeholder perspectives were informed through key-informant interviews conducted in the project area in June 2026 with ward councillors, directly affected and neighbouring landowners, a local business and skills-development forum, and an environmental-justice network. The views expressed reflect a community context shaped by deep unemployment, the decline of mining, and recent experience with renewable energy developments in the area.

Local councillors (Wards 1, 3 and 4, Ventersburg and Theunissen) emphasised that unemployment, poverty and inequality are the dominant challenges in their wards, and that communities are strongly pro-development because they associate new projects with jobs. They stressed that local people must be prioritised for employment: a recurring grievance was that earlier projects in the area (including gas and solar developments) were perceived to have employed outsiders, fuelling protests that have included tyre burning and road blockages. Councillors warned that perceptions of unfair recruitment can rapidly translate into unrest with operational consequences for the project. They noted that the municipalities maintain databases of vulnerable individuals and households (people with disabilities, child-headed households and others) that can be used to ensure such groups also benefit, and that the most effective way to communicate with general labourers is loud-hailing and public announcements, supplemented by social media. They also observed that the relationship between farm owners and farm workers tends to become strained during active recruitment, as farmers fear losing workers to the project.

Directly affected and neighbouring landowners raised a consistent set of concerns centred on the protection of their farming operations. The dominant land uses are cattle, game, maize and soya farming, and some properties include hunting and tourism operations with bookings made months in advance by overseas clients. Their priority concerns were safety and security (livestock and equipment theft, break-ins, and the risk that increased outsider presence brings); the very poor condition of farm gravel roads, which cannot carry heavy machinery without upgrading and maintenance; protection of groundwater, on which they depend



entirely through boreholes; veld fires (some farmers reported losing assets to fire six times since 2000); and the need for honest, timeous communication so that they can move livestock and adjust operations around drilling schedules. Landowners hosting the existing Red Rocket solar development cited direct experience of deteriorated roads; inadequate stormwater management; sediment build-up; an unfenced excavation; oil residues near a watercourse; increased poaching and theft; and poorly maintained ablution facilities; and feared that the gas project could intensify these effects. They called for an agricultural economist to assess loss of land value, formal access control that protects the farm and not only the plant, registered servitudes only where necessary, fire equipment and trained personnel on site, strict biosecurity, and first option on employment for existing farm workers where grazing is lost.

The Tikwe Business Forum and associated business and skills-development structures welcomed the project but stressed that local SMMEs are too often excluded from project value chains. They called for meaningful inclusion of local companies in procurement and sub-contracting; deliberate skills transfer and enterprise development so that people move beyond general labour; and structured engagement through recognised, registered forums working with the municipalities, in order to avoid opportunistic “briefcase” forums. They highlighted active women- and youth-led initiatives (cooperatives in farming and baking, and youth programmes addressing substance abuse) that could be supported. They emphasised that renewable energy and similar projects have become a key source of work since the mines began closing, making genuine local participation both expected and necessary.

MEJCON-SA indicated that, while their legal advisors have been sensitising communities to the potential negative aspects of the project, the organisation recognises the potential long-term socio-economic benefits and would prefer to engage directly with the developer to form its own informed view. They formally requested a full project induction and detailed workshops and noted that community unhappiness can readily escalate into protest action with operational and logistical implications. They expressed particular interest in environmental health and in engaging young women in the affected communities. This reflects MEJCON-SA's position as expressed during engagement and is reported as such; it does not speak to, or alter, the mandate of any organisation or representative to comment on stakeholders' behalf.



Across all groups there was strong agreement on the need for consistent communication, transparency, fair treatment, and respect for landowners and communities. Past experience with developers in the mining and renewable energy sectors has left many stakeholders distrustful of promises, underlining the importance of regular updates, clear points of contact, written agreements, and genuine inclusion in planning and decision-making.

6.3 Stakeholder Groups and Issues Raised

The consultations undertaken for this assessment involved four main groups: directly affected and neighbouring commercial farmers and landowners; ward councillors and local government; local business and skills-development forums; and an environmental-justice network. Each group expressed distinct concerns and priorities shaped by its position in the local economy and its relationship to the land. The table below summarises the key issues and concerns raised by each group during the consultation process, together with the expectations and recommendations each group put forward.

Table 6-3: Summary of stakeholder groups and issues raised.

Stakeholder Group	Key Issues / Concerns Raised	Expectations / Recommendations
Commercial farmers and directly affected / neighbouring landowners	Farming operations and livelihoods: Disruption to cattle and game grazing and to maize and soya cropping; loss of productive land and grazing reduces stocking rates and farm worker numbers; hunting and tourism bookings made months in advance cannot be relocated at short notice. Water: Heavy reliance on boreholes and groundwater; fears of contamination and abstraction pressure; concerns about the Sand River and oil residues observed near watercourses on existing projects. Roads and infrastructure: Poor gravel roads unsuitable for heavy machinery; deterioration and accidents linked to existing solar traffic; risk of damage to buried water pipes. Safety and security: Stock theft, cable theft and break-ins; an influx of outsiders is expected to worsen the risk; the farm and family must be secured, not only the plant; unfenced excavations and unguarded equipment are hazards.	Communication and access: Appoint a visible, consistent and trusted Community Liaison Officer before construction; give advance notice of drilling and site activities; agree written access, gate management and road maintenance protocols with each landowner; keep gates closed. Compensation: Fair compensation for actual losses; a transparent claims process; an independent agricultural economist to assess any loss of land value (applied where a landowner raises a land-value concern or a claim arises, rather than as a blanket requirement for every property). Water and environment: Baseline and ongoing groundwater monitoring; spill prevention; protection of watercourses. Security and fire: Strict access control with identification and marked vehicles; support for farm-watch structures; fire equipment, trained teams and firebreaks; secure all wells and excavations. Labour: Prioritise local people and give first option to existing farm workers where



Stakeholder Group	Key Issues / Concerns Raised	Expectations / Recommendations
	Veld fire: Recurrent veld fires with limited municipal support; project activity adds ignition risk to farming, grazing, wildlife and nearby energy infrastructure. Servitudes and property value: Uncertainty over pipeline servitudes and their effect on land value and future land use. Poaching, biosecurity and sanitation: Increased poaching and snaring; biosecurity risks; poorly maintained ablutions that could pollute land, water and grazing. Communication and trust: Inconsistent past communication and unmet commitments on other projects have left landowners distrustful of developers.	grazing is temporarily displaced; do not poach farm workers. Site discipline: Portable toilets and no open defecation; no littering; no interference with livestock; proper rehabilitation of disturbed areas; a clear grievance mechanism communicated before construction.
Ward councillors and local government (Wards 1, 3 and 4; Ventersburg and Theunissen)	Unemployment and poverty: High unemployment, poverty and dependence on social grants; communities are strongly pro-development because they associate new projects with jobs. Exclusion and unrest: A recurring grievance that earlier projects employed outsiders, triggering protests (tyre burning and road blockages); the fairness of recruitment is critical. Vulnerable groups and social ills: Vulnerable households (people with disabilities, child-headed households); drug and alcohol abuse and prostitution along the N1; tensions between farm owners and workers during recruitment.	Prioritise local labour and distribute opportunities fairly across wards. Use the municipal vulnerable household databases to ensure vulnerable groups also benefit. Communicate through loud-hailing and public announcements (supplemented by social media) and engage councillors early.
Local business and skills-development forums (e.g. Tikwe Business Forum)	SMME exclusion: Local SMMEs are too often excluded from procurement and project value chains and seek meaningful inclusion. Skills: Many local people and enterprises lack the skills to benefit and need to move beyond general labour.	Prioritise local procurement, sub-contracting and supplier development; engage recognised, registered forums and the municipalities; deliver deliberate skills transfer and enterprise development; and support women- and youth-led cooperatives and youth programmes.
Environmental-justice network (MEJCON-SA)	Environmental health and information: Environmental-health concerns; communities have been sensitised to the project's potential negatives by legal advisors; a full project induction is requested. Protest risk: Community unhappiness can readily escalate into protest action with operational and logistical implications.	Engage directly through detailed workshops and a project induction; engage young women in the affected communities; and provide transparent information so communities can form their own informed views.





7 Description of Potential Impacts

7.1 Social Impact Assessment

“Almost all projects almost always cause almost all impacts. Therefore, more important than predicting impacts is having on-going monitoring and adaptive management.”
(Frank Vanclay)

Considering the statement above, the focus of this assessment is on the most material impacts. The social environment is dynamic and adapts to change, and it is highly likely that the impacts predicted in this report will change throughout the life of the project. The emphasis should therefore be on the active management of social impacts rather than on once-off prediction and mitigation. Successful management requires long-term commitment and should form part of the strategic planning and management of the project until decommissioning. Suggestions are provided in the form of a social impact management plan (the mitigation tables in this section). Implementation should start as soon as possible, since the social impacts of a project begin when it is announced.

Social impacts are the result of social change processes. A social change process is a discrete, observable and describable process that changes the characteristics of a society (for example demographic, economic, geographic, institutional, empowerment or socio-cultural processes). The way in which these processes are perceived, given meaning or valued depends on the social context. Some groups adapt quickly and exploit opportunities; others (vulnerable groups) are less able to adapt and bear most of the negative consequences. Social impacts are therefore context-dependent, and both objective impacts (e.g. changes in employment or health and safety) and subjective impacts (e.g. anxiety, distrust, reduced quality of life) are considered, since subjective impacts can drive opposition to a project.



7.1.1 Impact assessment criteria

The impact tables and ratings were adapted from the environmental sciences, and it is acknowledged that it is not always possible to compartmentalise social impacts in this way. The significance rating methodology follows the approach provided by EIMS, guided by the NEMA EIA Regulations (as amended). The risk or significance (S) is determined by relating the consequence (C) of an impact to the probability (P) of it occurring. Consequence is a function of Nature (N), Extent (E), Duration (D), Magnitude (M) and Reversibility (R):

$$C = (E + D + M + R) \times N / 4 \quad \text{and} \quad S = C \times P$$

A prioritisation factor (PF), derived from the potential for cumulative impact (CI) and irreplaceable loss of resources (LR), is then applied to the post-mitigation significance to determine the final significance (FS = post-mitigation S × PF). Significance is determined both before mitigation (pre-mitigation) and after implementation of the recommended measures (post-mitigation).

Table 7-1: Criteria for determination of impact consequence.

Aspect	Score	Definition
Nature	-1 / +1	Negative (detrimental) impact / Positive (beneficial) impact.
Extent	1–5	1 Activity (highly localised); 2 Site (within site boundary); 3 Local (within the local municipality / within 5 km); 4 Regional (within the district / 5–50 km); 5 Provincial/National/International (>50 km).
Duration	1–5	1 Immediate (<1 yr); 2 Short term (1–5 yrs); 3 Medium term (6–15 yrs); 4 Long term (15–65 yrs, ceases after operational life); 5 Permanent (>65 yrs).
Magnitude / Intensity	1–5	1 Minor (functions not affected); 2 Low (slightly affected / already degraded); 3 Moderate (continue in a modified way); 4 High (temporarily cease); 5 Very high (permanently cease).
Reversibility	1–5	1 Reversible at no time/cost; 2 Reversible without significant time/cost; 3 Reversible at significant time/cost; 4 Reversible at very high time/cost; 5 Irreversible.

Table 7-2: Probability / likelihood scoring.

Score	Probability
1	Improbable (rare; <5% chance).
2	Low probability (unlikely; >5% and <20% chance).
3	Medium probability (possible; >20% and <50% chance).
4	High probability (likely; >50% and <90% chance).
5	Definite (almost certain; >90% chance).

**Table 7-3: Significance score classes (absolute value; sign indicates positive or negative).**

Score (absolute)	Class
≤ 4.25	Low
> 4.25 to ≤ 8.5	Medium-Low
> 8.5 to ≤ 13.75	Medium-High
> 13.75	High

To account for cumulative impacts and the potential for irreplaceable loss of resources, a prioritisation factor is applied. Each of cumulative impact (CI) and irreplaceable loss (LR) is scored Low (1), Medium (2) or High (3). Their sum (Priority = CI + LR, ranging from 2 to 6) yields a prioritisation factor (PF) of 1.0 to 1.5 (Table 7-4), which is multiplied by the post-mitigation significance to obtain the final significance.

Table 7-4: Determination of the prioritisation factor.

Priority (CI + LR)	2	3	4	5	6
Prioritisation factor	1.0	1.125	1.25	1.375	1.5

Table 7-5: Final significance rating classes.

Final significance	Description
< -13.75 to -25	High negative – significant; requires extensive mitigation and may influence the decision.
-8.5 to -13.75	Medium-High negative – substantial; may influence the decision and requires robust mitigation.
> -4.25 to -8.5	Medium-Low negative – more significant than low impacts but generally manageable.
-1 to -4.25	Low negative – minor; easily mitigated; does not influence the decision.
0	No impact.
1 to 13.75	Low to Medium-High positive – beneficial impact to be enhanced.
> 13.75	High positive.

7.1.2 Social impacts and mitigation

Each impact is described below, the project phases in which it is likely to occur are identified, and mitigation measures are provided. A compact significance table accompanies each impact, and a consolidated rating table is provided at the end of the section. Unless otherwise indicated, the “Responsible party” is D3 Energy (typically acting through its Community Liaison Officer (CLO)).



Relating impacts to project activities. In response to the requirement to relate impacts to specific project activities, each impact below is annotated with its principal contributing activity or activities – seismic survey, drilling of production wells, the production (processing) plant, and associated infrastructure (gathering pipelines, servitudes, access roads and vehicle movement) – and the phase in which it mainly arises. Consistent with social-impact-assessment methodology, impacts are assessed by their effect on social receptors rather than by engineering activity alone, because a given social impact is typically produced by several activities acting together and is experienced cumulatively by the affected party. Where significance differs materially by activity or phase this is stated; where a single significance is retained, it is because the impact arises from the activities in combination. A cumulative-impact note is provided for each impact that has a cumulative dimension, and Table 7-21 maps each impact to its principal contributing activities.

A social sensitivity analysis of the production right area is summarised in [Figure 7-1](#) below, which maps areas of low, medium and high social concern together with social no-go areas. This spatial picture informs the siting of wells, pipelines and infrastructure and the prioritisation of mitigation.

The sensitivity mapping (Figure 7-1) distinguishes areas of low, medium and high social sensitivity together with social no-go areas. Areas of high social sensitivity are driven by occupied homesteads and dwellings and their immediate surrounds; by settlements and social infrastructure (such as schools, clinics and community facilities); and by the authorised renewable-energy footprints within the production right area. The renewable-energy footprints are treated as socially sensitive because they represent committed land uses and investment and are a principal locus of potential land-use conflict and cumulative impact; the sensitivity figure is being updated to depict these footprints as areas of social sensitivity. Areas of medium sensitivity comprise actively farmed agricultural land – cultivated fields and grazing – and associated farm infrastructure on which local livelihoods depend. Social no-go areas are those where the social cost of intrusion would be unacceptable, such as the immediate surrounds of homes, schools and other sensitive social receptors. This spatial pattern of sensitivity informs the siting of wells, pipelines and infrastructure and the prioritisation of mitigation, and should be read together with the biophysical sensitivity mapping.

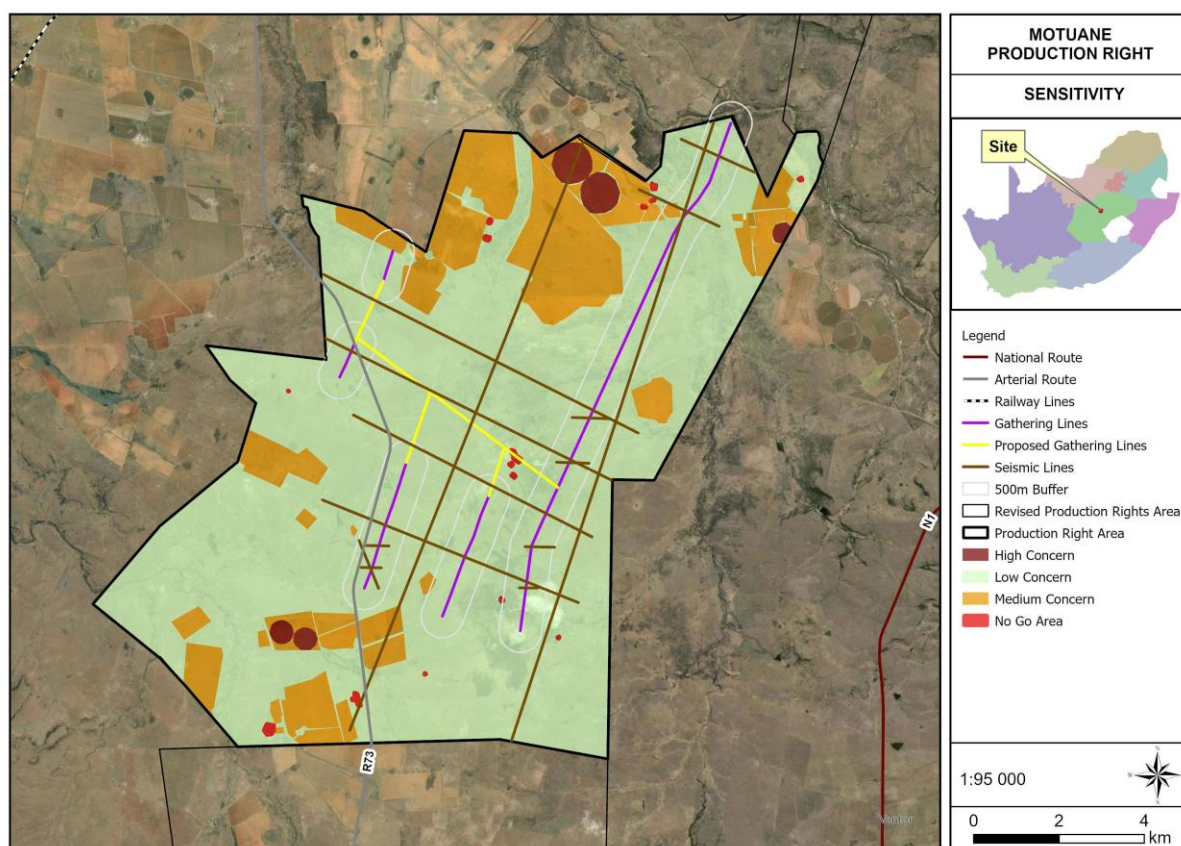


Figure 7-1: Social sensitivity of the production right area (areas of concern and social no-go areas).

7.1.2.1 Impact on farming livelihoods and interference with existing land uses

The proposed activities – drilling of up to 43 production wells, gathering pipelines, access roads, a processing facility and ongoing exploration – will take place on land that is actively farmed (the affected farm portions are shown in Figure 1-2). A livelihood refers to the way a household makes a living and secures the basic necessities of life (Vanclay et al., 2015). The project area is characterised by commercial agriculture (maize, soya, cattle and game) and, on some properties, hunting and tourism. These activities depend on the sustainable use of land, soil quality, water availability and uninterrupted seasonal access. Affected communities include not only farmers but also farm workers who earn their livelihoods on and call the farm their home.

Stakeholders stressed that agricultural land is used cyclically and that disturbance during planting, growing, harvesting or grazing periods can cause substantial financial loss. Each well, pipeline servitude and access road removes land from production; soil compaction from heavy machinery can render land unproductive for one or more seasons and reduce yields



even after rehabilitation. Game and hunting operations are particularly sensitive, as hunts are booked months in advance and cannot be relocated at short notice, and loss of grazing reduces stocking rates and therefore the number of farm workers required.

Because the project's operational footprint persists for at least 30 years, and because farm workers have limited ability to diversify their livelihoods, impacts on livelihoods are among the most significant from a social perspective. (Livelihood diversification refers to engaging in both on-farm and off-farm activities to spread risk; farm workers typically have few such options.)

Contributing activities and phase: Drilling of production wells (well pads), gathering pipelines, servitudes and access roads, and the production plant remove land from production, while seismic survey lines and vehicle movement cause temporary disturbance; land-take is greatest during construction and persists through operation. The impact arises from these activities in combination on each affected property. *Cumulative dimension:* Land taken by the gas project adds to land already committed to renewable-energy developments on the same properties, further reducing the productive area available to the affected farmer.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	4	3	-3.25	4	-13	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	3	-6	Medium-Low negative

Table 7-6: Mitigation for impact on farming livelihoods and interference with existing land uses.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Appoint a Community Liaison Officer (CLO) to maintain ongoing relationships with affected landowners and farm workers and to record all communications.	All phases	Before construction → life of project	D3 Energy (CLO)	CLO management	Good relationships maintained	Communication register; stakeholder log
2	Conclude written agreements with each affected landowner before any activity, providing fair compensation for loss of productive land, grazing or hunting income; avoid interference where possible and avoid sensitive seasons.	Planning / Construction	Before activity on each property	D3 Energy (CLO)	Independent valuer	Affected parties fairly compensated	Signed agreements; compensation records
3	Implement a transparent claims procedure (with response timeframes) communicated to all landowners; appoint an agricultural	All phases	Ongoing	D3 Energy (CLO)	CLO	No uncompensated actual losses	Claims register; completed claim forms



	economist where loss of land value is contested.						
4	Rehabilitate disturbed land (including mechanical de-compaction) and reinstate productive capacity as soon as activities cease in an area.	Operation / Closure	On completion in each area	D3 Energy	ECO / CLO	Land returned to productive use	Rehabilitation sign-off records

7.1.2.2 Water contamination and groundwater safety

Farmers in the area rely almost entirely on groundwater abstracted from boreholes for domestic use, livestock watering and farming, and some hold water rights in the Sand River. Stakeholders repeatedly identified water contamination and the long-term sustainability of groundwater as primary concerns, noting that the area is already water-stressed and that boreholes sometimes run dry. Drilling, the handling of hydrocarbons, fuels and chemicals, and the operation of the processing facility all carry a risk of spills, leaks or cross-contamination of aquifers and watercourses.

Landowners hosting the existing solar development reported oil residues associated with project activities near a watercourse, heightening anxiety that the gas project could affect water quality. Poorly managed sanitation on site (spillages or overflowing ablution facilities) was also raised as a contamination pathway that could affect groundwater, livestock and people. Because contamination of a shared aquifer can affect multiple properties and may be difficult and costly to reverse, this impact has a high potential for cumulative effect and irreplaceable loss. The post-mitigation rating already assumes correctly designed, constructed and managed wells and infrastructure; the residual significance nonetheless reflects the social dimension of this impact – community perception, the fear of contaminating a sole water source, and the associated loss of trust and sense of security – which persists to a degree irrespective of engineering controls and is what this social assessment measures.

Contributing activities and phase: Drilling of production wells is the principal contributing activity, together with the handling of hydrocarbons, fuels and chemicals at the production plant and on-site sanitation and waste; the risk is present during construction and operation. *Cumulative dimension:* Contamination of a shared aquifer can affect multiple properties and combines with abstraction and pollution pressures from other land uses in an already water-stressed area, giving this impact a high cumulative and potentially irreversible dimension.



Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	4	4	-3.5	3	-10.5	Medium-High negative
Post-mitigation	-1	2	2	2	3	-2.25	2	-4.5	Medium-Low negative

Table 7-7: Mitigation for water contamination and groundwater safety.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Conduct baseline water-quality and borehole-yield assessments before activities and monitor water quality regularly during and after construction and operation.	Planning / Operation	Baseline, then ongoing	D3 Energy	Hydro-geologist / DWS	No project-induced deterioration in water quality	Baseline monitoring results +
2	Establish minimum set-back distances between drilling/processing sites and boreholes, wells and watercourses, in line with the aquatic / wetland specialist recommendations.	Planning	Before siting	D3 Energy	ECO	Sensitive water points protected	Approved site layouts; set-backs
3	Develop and implement a Spill Prevention and Response Plan, with bunding, drip trays, spill kits and trained personnel; manage sanitation and waste so there is no discharge to land or water.	All phases	Ongoing	D3 Energy	ECO	Zero uncontained spills	Spill records; waste manifests
4	Disclose water-use requirements to affected landowners and agree abstraction arrangements to avoid placing additional pressure on local resources.	Planning / Operation	Before abstraction	D3 Energy (CLO)	DWS / CLO	No competition for farmers' water	Water-use agreements; abstraction records

7.1.2.3 Damage to farm roads, services and infrastructure

The project will use existing local and farm gravel roads and may require new access roads. Landowners were emphatic that the existing dirt and other local roads are in poor condition, deteriorate badly after rain, and cannot carry heavy machinery or large trucks without upgrading. Experience with the nearby solar development was cited directly: project-related heavy vehicles accelerated road deterioration to the point that, in one case, a family relocated their children's schooling, and accidents increased. Water pipes and other buried services could also be damaged during earthworks.

Damage to roads and services imposes real costs on farmers, who must then repair infrastructure they rely on daily and which is essential to moving produce and livestock. Heavy-vehicle movement also raises road safety concerns on rural roads shared with farm workers travelling by taxi.



Contributing activities and phase: Heavy-vehicle movement associated with the seismic survey, drilling-rig mobilisation, construction of the plant and pipelines, and operational traffic; concentrated in construction but continuing through operation. *Cumulative dimension:* Project traffic adds to heavy-vehicle movement from neighbouring renewable-energy and other developments on the same local and farm roads, compounding road deterioration and safety risk.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	2	4	3	-3	4	-12	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	3	-6	Medium-Low negative

Table 7-8: Mitigation for damage to farm roads, services and infrastructure.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Compile an asset and infrastructure baseline (photographic condition survey of roads, services and structures) before construction on each property.	Planning	Before construction	D3 Energy	CLO / landowner	Pre-existing condition documented	Signed surveys condition
2	Formalise road-maintenance and reinstatement agreements covering the internal and access roads used for the activity, to be kept in good condition during operations and rehabilitated to at least their pre-existing condition afterwards, with any upgrading only where required for safety and by agreement with the relevant road authority or landowner (that is, SANRAL for national roads, the district or local municipality for municipal roads, and the affected landowner for private farm roads); upgrade and maintain private roads used by the project at D3 Energy's cost.	Planning / Construction	Before and during use	D3 Energy	CLO	Roads kept fit for purpose	Maintenance agreements; records
3	Repair or reinstate any damaged roads, pipes or services promptly; enforce speed limits and a driver code of conduct for project vehicles.	All phases	Within agreed timeframes	D3 Energy	CLO	Damaged infrastructure reinstated	Repair records; incident log

7.1.2.4 Uncertainty around servitudes, property values and land-use rights

The need to register servitudes for gathering pipelines connecting wells to the processing facility, together with the long operational life of the project, creates uncertainty for landowners about future land access, land-use rights and property values. Landowners noted that the production right does not change ownership of the land and stressed that



infrastructure requirements must be clearly communicated and formalised through proper agreements. Some requested an agricultural economist to determine any loss of property value.

Uncertainty is itself a social impact: not knowing where infrastructure will be placed, for how long, or how it will affect resale and financing causes anxiety and can sour relationships before any physical activity occurs. Game and tourism operations are especially sensitive to servitudes and visual intrusion that could affect their marketability.

Contributing activities and phase: Registration of servitudes for gathering pipelines is the principal contributing activity, together with the wells, the plant and the long tenure of the production right; the uncertainty arises mainly in planning and persists through operation.

Cumulative dimension: Gas servitudes overlie land already subject to renewable-energy rights and leases on several properties, compounding uncertainty about overlapping land-use rights and future property values.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	4	3	3	-3.25	3	-9.75	Medium-High negative
Post-mitigation	-1	2	3	2	2	-2.25	2	-4.5	Medium-Low negative

Table 7-9: Mitigation for uncertainty around servitudes, property values and land-use rights.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Provide detailed written information to each landowner (pipeline routes, infrastructure footprints, maps, timeframes) and communicate any expansion plans early.	Planning / Operation	Before and during planning	D3 Energy (CLO)	CLO	Landowners fully informed	Information packs; meeting minutes
2	Register servitudes only where strictly necessary (for productive wells/infrastructure), use temporary access arrangements until certainty is obtained, and de-register servitudes at closure.	Planning / Closure	As required; reviewed annually	D3 Energy	Legal / CLO	Minimal, justified servitudes	Servitude register
3	Negotiate clear, fair land access and compensation agreements; offer an independent agricultural economist's assessment where loss of land value is in dispute.	Planning	Before activity	D3 Energy (CLO)	Independent economist	Property-value concerns addressed	Agreements; valuation reports



7.1.2.5 Impacts on safety and security of local residents

Safety and security were the single most consistently raised concern among landowners. The area already experiences stock theft, cable theft, break-ins and poaching, and farmers are largely responsible for their own security. Stakeholders feared that an influx of outside workers and increased vehicle movement would put “more eyes on the farm”, increase familiarity with farm layouts, and raise the risk to the safety of families, farm workers, livestock, visitors and hunting clients. The experience with the solar development – where theft increased because people perceived “more money in the area” – reinforced these fears. Unfenced excavations and equipment left unguarded were specifically cited as risks.

Community-side safety issues were also raised: prostitution along the N1 (exacerbated by truck traffic), and the risk of protest action (tyre burning, road blockages) where recruitment is perceived as unfair, which can threaten the safety of residents and personnel and disrupt both farming and project activities.

Contributing activities and phase: The presence and movement of personnel and vehicles across all activities – seismic survey, drilling, plant and pipeline construction and operation – together with recruitment-related community tensions; greatest during construction.

Cumulative dimension: Added outsider presence and vehicle movement combine with those of other developments in the area, increasing the overall risk of theft, poaching and unrest beyond that of the gas project alone.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	3	3	-3	4	-12	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	3	-6	Medium-Low negative

Table 7-10: Mitigation for impacts on safety and security of local residents.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Develop a farm-access and security protocol with each affected landowner and local security/farm-watch structures (e.g. an AgriSA-style protocol); control and log all site access.	Planning / Construction	Before access; ongoing	D3 Energy (CLO)	Landowner / security group	Controlled, agreed access	Access protocol; access log
2	Require all personnel and contractors to carry	All phases	Throughout	D3 Energy	CLO contractors /	No unsecured	ID records; site inspections



	identification and use clearly marked vehicles; fence and secure all wells, excavations and equipment.					sites; personnel identifiable	
3	Enforce a workforce code of conduct (gates kept closed, no off-road driving, no trespassing) with penalties for non-compliance; compensate landowners for contractor-related damages.	All phases	Throughout	D3 Energy	CLO	Respectful conduct; gates closed	Signed codes; incident register

7.1.2.6 Increase in poaching incidents and stock theft

Increased access to, and presence of people in, the project area raises the risk of poaching and stock theft on properties used for cattle and game farming. Landowners reported that poaching incidents (including hunting with dogs and the setting of snares) increased after the establishment of the nearby solar development and attributed this partly to greater activity in the area and proximity to townships. Game fences and snares were identified as particular concerns on hunting properties.

Poaching and stock theft directly erode farming income and the viability of game and hunting operations and can have cumulative effects where multiple developments increase the number of outsiders moving through the area.

Contributing activities and phase: Increased access and personnel presence across all activities (seismic, drilling, construction and operation) on properties used for cattle and game; greatest where access control is weakest during construction. *Cumulative dimension:* Multiple concurrent developments increase the number of outsiders moving through the area, raising poaching and stock-theft risk cumulatively.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	3	3	-3	4	-12	Medium-High negative
Post-mitigation	-1	3	2	2	2	-2.25	2	-4.5	Medium-Low negative

Table 7-11: Mitigation for increase in poaching incidents and stock theft.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
-----	--------------------	-------	-----------	-------------	------------	--------	-----------------------



1	Implement strict access control and induct all workers on a no-poaching, no-trespassing policy; remove offenders from site and report to the police.	All phases	Throughout	D3 Energy	CLO security /	No project-linked poaching	Induction records; incident reports
2	Inspect fences and project areas regularly for snares and damage; repair fences promptly and maintain game-fence integrity.	Construction / Operation	Routine (e.g. daily during construction)	D3 Energy	Landowner / CLO	Fences intact; snares removed	Inspection logs
3	Include anti-poaching and stock-theft awareness in toolbox talks and coordinate with local farm-watch structures.	All phases	Ongoing	D3 Energy	CLO	Workforce aware; cooperation in place	Toolbox-talk records

7.1.2.7 Veld fire risk

Veld fires were highlighted as a serious risk. Farmers reported recurrent veld fires (some losing assets to fire around six times since 2000), limited municipal firefighting support, and reliance on neighbours and trained farm workers to fight fires. Project activities – vehicles, hot works, equipment and a larger human presence – introduce additional ignition sources. A fire could damage farming operations, grazing, wildlife, infrastructure and neighbouring energy developments, with potentially severe financial consequences given the gas and solar infrastructure in the area.

Because fire can spread across property boundaries, the risk has a clear cumulative dimension that requires coordination with neighbouring landowners and fire-management structures.

Contributing activities and phase: Hot works and equipment during drilling and construction, vehicle movement (seismic and operational) and the larger human presence introduce ignition sources; the risk is present in construction and operation and peaks in the fire season.

Cumulative dimension: Fire can spread across property boundaries and threaten neighbouring farming and energy infrastructure (gas and solar), giving the risk a clear cumulative dimension that requires joint fire management.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	2	4	3	-3	3	-9	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	2	-4	Low negative

Table 7-12: Mitigation for veld fire risk.



No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Compile and implement a Fire Prevention and Response Plan; join the local Fire Protection Association and coordinate with neighbours and Working on Fire.	Planning / Operation	Before construction ; ongoing	D3 Energy	FPA / CLO	Effective fire response capability	Fire plan; FPA membership
2	Provide fire-fighting equipment on site and train personnel in veld-fire awareness and response; control hot works and ignition sources, especially in the fire season.	All phases	Throughout	D3 Energy	ECO / CLO	Trained teams; equipment available	Training records; equipment checks
3	Maintain firebreaks around facilities and notify landowners at least 48-hours before high-risk activities.	Operation	Annually / before activities	D3 Energy	Landowner / CLO	Firebreaks maintained	Maintenance records

7.1.2.8 Nuisance factors (dust, noise, visual intrusion and sense of place)

Construction and drilling generate dust and noise, and the introduction of wells, pipelines, a processing facility, lighting and increased traffic alters the rural character and sense of place valued by farming, game and tourism operations. While individually these nuisances are usually localised and of low intensity, they can disturb residents, livestock, wildlife and hunting/tourism guests, and contribute to a perception that the area is becoming industrialised, particularly where they add to disturbance from existing solar developments.

Sense of place is especially important for game farms and hunting lodges whose marketability depends on an undisturbed rural setting; visual markers, lighting and noise can therefore have economic as well as amenity effects.

Contributing activities and phase: Dust and noise from drilling and construction, and visual intrusion from wells, pipelines, the plant, lighting and traffic; concentrated in construction, with visual and sense-of-place effects persisting through operation. *Cumulative dimension:* These nuisances add to disturbance from existing solar developments, reinforcing a perception that the rural area is becoming industrialised.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	2	2	2	2	-2	3	-6	Medium-Low negative
Post-mitigation	-1	1	2	2	1	-1.5	2	-3	Low negative



Table 7-13: Mitigation for nuisance factors (dust, noise, visual intrusion and sense of place).

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Implement dust-suppression and noise-control measures from the relevant specialist studies; avoid construction at night and over weekends where feasible.	Construction / Operation	Throughout	D3 Energy	ECO	Nuisance kept within acceptable limits	Complaints register; monitoring
2	Manage lighting (direction, brightness) and use screening/shade nets near dwellings; camouflage markers on game farms.	Construction / Operation	Throughout	D3 Energy	ECO / CLO	Minimal visual intrusion	Site inspections
3	Follow visual, noise and ecological specialists' mitigation and rehabilitate disturbed areas to restore rural sense of place.	Operation / Closure	Ongoing; at closure	D3 Energy	ECO	Sense of place restored	Rehabilitation records

7.1.2.9 Community perceptions and fears regarding gas safety

Gas production, gathering pipelines and a processing facility with CNG/LNG capability give rise to community perceptions and fears about safety – including methane leaks, explosions and pipeline incidents. Whether or not such fears are technically justified, perceived risk is a genuine social impact that can generate anxiety, opposition and reputational harm if not addressed through clear, accessible information. MEJCON-SA specifically raised environmental health concerns and requested detailed briefings, illustrating the importance of proactive, factual communication.

Managing these perceptions is largely a matter of transparent information, visible safety management and responsiveness; with appropriate mitigation the residual impact is low.

Contributing activities and phase: The production (processing) plant with CNG/LNG capability, the gathering pipelines and the producing wells; perceptions arise principally in the operation phase. *Cumulative dimension:* Perceived risk combines with the presence of other industrial and energy infrastructure to heighten a general sense of a changing, higher-risk environment, even where individual facilities are managed safely.



Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	3	2	-2.75	3	-8.25	Medium-Low negative
Post-mitigation	-1	2	2	2	2	-2	2	-4	Low negative

Table 7-14: Mitigation for community perceptions and fears regarding gas safety.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Distribute background information in lay terms (in Sesotho, Afrikaans and English) explaining the gas, the process and the safety measures; conduct community awareness campaigns.	Planning / Operation	Before and during operation	D3 Energy (CLO)	CLO	Communities accurately informed	Information materials; attendance
2	Site wells and pipelines away from residences where feasible and implement and communicate emergency-response and safety procedures.	Planning / Operation	Throughout	D3 Energy	Safety officer	Safety measures understood	Emergency plan; drills
3	Provide a full project induction and workshops to key community structures (e.g. MEJCON-SA, forums) on request.	Planning	On request	D3 Energy (CLO)	CLO	Key structures engaged	Workshop records

7.1.2.10 Social pathologies associated with a temporary workforce and contractor behaviour

The presence of a temporary construction workforce and contractors can be associated with social pathologies such as prostitution, sexually transmitted infections, substance abuse and antisocial behaviour, and with nuisance behaviour such as leaving gates open, littering and off-road driving. Councillors noted that prostitution is already a concern along the N1, exacerbated by truck traffic, and that young women are particularly exposed. Although the project's permanent workforce is very small, construction peaks and contractor activity can still introduce these risks.

These impacts fall disproportionately on vulnerable groups and on host communities, and are best managed through a code of conduct, awareness programmes and a preference for local labour that reduces the influx of outsiders.

Contributing activities and phase: The temporary construction workforce and contractors (drilling crews and plant and pipeline construction, with seismic crews earlier); concentrated in the construction phase and at construction peaks. *Cumulative dimension:* The project's temporary workforce adds to labour influx from other developments along the N1 corridor,



Equispectives

Social Impact Assessment

compounding pressures associated with prostitution, substance abuse and antisocial behaviour.



Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	3	3	3	-3	3	-9	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	2	-4	Low negative

Table 7-15: Mitigation for social pathologies associated with a temporary workforce and contractor behaviour.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Maximise the use of local labour to minimise worker influx; enforce a workforce code of conduct with penalties for non-compliance.	Construction / Operation	Throughout	D3 Energy	CLO	Reduced influx; respectful conduct	Recruitment records; code register
2	Include HIV/STI, substance-abuse and gender-respect awareness in toolbox talks; develop an infectious-diseases strategy and support peer education and voluntary testing.	Construction / Operation	Ongoing	D3 Energy	SHE officer	Workforce sensitised	Toolbox-talk and programme records
3	Provide adequate sanitation facilities on site and manage contractor behaviour (gates, litter, driving).	Construction	Throughout	D3 Energy	ECO / CLO	No nuisance complaints upheld	Inspections; complaints log

7.1.2.11 Overlapping land use and cumulative impacts with renewable-energy projects

A defining feature of the receiving environment is the concentration of approved and applied-for renewable-energy developments (predominantly solar PV) over the same land as the production right. A review of renewable-energy environmental applications on record for the Matjhabeng and Masilonyana Local Municipalities identified more than forty such applications in the broader area, several of them overlapping or immediately adjacent to the production right (Figure 4). This creates overlapping land-use rights and significant potential for cumulative social impacts – on roads, safety, water, sense of place and community expectations – over and above those of the gas project alone.

Directly affected landowners are, in several cases, already hosting or neighbouring solar developments and have experienced road damage, stormwater problems, theft and disputes. For these landowners the gas project represents a cumulative burden. Conflict between developers (for example over road condition and stormwater) has already occurred in the area, and overlapping construction programmes could compound disturbance and confusion about land access. The cumulative dimension of this impact is therefore high. The residual



significance remains Medium-High after mitigation because this is a cumulative impact driven substantially by factors outside the proponent's control – third-party renewable-energy developments, overlapping surface and sub-surface rights, and regional land-use planning. Project-level mitigation reduces the proponent's own contribution to the cumulative effect (reflected in the lower project residual), but the interaction with independent developments cannot be fully mitigated by this proponent alone; reducing the cumulative rating to Low would imply a degree of control the proponent does not have.

Contributing activities and phase: All land-using activities – wells, gathering pipelines, servitudes, access roads and the plant – over land also subject to renewable-energy developments; relevant across all phases. *Cumulative dimension:* This impact is inherently cumulative: it arises from the interaction of the gas project with the numerous approved and applied-for renewable-energy developments over the same land, and is assessed and rated as a cumulative impact.

Route alternatives. Where a linear-infrastructure route alternative (for a gathering pipeline, servitude or access road) traverses an authorised renewable-energy facility such as the Virginia Solar Park, the alternatives cannot carry the same social significance. A route passing through the authorised solar facility entails direct interaction with a committed land use and therefore carries higher land-use-conflict and cumulative significance, whereas the alternative that deviates around the facility avoids that direct interaction and is assessed as lower social significance for land-use conflict and cumulative overlap. The alignment that avoids the authorised facility is accordingly the socially preferred alternative. For this impact the significance should therefore be read as two scenarios – route through the authorised facility (higher; Medium-High) and route deviating around it (lower; Medium-Low) – rather than as a single rating; the other rated impacts are not materially affected by the route choice.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	4	3	3	3	-3.25	4	-13	Medium-High negative
Post-mitigation	-1	3	2	2	3	-2.5	3	-7.5	Medium-Low negative

Table 7-16: Mitigation for overlapping land use and cumulative impacts with renewable-energy projects.



No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Engage proactively with overlapping/adjacent renewable-energy developers to coordinate land access, road use, stormwater and construction scheduling, and to agree coexistence arrangements.	Planning / Construction	Before and during construction	D3 Energy	CLO / EAP	Coordinated, conflict-free coexistence	Coordination agreements; minutes
2	Assess and manage cumulative impacts (traffic, water, safety, sense of place) jointly where possible and account for them in mitigation planning.	All phases	Ongoing	D3 Energy	EAP / ECO	Cumulative effects managed	Cumulative-impact assessment; monitoring
3	Provide affected landowners with clear, written information on how the gas project's footprint relates to existing developments on their land.	Planning	Before activity	D3 Energy (CLO)	CLO	Landowners' uncertainty reduced	Information packs; meeting records

7.1.2.12 Distrust arising from previous development projects

Communities and landowners brought to the consultation a reservoir of distrust built up through experience with previous projects in the area. Community members referred to earlier gas and mining projects perceived to have delivered few local benefits and to solar projects that employed outsiders, leading to protests. Landowners described unmet commitments, road damage and disputes associated with an existing solar development. This history means that the same activity may be experienced as a new impact by one group and as a cumulative grievance by another, and that promises will be treated with scepticism.

Distrust is a subjective but powerful social impact: it shapes how every other impact is perceived and can escalate into opposition or protest. It is best mitigated through honest, consistent communication, written commitments and visible follow-through.

Contributing activities and phase: The project as announced and experienced across all activities, layered on the community's experience of previous mining, gas and renewable-energy projects; arises from planning and through construction. *Cumulative dimension:* Distrust is cumulative across successive projects: unmet commitments and grievances from earlier developments carry over and shape how this project is received.



Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	2	3	3	-2.75	4	-11	Medium-High negative
Post-mitigation	-1	2	2	2	2	-2	3	-6	Medium-Low negative

Table 7-17: Mitigation for distrust arising from previous development projects.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Hold one-on-one meetings with affected landowners and structured meetings with community structures before activities, explaining the project honestly and co-developing agreements.	Planning	Before construction	D3 Energy (CLO)	CLO management /	Trust-based relationships established	Meeting minutes; agreements
2	Establish regular, inclusive communication channels (e.g. WhatsApp groups for landowners, loud-hailing and community WhatsApp channels for communities) and report back on commitments and progress.	All phases	Ongoing	D3 Energy (CLO)	CLO	Stakeholders kept informed; commitments met	Communication log; progress reports
3	Honour all commitments and address past-project-related grievances raised, within the project's sphere of control, promptly and transparently.	All phases	Ongoing	D3 Energy	CLO	Grievances resolved	Grievance register

7.1.2.13 Gender and social inclusion impacts

Without deliberate measures, the benefits of the project (employment, procurement, skills) risk being captured by those already better positioned, while women, youth and vulnerable groups are excluded. Stakeholders highlighted active women-led cooperatives (farming, baking) and youth programmes that could be supported, and councillors noted municipal databases of vulnerable households that can be used to ensure inclusion. Conversely, social pathologies linked to the project (e.g. prostitution) disproportionately affect young women.

Promoting gender and social inclusion is both a legislative expectation (MPRDA, employment equity) and a means of broadening and deepening local benefit. With deliberate inclusion measures the residual impact can be turned towards a positive outcome.

Contributing activities and phase: Recruitment, procurement and skills activities across all phases determine who benefits, while the construction workforce drives the social-pathology risks that fall disproportionately on young women. *Cumulative dimension:* Patterns of



Equispectives

Social Impact Assessment

exclusion or inclusion combine with those of other projects in the area to entrench or to counteract existing inequalities in access to opportunity.



Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	-1	3	2	3	2	-2.5	3	-7.5	Medium-Low negative
Post-mitigation	-1	3	2	2	1	-2	2	-4	Low negative

Table 7-18: Mitigation for gender and social inclusion impacts.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Set and monitor targets for the participation of women and youth in employment, training and procurement; promote their representation in engagement and decision-making.	All phases	Throughout	D3 Energy	CLO / HR	Equitable participation of women and youth	Disaggregated employment/ procurement data
2	Support women- and youth-led cooperatives and enterprises through enterprise development and skills programmes, working with recognised forums.	Operation	Ongoing	D3 Energy	CLO forums	Women/youth enterprises supported	Programme records; beneficiary lists
3	Use municipal vulnerable-household databases to ensure vulnerable groups are not excluded from benefit-sharing (these are the indigent and vulnerable-household registers held by the local municipalities; access is to be requested through the municipality and used subject to the requirements of POPIA).	All phases	Ongoing	D3 Energy (CLO)	Municipality / CLO	Vulnerable groups included	Beneficiary records

7.1.2.14 Job creation, local procurement and economic expectations

The project's principal positive impact is local economic stimulation. Communities have very high expectations of employment, driven by deep unemployment and the decline of mining. It is essential, however, to manage these expectations realistically: gas production is capital-intensive rather than labour-intensive, and the proponent's Social and Labour Plan projects a small permanent workforce of approximately seven positions in Year 1 rising to about ten by Year 5. The realistic local benefit therefore lies less in direct employment than in secondary opportunities – local procurement and sub-contracting, enterprise and skills development, and the SLP's human resources development and local economic development programmes.

Stakeholders (councillors and the business forum) were clear that meaningful local participation – prioritising local labour, contracting local SMMEs, and transferring skills so people move beyond general labour – is both expected and necessary to secure a social



licence. Failure to manage expectations or to deliver visible local benefit is itself a source of protest risk (see Impacts 5 and 12). With active enhancement, this impact can become a meaningful and lasting positive contribution to the local economy.

Indirect and induced employment. Beyond direct posts, the project will generate indirect employment through local procurement and sub-contracting, and induced employment through local spending by employees and contractors, in addition to the enterprise- and skills-development opportunities noted above. Consistent with SIA practice these secondary and multiplier effects are described qualitatively and are not quantified here: employment multipliers are properly derived in an economic impact assessment, and presenting multiplier figures unsupported by primary data would risk over-stating the project's employment benefits.

National-scale benefits. At the national scale the project is also associated with wider benefits – royalties payable to the State, greater security of domestic gas supply (including substitution for imported gas) and energy-related employment sustained elsewhere in the economy. These are macro-economic and energy-security considerations that fall within the project's need-and-desirability motivation and the province of an economic impact assessment, rather than within this social impact assessment, which assesses social impacts on directly affected communities and stakeholders. They are acknowledged here but are not quantified, both to remain within the scope of the SIA and to avoid the bias that foregrounding national-scale benefits could introduce into a community-level social study.

Contributing activities and phase: Construction (drilling, and plant and pipeline construction) generates peak labour and procurement, while operation sustains the small permanent workforce and ongoing procurement and SLP programmes; benefit accrues across construction and operation. *Cumulative dimension:* Local procurement, enterprise development and skills transfer can combine with the region's other energy-sector activity to build a broader, more durable local economic base – a positive cumulative effect to be enhanced.

Significance rating

Stage	N	E	D	M	R	Conseq.	Prob.	Signif.	Class
Pre-mitigation	+1	3	3	2	2	2.5	3	7.5	Medium-Low positive



Post-mitigation	+1	3	4	3	3	3.25	4	13	Medium-High positive
-----------------	----	---	---	---	---	------	---	----	----------------------

Table 7-19: Mitigation for job creation, local procurement and economic expectations.

No.	Mitigation measure	Phase	Timeframe	Responsible	Monitoring	Target	Performance indicator
1	Develop and communicate a transparent local recruitment and procurement plan; prioritise local labour and channel a defined share of procurement and sub-contracting to local SMMEs.	All phases	Before construction ; ongoing	D3 Energy	CLO / HR	Maximised local employment and procurement	Local-spend and local-hire records
2	Implement SLP human-resources-development commitments (skills training, learnerships, bursaries, portable skills) and partner with local institutions and forums on skills transfer and enterprise development.	All phases	Per SLP schedule	D3 Energy	DMR / CLO	People move beyond general labour	SLP reports; training numbers
3	Identify and implement SLP local-economic-development projects in consultation with the Matjhabeng and Masilonyana Municipalities and recognised forums.	Operation	Per SLP	D3 Energy	Municipality / DMR	Aligned projects delivered LED	LED project records
4	Actively and continuously communicate the realistic nature and number of opportunities to manage expectations and prevent perceptions of unfairness.	All phases	Ongoing	D3 (CLO) Energy	CLO	Realistic expectations; reduced conflict	Communication records; grievance trends



7.2 Impact Ratings

Table 7-20 consolidates the pre- and post-mitigation significance of all assessed impacts, together with the prioritisation factor and the final significance. All scores are negative (adverse) except for job creation, local procurement and economic expectations, which is a positive impact to be enhanced.

Table 7-20: Consolidated impact rating table.

Impact	Phase	Pre score	Pre-mitigation significance	Post score	Post-mitigation significance	Confidence	CI	LR	PF	Final score	Final significance
Impact on farming livelihoods and interference with existing land uses	Construction / Operation	-13	Medium-High negative	-6	Medium-Low negative	High	3	2	1.38	-8.25	Medium-Low negative
Water contamination and groundwater safety	Construction / Operation	-10.5	Medium-High negative	-4.5	Medium-Low negative	Medium	3	3	1.5	-6.75	Medium-Low negative
Damage to farm roads, services and infrastructure	Construction / Operation	-12	Medium-High negative	-6	Medium-Low negative	High	2	1	1.12	-6.75	Medium-Low negative
Uncertainty around servitudes, property values and land-use rights	Planning / Operation	-9.75	Medium-High negative	-4.5	Medium-Low negative	Medium	2	2	1.25	-5.62	Medium-Low negative
Impacts on safety and security of local residents	Construction / Operation	-12	Medium-High negative	-6	Medium-Low negative	High	2	2	1.25	-7.5	Medium-Low negative
Increase in poaching incidents and stock theft	Construction / Operation	-12	Medium-High negative	-4.5	Medium-Low negative	Medium	2	3	1.38	-6.19	Medium-Low negative
Veld fire risk	Construction / Operation	-9	Medium-High negative	-4	Low negative	Medium	2	2	1.25	-5	Medium-Low negative
Nuisance factors (dust, noise, visual intrusion and sense of place)	Construction / Operation	-6	Medium-Low negative	-3	Low negative	High	2	1	1.12	-3.38	Low negative
Community perceptions and fears regarding gas safety	Operation	-8.25	Medium-Low negative	-4	Low negative	Medium	1	1	1	-4	Low negative
Social pathologies associated with a temporary workforce and contractor behaviour	Construction	-9	Medium-High negative	-4	Low negative	Medium	2	1	1.12	-4.5	Medium-Low negative
Overlapping land use and cumulative impacts with renewable energy projects	All phases	-13	Medium-High negative	-7.5	Medium-Low negative	Medium	3	1	1.25	-9.38	Medium-High negative



Equispectives

Social Impact Assessment

Distrust arising from previous development projects	Planning / Construction	-11	Medium-High negative	-6	Medium-Low negative	High	2	1	1.12	-6.75	Medium-Low negative
Gender and social inclusion impacts	Construction / Operation	-7.5	Medium-Low negative	-4	Low negative	Medium	1	1	1	-4	Low negative
Job creation, local procurement and economic expectations	Construction / Operation	7.5	Medium-Low positive	13	Medium-High positive	High	1	1	1	13	Medium-High positive

Table 7-21: Principal contributing activities and cumulative dimension by impact (activity-linkage summary).

Impact	Seismic survey	Drilling	Production plant	Associated infrastructure	Cumulative dimension
Farming livelihoods and land use	○	●	○	●	Yes (land take)
Water contamination and groundwater safety	—	●	●	○	High
Damage to farm roads, services and infrastructure	○	●	○	●	Yes
Uncertainty around servitudes, property values and land-use rights	—	○	○	●	Yes
Safety and security of local residents	○	●	○	●	Yes
Increase in poaching incidents and stock theft	○	●	—	●	Yes
Veld fire risk	○	●	○	●	Yes
Nuisance factors (dust, noise, visual intrusion, sense of place)	○	●	●	○	Yes
Community perceptions and fears regarding gas safety	—	○	●	●	Medium
Social pathologies associated with a temporary workforce	○	●	○	○	Yes
Overlapping land use and cumulative impacts (renewable energy)	○	●	●	●	Inherent
Distrust arising from previous development projects	○	○	○	○	Yes
Gender and social inclusion impacts	○	●	○	○	Yes
Job creation, local procurement and economic expectations (+)	○	●	●	●	Positive



Equispectives

Social Impact Assessment

Key: ● principal contributing activity; ○ contributory activity; – not material. The 'Cumulative dimension' column indicates whether the impact has a cumulative character and its relative degree. Because a given social impact is typically produced by several activities acting together, most impacts show more than one contributing activity and are experienced cumulatively by the affected receptor.



8 Social Impact Management Plan

A Social Impact Management Plan (SIMP) translates the findings of this assessment into a practical, implementable programme for managing the project's social impacts throughout its life cycle. The detailed mitigation and enhancement measures for each impact are set out in the impact tables in Section 7. The table below consolidates these into a single management reference, summarising the key measures, the responsible party, and the monitoring and performance indicators for each impact.

The SIMP must be treated as a living document. It should be reviewed and updated at least annually, and whenever project activities, phases or circumstances change, and its measures should be incorporated into the project's environmental and social management system, contractor specifications, and the Social and Labour Plan where relevant. Implementation should begin as early as possible in the project cycle, since social impacts begin when a project is announced. Responsibility for the SIMP rests with D3 Energy, typically acting through a dedicated Community Liaison Officer (CLO) supported by the project's management team. Performance against the SIMP should be monitored continuously, audited periodically (including independent or community monitoring where appropriate), and reported to stakeholders.

Table 8-1: Consolidated Social Impact Management Plan.

Impact	Phase	Key management and mitigation measures	Responsible party	Monitoring and performance indicators
Farming livelihoods and land use	Construction / Operation	Appoint a CLO; conclude written access and compensation agreements before activity; avoid sensitive seasons; rehabilitate disturbed land; transparent claims procedure.	D3 Energy (CLO)	Signed agreements; claims register; rehabilitation sign-off.
Water contamination and groundwater	Construction / Operation	Baseline and ongoing water-quality monitoring; set-back distances from boreholes/watercourses; Spill Prevention and Response Plan; manage sanitation and waste; agreed abstraction.	D3 Energy; hydrogeologist	Monitoring results; spill records; water-use agreements.
Roads, services and infrastructure	Construction / Operation	Pre-construction condition survey; road-maintenance and upgrade agreements; prompt repair; speed limits and driver code of conduct.	D3 Energy (CLO)	Condition surveys; maintenance and repair records.
Servitudes, property values and land-use rights	Planning / Operation	Detailed written information; register servitudes only where necessary and de-	D3 Energy; legal	Servitude register; agreements; valuations.



Impact	Phase	Key management and mitigation measures	Responsible party	Monitoring and performance indicators
		register at closure; fair agreements; independent valuation if disputed.		
Safety and security	Construction / Operation	Farm access and security protocol with landowners and security structures; ID and marked vehicles; secure wells/excavations; code of conduct; compensate damages.	D3 Energy (CLO)	Access protocol and logs; incident register.
Poaching and stock theft	Construction / Operation	Access control; no-poaching induction; regular fence and snare inspections; coordinate with farm watch; remove and report offenders.	D3 Energy; security	Induction and inspection logs; incident reports.
Veld fire	Construction / Operation	Fire Prevention and Response Plan; join the Fire Protection Association; equipment and trained teams; control hot works; firebreaks; notify neighbours.	D3 Energy; FPA	Fire plan; FPA membership; training records.
Nuisance and sense of place	Construction / Operation	Dust and noise control; avoid night/weekend work; manage lighting and screening; camouflage markers; rehabilitate.	D3 Energy; ECO	Complaints register; monitoring; site inspections.
Gas-safety perceptions	Operation	Non-technical information in local languages; awareness campaigns; site wells/pipelines away from residences; emergency response procedures and drills; inductions on request.	D3 Energy (CLO); safety officer	Information materials; drill records; engagement records.
Social pathologies and worker influx	Construction	Maximise local labour; enforce code of conduct with penalties; HIV/STI and substance-abuse awareness; adequate sanitation and welfare facilities.	D3 Energy; SHE officer	Recruitment records; toolbox-talk records; inspections.
Overlapping land use and cumulative impacts	All phases	Engage renewable-energy developers to coordinate access, roads, stormwater and scheduling; manage cumulative impacts jointly; clear landowner information.	D3 Energy (CLO / EAP)	Coordination agreements; cumulative-impact assessment.
Distrust from previous projects	Planning / Construction	One-on-one and structured meetings before activity; honest, continuous communication channels; honour commitments; resolve grievances promptly.	D3 Energy (CLO)	Meeting minutes; communication log; grievance register.
Gender and social inclusion	Construction / Operation	Participation targets for women and youth; support women/youth cooperatives and enterprise development; use vulnerable-household databases.	D3 Energy (CLO / HR)	Disaggregated data; programme records; beneficiary lists.
Job creation, procurement and economic expectations	Construction / Operation	Transparent local recruitment and procurement plan; SLP skills, learnerships and bursaries; SLP local economic development projects with the municipalities; manage expectations.	D3 Energy; HR; DMR	Local-hire and local-spend records; SLP reports; communication records.

Monitoring, auditing and review of the SIMP should be linked to the project's environmental management programme and Social and Labour Plan reporting cycles, and key performance indicators should be reported to affected stakeholders at least annually.



9 Stakeholder Engagement Plan

Social impacts begin in the planning phase of a project, and it is therefore imperative to start stakeholder engagement as early as possible. A Stakeholder Engagement Plan (SEP) will assist D3 Energy to communicate efficiently with stakeholders throughout the life of the project. The SEP cannot be a once-off activity and should be updated annually to remain relevant and to capture new information, with stakeholder input. The SEP should have the following objectives:

- To identify and assess the processes and mechanisms that will improve communication between landowners, local communities, the wider community and D3 Energy.
- To improve relations between D3 Energy's staff and the people living in the local communities.
- To provide a guideline for the dissemination of crucial information to local communities in a timely, respectful and efficient manner; and
- To provide a format for the timely collection of information from local communities so that they are included in decision-making.

The SEP should be compiled in line with International Finance Corporation (IFC) guidelines and should consist of the following components:

- **Stakeholder identification and analysis** – time should be invested in identifying and prioritising stakeholders and assessing their interests and concerns.
- **Information disclosure** – information must be communicated early and throughout the project in ways that are meaningful and accessible (including in Sesotho, Afrikaans and English, and by loud-hailing for general labourers) – identified by local councillors as the most effective means of reaching general labourers with limited connectivity, and used well beyond political contexts.
- **Stakeholder consultation** – each consultation should be planned, inclusive, documented and followed up.
- **Negotiation and partnerships** – strategic partnerships (e.g. with recognised business and women's/youth forums and the municipalities) should add value, and good-faith negotiation should be used for complex issues.



- **Grievance management** – accessible and responsive means for raising grievances must be maintained throughout the project.
- **Stakeholder involvement in monitoring** – directly affected stakeholders should be involved in monitoring impacts, mitigation and benefits, with external monitors where they enhance credibility.
- **Reporting to stakeholders** – report back on environmental, social and economic performance; and
- **Management functions** – build and maintain sufficient capacity (including the CLO function) to manage engagement, track commitments and report on progress.

Stakeholder engagement must take place in each phase of the project cycle, and the approach will differ by phase. The stakeholder analysis in Section 6 must inform the engagement strategy.

Engagement should be guided by the principles of inclusivity (reaching all affected groups, including those with limited literacy or no digital access), transparency, responsiveness, and consistency throughout the project life cycle. The matrix below sets out, for each stakeholder group, the recommended engagement approach, timing, language and responsible person.

Table 9-1: Stakeholder engagement plan.

Stakeholder Group	Impact Level	Interest Level	Engagement Approach	Timing / Frequency	Language	Responsible Person
Directly affected and neighbouring landowners / farmers	High	High	Individual farm visits; site-specific meetings; written access, gate and compensation protocols; regular CLO contact; WhatsApp group.	Before, during and after construction	Afrikaans and English	CLO (primary); project manager (escalation)
Farm workers	Medium	Medium	Site induction briefings; CLO contact; grievance-mechanism briefings.	Before and during construction	Sesotho, Afrikaans, English	CLO; contractor HR
Ward councillors and local municipalities (Matjhabeng, Masilonyana)	Medium	High	Briefing meetings; written progress reports; alignment with IDP/LED priorities.	Quarterly through the project life cycle	Sesotho and English	Project developer; CLO
Local business and SMME forums (e.g. Tikwe Business Forum)	Low-Medium	High	Procurement and supplier-development sessions; SMME database registration; engage registered forums.	Before construction and quarterly thereafter	Sesotho and English	Procurement department; CLO



Stakeholder Group	Impact Level	Interest Level	Engagement Approach	Timing / Frequency	Language	Responsible Person
Community forums, women and youth groups	Low-Medium	Medium	Community meetings; loud-hailing and social media; support for cooperatives and youth programmes.	Before and during construction; periodically in operation	Sesotho, Afrikaans, English	CLO
Environmental-justice networks and NGOs (MEJCON-SA, MACUA, EWT)	Low-Medium	Medium	Project induction and workshops on request; written updates; public reports.	At key milestones; annually	English and Sesotho	Project developer; CLO
Government departments and state entities (PASA, DMPR, DWS, DFFE, Eskom, SANRAL)	Low	Medium	Written correspondence; formal updates; participation in the EIA process.	At key project milestones	English	Project developer
Renewable-energy developers in the area	Medium	Medium	Bilateral coordination meetings on land access, roads, stormwater and scheduling.	Before and during construction	English	Project developer

The Community Liaison Officer (CLO) is the central figure in stakeholder engagement. The CLO should:

- Be fluent in Sesotho, Afrikaans and English.
- Be visible, consistent and trusted by both the farming community and the township communities.
- Be based in or near the project area during construction and available to all stakeholder groups.
- Be equipped with a vehicle, a project mobile phone and a budget for engagement; and
- Report to the project manager and keep a communication register of all engagements (date, participants, issues raised and commitments made), reviewed regularly by management and included in project reports.

10 Proposed Grievance Mechanism

In accordance with international good practice, D3 Energy should establish a specific mechanism for dealing with grievances. A grievance is a complaint or concern raised by an individual or organisation that judges that it has been adversely affected by the project. Grievances may take the form of specific complaints for actual damages, general concerns, or perceived impacts. The IFC standards require grievance mechanisms to provide a structured way of receiving and resolving grievances promptly, using an understandable and transparent



process that is culturally appropriate, accessible to all segments of affected communities, at no cost and without retribution. The mechanism must not impede access to other judicial or administrative remedies.

The grievance mechanism should be based on the following principles:

- Transparency and fairness.
- Accessibility and cultural appropriateness.
- Openness and regular communication.
- Written records.
- Dialogue and site visits; and
- Timely resolution.

Based on these principles, the grievance mechanism process involves four stages: (1) receiving and recording the grievance; (2) acknowledgement and registration; (3) site inspection and investigation; and (4) response. Given the level of distrust and the history of disputes in the area, an accessible and visibly fair grievance mechanism is particularly important for this project.

11 Conclusion and Recommendations

The aim of this report is to identify, assess and propose mitigation for the potential social impacts associated with the proposed D3 Production Right. The affected area includes high-value agricultural land, game and tourism operations, and vulnerable communities already facing poverty, high unemployment and limited services. Many landowners and residents are uncertain about what the project will mean for their properties, their rights and their livelihoods. Critically, the direct employment benefit is very limited – the SLP projects only about seven to ten permanent positions – so the parties who bear the social cost of the development (directly affected farmers and farm workers) are largely not the parties who will receive its direct benefits. It is therefore of utmost importance that local social impacts are managed and monitored diligently.

The situation is made more complex by the concentration of approved renewable-energy developments over the same land. Overlapping energy developments add to confusion and raise real concerns about long-term land access, use and cumulative effects. Concerns have



already been raised by landowners, farmers and communities about disruption to land use, safety, water, roads and the coexistence of multiple developments.

The project will require access to private land where farming, game and tourism activities take place. This creates concern for landowners about infrastructure, safety and their ability to continue using their land productively. There are no fatal flaws that would prevent the project from proceeding, but the social concerns must be addressed early and carefully. If not managed properly, they could result in resistance, reputational harm and unnecessary conflict. Based on the assessment, the key recommendations are:

Community livelihoods and land use

- Appoint a dedicated Community Liaison Officer.
- Conclude written access and fair compensation agreements before any activity.
- Implement a transparent claims procedure.
- Avoid sensitive farming seasons.
- Rehabilitate disturbed land.

Water safety

- Conduct baseline and ongoing groundwater and water-quality monitoring.
- Set minimum set back distances from boreholes and watercourses.
- Implement a Spill Prevention and Response Plan.
- Agree water-use arrangements with landowners.

Infrastructure protection

- Compile an infrastructure baseline before construction.
- Formalise road maintenance and rehabilitation agreements.
- Reinstate damaged roads, pipes and services promptly.

Servitudes and property values

- Provide detailed written information to landowners.
- Register servitudes only where necessary and de-register them at closure.
- Offer an independent agricultural economist assessment where land value is disputed.

Safety and security

- Develop farm access and security protocols with landowners and local security structures.
- Require identification and marked vehicles for all personnel.



- Secure all wells, excavations and equipment.
- Enforce a workforce code of conduct.

Poaching and veld fire

- Apply strict access control and anti-poaching measures.
- Inspect fences regularly for snares.
- Compile a Fire Prevention and Response Plan and join the local Fire Protection Association.
- Train and equip personnel for veld-fire response.

Nuisance and sense of place

- Implement dust, noise, lighting and visual mitigation from specialist studies.
- Avoid night and weekend work where feasible.
- Rehabilitate disturbed areas to restore the rural character.

Gas-safety perceptions

- Distribute clear, lay language information in local languages.
- Provide inductions and workshops to community structures.
- Communicate emergency response procedures.

Social pathologies and inclusion

- Maximise the use of locally resident labour.
- Enforce a code of conduct and run health and gender respect awareness.
- Set participation targets for women and youth.
- Use municipal vulnerable household databases to include vulnerable groups.

Cumulative impacts

- Engage renewable energy developers to coordinate access, roads, stormwater and scheduling.
- Manage cumulative impacts jointly where possible.

Trust and communication

- Hold one-on-one and structured meetings before activities.
- Maintain honest, continuous communication and honour commitments.
- Operate an accessible grievance mechanism.

Job creation and local economy



- Manage expectations honestly given the small permanent workforce.
- Maximise local procurement, sub-contracting and skills transfer.
- Deliver SLP human resources development and local economic development commitments through recognised forums and the municipalities.

By implementing these measures, and by beginning to manage social impacts as early as possible in the project cycle, D3 Energy can proactively address the social risks of the development, protect the wellbeing of host communities, and earn and retain a social licence to operate while navigating the complexities of overlapping land uses and a challenging socio-economic context.



12 References

Barnett, E. & Casper, M. 2001. **Research: A definition of “social environment”**. American Journal of Public Health, 91(3): 465.

Bell, P. A., Fisher, J. D., Baum, A. & Greene, T. C. 1996. **Environmental Psychology, 4th ed.** Florida: Harcourt Brace.

Constitution of the Republic of South Africa, 1996.

Du Plessis, A. 2011. **South Africa’s constitutional environmental right (revisited)**. Macquarie Journal of International and Comparative Environmental Law, 7(1), 41–61.

Du Preez, M. & Perold, J. 2005. **Scoping/feasibility study for a new landfill site for the Northern Areas of Johannesburg: Socio-Economic Assessment**. Mawatsan.

Esteves, A. M., Franks, D. & Vanclay, F. 2012. **Social impact assessment: the state of the art**. Impact Assessment & Project Appraisal, 30(1): 35–44.

Free State Provincial Growth and Development Strategy / Spatial Development Framework, 2012.

International Association for Impact Assessment. 2003. **Social Impact Assessment: International Principles**. Special Publication Series No. 2. Fargo: IAIA.

International Finance Corporation. 2012. **Performance Standards on Environmental and Social Sustainability**. Washington, DC: IFC.

International Finance Corporation. 2007. **Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets**. Washington, DC: IFC.

International Organisation for Standardisation. 2010. **ISO 26000: Guidance on Social Responsibility**. Geneva: ISO.

Lejweleputswa District Municipality. **Integrated Development Plan 2022–2027**.

Masilonyana Local Municipality. **Final Integrated Development Plan 2024/2025**.



Mineral and Petroleum Resources Development Act 28 of 2002.

D3 Energy Energy (Pty) Ltd. 2025. **Social and Labour Plan**, August 2025.

National Development Plan 2030: Our future – make it work. 2012. Pretoria: National Planning Commission.

National Environmental Management Act 107 of 1998.

National Heritage Resources Act 25 of 1999.

National Water Act 36 of 1998.

Promotion of Administrative Justice Act 3 of 2000.

Statistics South Africa. **Census 2011; Community Survey 2016; Census 2022.**

Statistics South Africa. 2014. **The South African MPI: Creating a multidimensional poverty index using census data.**

UNEP. 2002. **EIA Training Resource Manual**, 2nd ed. UNEP.

Vanclay, F. 2003. **Conceptual and methodological advances in Social Impact Assessment.** In Vanclay, F. & Becker, H. A. *The International Handbook for Social Impact Assessment.* Cheltenham: Edward Elgar.

Vanclay, F., Esteves, A. M., Aucamp, I. & Franks, D. 2015. **Social Impact Assessment: Guidance for assessing and managing the social impacts of projects.** Fargo, ND: IAIA.



World Wide Web:

<http://www.lejweleputswa.co.za> (accessed 27/05/2023)

<http://www.matjhabeng.fs.gov.za> (accessed 27/05/2023)

<http://www.masilonyana.fs.gov.za> (accessed 18/09/2025)

<http://mineralscouncil.org.za> (accessed 27/05/2023)

<http://www.municipalities.co.za> (accessed 18/09/2025)