Proposed development of a 400 MW solar PV plant and associated infrastructure (Phase 3) in the Emthanjeni Local Municipality in the Northern Cape Province

Social Impact Assessment Report

Prepared by:

Equispectives Research & Consulting Services

Contact person: Ilse Aucamp

Prepared for:
Ecoleges Environmental Consultants

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Executive Summary

In 2016 Soventix SA (Pty) Ltd applied for the development of a 225 MW Solar PV facility between Hanover and De Aar in the Northern Cape. Environmental authorisation for the central footprint (PV02) was granted in 2016. An amendment to increase the capacity of the facility to 300 MW due to technological advancements in solar photovoltaic efficiency and electrical output was granted in 2020. In 2021 a second amendment was granted for the inclusion of containerised lithium-ion battery storage and dual-fuel backup generators with associated fuel storage. The application was part of the REIPPP or RMIPPP bid rounds that formed part of a Strategic Infrastructure Project as described in the National Development Plan of 2011. Soventix SA (Pty) Ltd was an unsuccessful bidder but has since partnered with another company with 1.5 GW in private renewable energy offtake agreements, making it economically feasible to develop two more 300 and 400 MW facilities (Phases 2 and 3 respectively). The PV03 footprint where Phase 2 is proposed was considered during the initial SEIA for Phase 1. The proposed site for Phase 3 was not assessed in the SEIA for Phase 1. The two additional Solar PV facilities (Phases 2 and 3) will feed into the authorised sub-station on the PV02 footprint (Phase 1). The size of the proposed Phase 3 for a 400 MW solar PV facility is approximately 600 ha.

The receiving environment is located in Ward 6 of the Emthanjeni Local Municipality that is located in the Pixley Ka Seme District Municipality in the Northern Cape province. The towns in the area are small and the proposed site is located between the towns of Hanover and De Aar. There are no areas under traditional leadership in the district and the site is surrounded by commercial farms.

The area showed an increase in population as well as the number of households since 2011, with the increase in the number of households greater than the increase in population. The household sizes have shown a decrease since 2011. This can be due to children leaving their parents' house to stay on their own and start families of their own.

In Ward 6, the proportion of households that are multidimensionally poor has increased, compared to a decrease on local level. This means that the households are deprived on a number of dimensions which mostly relate to access to basic services. Education levels are low and there are very few employment opportunities. Agriculture forms the backbone of the economy.

None of the possible impacts is seen as a fatal flaw in the possible successful execution of the proposed project. Most of the potential impacts can be mitigated. The importance of addressing the potential impacts as early in the project cycle as possible must be underlined, since failure to do so may result in the development of risks and an exponential increase in project cost. The following key social impacts have been identified:

- Expectations and community relations
- Uncertainty
- Change of land use/Livelihoods
- Property values
- Traffic and roads
- Damage to farm infrastructure
- Safety and security concerns
- Concerns about social disturbance and community safety
- Economic opportunities
- Sense of place
- Generation of renewable energy

There will also be cumulative impacts from Phase 1 of this project and other similar projects in the area. The cumulative impacts should be mitigated and managed with input from other renewable energy service providers and the local and district municipalities. Based on the findings of this study, the following key recommendations are made:

- Mitigation about safety and security must be implemented as soon as construction commences. The process must involve local security groups and landowners.

- A community liaison officer that is trusted by the community and has the necessary skills must be appointed before construction commences.
- Protocols on farm access, compensation, communication, and road maintenance must be agreed upon and be in place before construction commences.
- Screening the solar facility from the neighbouring properties in a way acceptable to the land owners must be investigated and agreed to.
- The social plans for the facility must be generated with input from the local municipality and other key stakeholders.
- A grievance mechanism and claims procedure must be in place and shared with all the stakeholders before the construction commences; and
- Economic benefits must be enhanced, and local labour and procurement should be prioritised.

Based on the findings of this report, it is recommended that the project continues, on the conditions that the mitigation measures are implemented.

Declaration of Independence

Equispectives Research and Consulting Services declare that:

- All work undertaken relating to the proposed project were 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 abovementioned 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;
- 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

This report was compiled by San-Marié Aucamp and Ilse Aucamp.

Ilse Aucamp holds a D Phil degree in Social Work obtained from the University of Pretoria in 2015. She also has Masters' degree in Environmental Management (Cum Laude) from the Potchefstroom University for Christian Higher Education, which she obtained in 2004. Prior to that she completed a BA degree in Social Work at the University of Pretoria. She is frequently a guest lecturer in pre- as well as post-graduate programmes at various tertiary institutions. Her expertise includes social impact assessments, social impact management plans, social and labour plans, social auditing, training, human rights, gender, social research and public participation. She is a co-author of the *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects* document published by the International Association for Impact Assessment.

San-Marié Aucamp is a registered Research Psychologist with extensive experience in both the practical and theoretical aspects of social research. She has more than 20 years' experience in social research, and she occasionally presents guest lectures on social impact assessment. Her experience includes social impact assessments, social and labour plans, training, group facilitation as well as social research. She is a past council member of the Southern African Marketing Research Association (SAMRA).

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GLOSSARY OF TERMS

Sense of place: Defining oneself in terms of a given piece of land. It is the manner in which humans relate or feel about the environments in which they live.

Social impact: Something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense.

Social change process: A discreet, observable, and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts.

Social Impact Assessment: The processes of analysing, monitoring, and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

Social license to operate: The acceptance and belief by society, and specifically local communities, in the value creation of activities.

Social risk: Risk resulting from a social or socio-economic source. Social risk comprises both the objective threat of harm and the subjective perception of risk for harm.

LIST OF ABBREVIATIONS

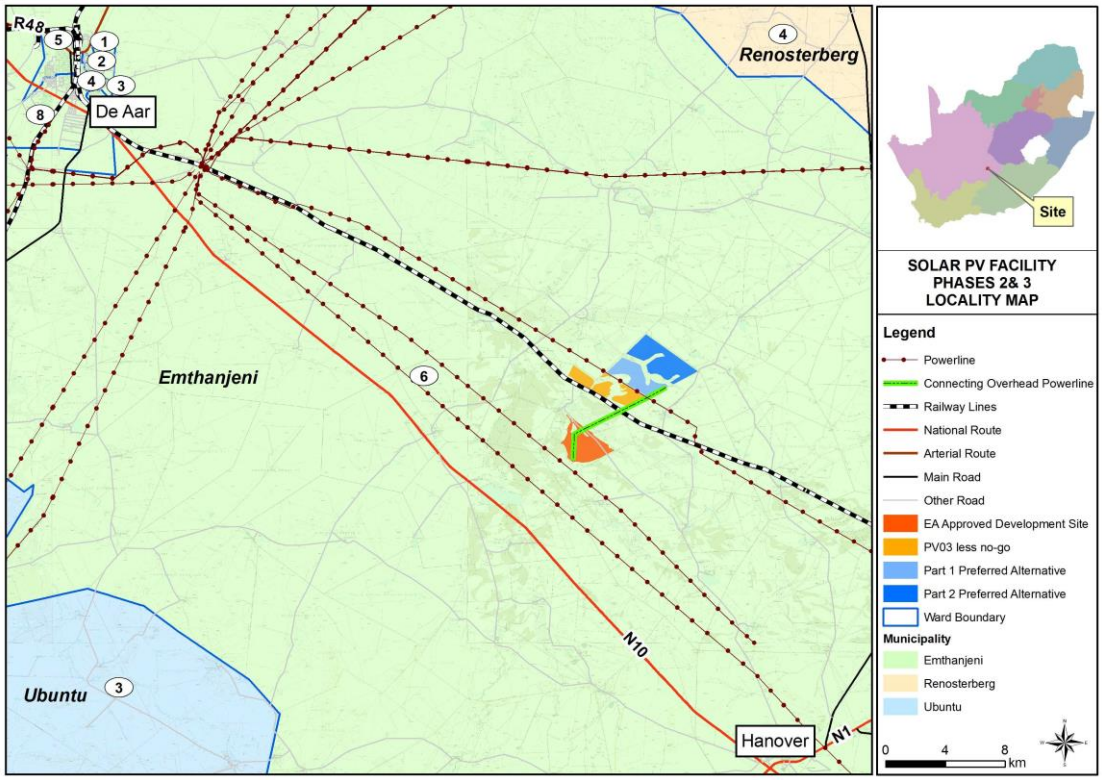
DM	District Municipality
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESOMAR	European Society for Opinion and Marketing Research
FPL	Food Poverty Line
HDSA	Historically Disadvantaged South African
IDP	Integrated Development Plan
LBPL	Lower Bound Poverty Line
LM	Local Municipality
NEMA	National Environmental Management Act
SAMPI	South African Multidimensional Poverty Index
SAMRA	Southern African Marketing Research Association
SIA	Social Impact Assessment
UBPL	Upper Bound Poverty Line
UNEP	United Nations Environmental Programme

1 Introduction

In 2016 Soventix SA (Pty) Ltd applied for the development of a 225 MW Solar PV facility between Hanover and De Aar in the Northern Cape. Environmental authorisation for the central footprint (PV02) was granted in 2016. An amendment to increase the capacity of the facility to 300 MW due to technological advancements in solar photovoltaic efficiency and electrical output was granted in 2020. In 2021 a second amendment was granted for the inclusion of containerised lithium-ion battery storage and dual-fuel backup generators with associated fuel storage. The application was part of the REIPPP or RMIPPP bid rounds that formed part of a Strategic Infrastructure Project as described in the National Development Plan of 2011. Soventix SA (Pty) Ltd was an unsuccessful bidder but has since partnered with another company with 1.5 GW in private renewable energy offtake agreements, making it economically feasible to develop two more 300 and 400 MW facilities and associated infrastructure (Phases 2 and 3 respectively). The PV03 footprint where Phase 2 is proposed was considered during the initial SEIA for Phase 1. The proposed site for Phase 3 was not assessed in the SEIA for Phase 1. The two additional Solar PV facilities (Phases 2 and 3) will feed into the authorised sub-station on the PV02 footprint (Phase 1). The size of the proposed Phase 3 for a 400 MW solar PV facility is approximately 600 ha.

Figure 1 shows the proposed location for the project.

Figure 1: Locality of the proposed 400 MV solar plant project.



The purpose of this report is to provide baseline information regarding the socio-economic environment, to identify possible social and economic risks/fatal flaws and to suggest ways in which these impacts can be mitigated. This will assist decision-makers on the project in making informed decisions by providing information on the potential or actual consequences of their 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 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 of individuals;
- Enhanced benefits to those affected;
- Avoiding delays and obstruction – helps to gain development approval (social license);
- Lowered costs;
- Better community and stakeholder relations; and
- Improved proposals.

Ecoleges Environmental Consultants was appointed to manage the Environmental Impact Assessment for the project, and they appointed Equispectives Research and Consulting Services to perform a social impact assessment for the proposed project. This report represents the findings and recommendations of the social impact assessment.

2 Scope of Work

The purpose of the SIA is to provide input in the Environmental Impact Assessment (EIA) Report for the proposed development. The SIA level assessment will include the following:

- Update of Baseline Information as determined post Scoping Phase;
- A detailed social impact assessment based on the proposed activities and the alternatives identified during the Scoping Phase;
- Identification and description of sensitivities and constraints from a social perspective;
- Include 'need and desirability' taking into account the social and economic aspects;
- Make recommendations with regard to the planning, construction and operation of the proposed development that will benefit all stakeholders, including the community;
- Contribution to the preparation of an EMP relating to the specific field of expertise and impacts identified;
- Providing detailed mitigation / management measures for the management of the identified impacts for inclusion in the EMP. The mitigation / management measures will be presented in a tabulated format for each phase of the project and will include;
    - Detailed description of mitigation measures or management options;
    - Roles and Responsibilities for implementation;
    - Timeframes for implementation;
    - Means of measuring successful implementation (Targets & Performance Indicators).
- Based on the needs of the community, make suggestions on effective corporate social responsibility projects that can be undertaken by the developer.

3 Methodology

Scientific social research methods were used for this assessment. In order to clarify the process to the reader, this section will start with a brief explanation of the processes 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 list provided in the References);
- Data from Statistics South Africa
- Public participation process conducted by Ecoleges
- Interviews with key stakeholders
- Professional judgement based on experience gained with similar projects.

3.2 Assumptions and limitations

The following assumptions and limitations were relevant:

1. Not every individual in the community could be interviewed therefore only key people in the community were approached for discussion. Additional information was obtained using existing data.

2. The social environment constantly changes and adapts to change, and external factors outside the scope of the project can offset social changes, for example changes in local political leadership, droughts or economic conditions. It is therefore difficult to predict all impacts to a high level of accuracy, although care has been taken to identify and address the most likely impacts in the most appropriate way for the current local context within the limitations. In addition, it is also important to manage social impacts for the life of the project, especially in the light of the changing social environment.

3. Social impacts can be felt on an actual or perceptual level, and therefore it is not always straightforward to measure the impacts in a quantitative manner.

4. Social impacts commence when the project enters the public domain. Some of

these impacts will occur irrespective of whether the project continues or not, and other impacts have already started. These impacts are difficult to mitigate and some would require immediate action to minimise the risk.

5. There are different groups with different interests in the community, and what one group may experience as a positive social impact, another group may experience as a negative impact. This duality will be pointed out in the impact assessment section of the report.

6. Social impacts are not site-specific, but take place in the communities surrounding the proposed development.

3.3 Social Impact Assessment Model

The theoretical model used for this impact assessment was developed by Slootweg, Vanclay and Van Schooten and presented in the *International Handbook of Social Impact Assessment* (Vanclay & Becker, 2003). This model identifies pathways by which social impacts may result from proposed projects. The model differentiates between social change processes and social impacts, where the social change process is the pathway leading to the social impact. Detail of how the model works is not relevant to this study, but it is important to understand the key concepts, which will be explained in the following paragraphs.

Social change processes are set in motion by project activities or policies. A social change process is a discreet, observable and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts (Vanclay, 2003). If managed properly, however, these changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place (Vanclay, 2003). Social change processes can be measured objectively, independent of the local context. Examples of social change processes are an increase in the population, relocation, or the presence of temporary workers.

For the purpose of this report, the following social change process categories were considered:

- Demographic processes;
- Economic processes;
- Geographic processes;
- Institutional and legal processes;
- Emancipatory and empowerment processes;
- Socio-cultural processes; and
- Other relevant processes.

The *International Association for Impact Assessment* (2003) states that Social Impact Assessment includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

A social impact is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Therefore, two types of social impacts can be distinguished:

- **Objective social impacts** – i.e. impacts that can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety.

- **Subjective social impacts** – i.e. impacts that occur "in the heads" or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life.

It is important to include subjective social impacts, as these can have far-reaching consequences in the form of opposition to, and social mobilisation against the project (Du Preez & Perold, 2005).

For the purpose of this SIA, the following Social Impact Assessment categories were

investigated:

- Health and social well-being;
- Quality of the living environment;
- Economic impacts and material well-being;
- Cultural impacts;
- Family and community impacts;
- Institutional, legal, political and equity impacts; and
- Gender impacts.

Relevant criteria for selecting significant social impacts included the following:

- Probability of the event occurring;
- Number of people that will be affected;
- Duration of the impact;
- Value of the benefits or costs to the impacted group;
- Extent to which identified social impacts are reversible or can be mitigated;
- Likelihood that an identified impact will lead to secondary or cumulative impacts;
- Relevance for present and future policy decisions;
- Uncertainty over possible effects; and
- Presence or absence of controversy over the issue.

For the purpose of this study, the model was adapted to fit the South African context, and where processes and impacts were not relevant to the study, it was omitted. Each category has a number of sub-categories, which also have been investigated. The Equator Principles, International Finance Corporation Performance Standards and World Bank Environmental, Health and Safety guidelines were consulted in the writing of this report and the mitigation suggested adheres to these requirements.

3.4 Literature study

A literature search was undertaken to obtain secondary data for the baseline description of the socio-economic environment. The information in this report was acquired via statistical data obtained from Statistics South Africa, SIA literature (see

References), previous SIA studies conducted in the area, Municipal IDP's, the public consultation process conducted by Ecoleges and information from reputable sources on the World Wide Web.

3.5 Research approach

Traditionally there are two approaches to SIA, a technical approach, and a participatory approach. A technical approach entails that a scientist remains a neutral observer of social phenomena. The role of the scientist is to identify indicators, obtain objective measures relevant to the situation and provide an expert assessment on how the system will change (Becker, Harris, Nielsen & McLaughlin, 2004). A participatory approach uses the knowledge and experiences of individuals most affected by the proposed changes as the basis for projecting impacts. In this case the role of the scientist is facilitator of knowledge sharing, interpretation, and reporting of impacts (Becker et al, 2004). Both approaches were followed in this study.

3.6 Ethical issues

The most basic principle of research is that participants should not be harmed by participation in the research project. It is important that research not only does no harm, but also potentially contributes to the wellbeing of others. At times this might place a researcher in a difficult position – what is beneficial to one group may not be beneficial to another (Bless, Higson-Smith & Kagee, 2006). Furthermore, an individual has the autonomy to decide whether to participate in research or not. No person should be forced, either overtly or covertly, to participate in research. Other important principles include justice (based on the assumption that all people are equals), fidelity (keeping promises or agreements, specifically between the researcher and the participant) and respect for participants' rights and dignity. In addition to these overarching ethical principles, important ethical principles that should be met are informed consent, confidentiality, anonymity and discontinuance. This is in line with international as well as national research practice such as the World Association for Market, Social and Opinion Researchers (ESOMAR) and Southern African Marketing Research Association (SAMRA) codes of conduct. The researcher has an ethical obligation to develop well-designed projects and execute them with care.

Researchers are not allowed to change their data or observations and should report on technical shortcomings, failures, limits of the study, negative findings, and methodological constraints. The honest and accurate reporting of data is also an essential component of scientifically accurate and ethically legitimate research and conclusions should be supported by data.

4 Policy and Planning Environment

Legislation and policies reflect societal norms and values. Therefore, the legal and policy context plays an important role in identifying and assessing the potential social impacts associated with a proposed development.

Policy review provides an insight into government socio-economic objectives, plans, and applicable legislature. This assists in determining the importance and alignment of the project regarding the developmental objectives of various government spheres.

4.1 National Energy Act (Act No 34 of 2008)

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including solar and wind:

"To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (…); to provide for (…) increased generation and consumption of renewable energies…" (Preamble).

4.2 White Paper on the Energy Policy of the Republic of South Africa

Investment in renewable energy initiatives is supported by the White Paper on Energy Policy for South Africa (December 1998). In this regard the document notes:

"Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential".

"Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".

The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind. In

addition, renewable applications are in fact the cheapest energy service in many cases; more so when social and environmental costs are considered.

Government policy on renewable energy is concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential, and compared to investments in other energy supply options; and
- Addressing constraints on the development of the renewable industry.

The White Paper acknowledges that South Africa has neglected the development and implementation of renewable energy applications, even though the country's renewable energy resource base is extensive, and many appropriate applications exist. The White Paper further notes that renewable energy applications have specific characteristics that need to be considered. Advantages include:

- Minimal environmental impacts in operation in comparison with traditional supply technologies; and
- Generally lower running costs, and high labour intensities.

Disadvantages include:

- Higher capital costs in some cases.
- Lower energy densities; and
- Lower levels of availability, depending on specific conditions, especially with sun and wind-based systems.

4.3 White Paper on Renewable Energy

The White Paper on Renewable Energy (November, 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa. The White Paper notes that while South Africa is well endowed with renewable energy resources that

have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol[1], Government is resolute to realise the country's commitment to reducing greenhouse gas emissions. Therefore, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate. South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed to ensure energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act). Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels.

4.4 Integrated Energy Plan (2016)

The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply

[1] The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (https://unfccc.int/kyoto_protocol.)

bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives were identified, namely:

- Objective 1: Ensure security of supply.
- Objective 2: Minimise the cost of energy.
- Objective 3: Promote the creation of jobs and localisation.
- Objective 4: Minimise negative environmental impacts from the energy sector.
- Objective 5: Promote the conservation of water.
- Objective 6: Diversify supply sources and primary sources of energy.
- Objective 7: Promote energy efficiency in the economy; and
- Objective 8: Increase access to modern energy.

The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and consider the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others.

Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are analysed. The IEP is focused on determining the long-term energy pathway for South Africa, considering a variety of factors which are embedded in the eight objectives.

The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of renewable energy, the document refers to wind and solar energy. The document does, however, appear to support solar over wind noting that solar PV and CSP with storage present excellent opportunities to diversify the electricity mix, to produce distributed

generation and to provide off-grid electricity. Solar technologies also present the greatest potential for job creation and localisation. Incentive programmes and special focused programmes to promote further development in the technology, as well as solar roll-out programmes, should be pursued.

The IEP notes that a diversified energy mix with a reduced reliance on a single or a few primary energy sources should be pursued. In terms of renewable energy, wind and solar are identified as the key options.

4.5 Integrated Resource Plan (2019)

The NDP envisages that, by 2030, South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates, is socially equitable through expanded access to energy at affordable tariffs and that is environmentally sustainable through reduced pollution.

The Integrated Resource Plan (IRP) 2010–2030, promulgated in March 2011, updated in October 2019, represents an electricity infrastructure development plan for South Africa based on least-cost supply and demand balance considering security of supply and the environment (minimize negative emissions and water usage). Since the promulgated IRP 2010–2030 in 2011, a total 6 422MW under the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has been procured, with 3,272MW operational and made available to the grid. At the time of promulgation, it was envisaged that the IRP would be a “living plan” to be frequently revised by the then Department of Energy (DoE). Since the promulgation of the IRP in March 2011, several assumptions have changed, including electricity demand projections, Eskom’s existing plant performance, and new technology costs. The 2019 IRP notes that the Gross Domestic Product (GDP) for the period 2010– 2016 was significantly lower than the GDP projections assumed in the promulgated IRP 2010–2030. The expected electricity demand as forecast in the promulgated IRP 2010–2030 did not materialise and was updated accordingly. In so doing the 2019 IRP assesses the electricity demand for the period 2017-2050. Three demand scenarios were assessed, namely an upper, median, and lower forecast based on varying GDP growth rates. The median scenario also considered the assumed change in the structure of

the economy where energy-intensive industries make way for less intensive industries. The lower scenario considered lower economic growth linked to possible downgrading decisions by rating agencies. The 2019 IRP also considered the externality costs associated with Green House Gas (GHG) emissions, specifically the negative externalities-related air pollution caused by pollutants such as nitrogen oxide (NOx), sulphur oxide (SOx), particulate matter (PM) and mercury (Hg). These externality costs reflect the cost to society because of the activities of a third party resulting in social, health, environmental, degradation or other costs.

The scenarios were analysed in three timeframes, namely 2017–2030, 2031–2040 and 2041–2050. The period 2021–2030 is termed a "medium-to-high" period of certainty, with new capacity requirements driven by the decommissioning of old Eskom power plants and marginal demand growth. While demand and technology costs are likely to change, the decommissioning of old plants will result in the requirements for additional capacity.

The period 2031–2040 is termed an "indicative period", as the uncertainty regarding the assumptions begins to increase. The output for this period is relevant to the investment decisions of the 2021–2030 period because it provides information needed to understand various future energy mix paths and how they may be impacted by the decisions made today. The period 2041–2050 is even more uncertain than the period before 2040.

The IRP 2019 Report concludes that the scenario of Renewable Energy (RE) without annual build limits provides the least-cost path up to 2050. The document notes that a detailed analysis of the appropriate level of penetration of RE in the South African national grid is required to better understand the technical risks and mitigations required to ensure security of supply is maintained during the transition to a low-carbon future.

4.6 National Development Plan

On 11 November 2011 the National Planning Commission released the National Development Plan: Vision for 2030 (NPC, 2012) for South Africa and it was adopted as

government policy in August 2012. The National Development Plan (NDP) was undertaken to envision what South Africa should look like in 2030 and what action steps should be taken to achieve this (RSA, 2013). The aim of the NDP is to eliminate poverty and reduce inequality by 2030.

The NDP identifies nine key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the nine key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.

4.7 Sustainable Development Goals

All 189 Members States of the United Nations, including South Africa, adopted the United Nations Millennium Declaration in September 2000 (UN, 2000). The commitments made by the Millennium Declaration are known as the Millennium Development Goals (MDGs), and 2015 was targeted as the year to achieve these goals. The United Nations Open Working Group of the General Assembly identified seventeen sustainable development goals, built on the foundation of the MDGs as the next global development target (UN, 2014). The sustainable development goals include aspects such as ending poverty, addressing food security, promoting health, wellbeing and education, gender equality, water and sanitation, economic growth and employment creation, sustainable infrastructure, reducing inequality, creating sustainable cities and human settlements, and addressing challenges in the physical environment such as climate change and environmental resources (UN, 2014). These aspects are included in the NPD, and it can therefore be assumed that South Africa's development path is aligned with the international development agenda regarding renewable energy.

4.8 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The plan also supports the integration of African economies. The Government plan to invest significantly in infrastructure development in South Africa. The aim of the

investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing, and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, **electricity plants**, hospitals, schools, and dams will contribute to improved economic growth. Eighteen Strategic Integrated Projects (SIPs) have been identified to be included as part of the implementation of the plan.

5 International standards

International industry standards aimed at sustainable development and social justice specifically have become abundant in the last decade. Many industries use these standards as indicators for best practice. The discussion below highlights only a few of these standards.

5.1 International Social Performance Standards/Initiatives

There is a profusion of global initiatives aiming at assisting companies to make their operations more sustainable. Human rights, environmental protection and social justice are gaining support from industry.

Many of the multi-lateral funding agencies such as the World Bank Group, including the International Finance Corporation (IFC), have social standards that they must uphold. The IFC Performance Standards (PSs) relevant to the social environment are the following:

1. Environmental and Social PS 1. Assessment and Management of Environmental and Social Risks and Impacts
2. Environmental and Social PS 2: Labour and Working Conditions
3. Environmental and Social PS 4: Community Health and Safety
4. Environmental and Social PS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
5. Environmental and Social PS 8: Cultural Heritage (IFC, 2012)
6. IFC Stakeholder Engagement Good Practice Handbook for Companies doing Business in Emerging Markets (2007))

Issues such as gender, climate change, water and human rights are addressed across the standards.). Environmental and social risks and impacts must be managed by using an Environmental and Social Management System. The standard applies to all the activities funded by the IFC for the duration of the loan period.

5.2 International Principles for SIA

The practice of SIA is guided by a set of *International Principles* that defines the core values, fundamental principles for development and principles specific to SIA practice

(Vanclay, 2003). When the *International Principles* are considered, it is clear that SIA aspires to more than just assessing the impact of development on people and includes sustainable outcomes. The following specific principles refer to these sustainable outcomes (Vanclay, 2003):

1. Development projects should be broadly acceptable to the members of those communities likely to benefit from, or be affected by, the planned intervention.
2. The primary focus of all developments should be positive outcomes, such as capacity building, empowerment, and the realisation of human and social capital.
3. The term "environment" should be defined broadly to include social and human dimensions, and in such inclusion, care must be taken to ensure that adequate attention is given to the realm of the social.
4. Equity considerations should be a fundamental element of impact assessment and of development planning.
5. There should be a focus on socially sustainable development, with the SIA contributing to the determination of best development alternative(s) – SIA (and EIA) has more to offer than just being an arbiter between economic benefit and social cost.
6. In all planned interventions and their assessments, avenues should be developed to build the social and human capital of local communities and to strengthen democratic processes.
7. Local knowledge, experience and acknowledgement of different cultural values should be incorporated in any assessment.
8. Development processes that infringe the human rights of any section of society should not be accepted.

In addition to the *International Principles*, the international SIA community produced *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects* (Vanclay, Esteves, Aucamp & Franks, 2015) in April 2015. The purpose of this document is to advise stakeholders (including proponents) about good practice SIA and social impact management (Vanclay et al., 2015). This document aspires to provide a global benchmark for SIA practice.

6 Receiving environment

According to the National Environmental Management Act (NEMA, 1998) environment refers to the surroundings in which humans exist. When viewing the environment from a socio-economic perspective the question can be asked what exactly the social environment is. Different definitions for social environment exist, but a clear and comprehensive definition that is widely accepted remains elusive. Barnett & Casper (2001) offers the following definition of human social environment:

> *"Human social environments encompass the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact. Components of the social environment include built infrastructure; industrial and occupational structure; labour markets; social and economic processes; wealth; social, human, and health services; power relations; government; race relations; social inequality; cultural practices; the arts; religious institutions and practices; and beliefs about place and community. The social environment subsumes many aspects of the physical environment, given that contemporary landscapes, water resources, and other natural resources have been at least partially configured by human social processes. Embedded within contemporary social environments are historical social and power relations that have become institutionalized over time. Social environments can be experienced at multiple scales, often simultaneously, including households, kin networks, neighbourhoods, towns and cities, and regions. Social environments are dynamic and change over time as the result of both internal and external forces. There are relationships of dependency among the social environments of different local areas, because these areas are connected through larger regional, national, and international social and economic processes and power relations."*

Environment-behaviour relationships are interrelationships (Bell, Fisher, Baum & Greene, 1996). The environment influences and constrains behaviour, but behaviour also leads to changes in the environment. The impacts of a project on people can only

be truly understood if their environmental context is understood. The baseline description of the social environment will include a description of the area within a provincial, district and local context that will focus on the identity and history of the area as well as a description of the population of the area based on a number of demographic, social and economic variables.

6.1 Description of the area

The proposed project will be located in Ward 6 of the Emthanjeni Local Municipality that falls under the Pixley Ka Seme District Municipality in the Northern Cape Province. For the baseline description of the area, data from Census 2011, Community Survey 2016, municipal IDP's and websites were used.

The Northern Cape province is South Africa's largest province and takes up almost a third of the country's land area (www.localgovernment.co.za). It covers an area of 372 889 km^2 and is the least populous of South Africa's provinces. In the north it is bordered by Namibia and Botswana, in the west by the Atlantic Ocean. It is also bordered by the North West, Free State, Eastern Cape, and Western Cape provinces. Main towns in the province include Kimberley, Upington, Springbok, Kuruman and De Aar. The province is divided into five district municipalities, namely Frances Baard, ZF Mgcawu, John Taolo Gaetsewe, Pixley Ka Seme and Namakwa.

The Pixley Ka Seme District Municipality is located in the south-east of the Northern Cape Province and covers an area of 103 222 km^2. It shares a border with the Free State, Eastern Cape and Western Cape provinces and is the second-largest district in the province. The district is divided in eight local municipalities, namely Ubuntu, Umsobomvu, Emthanjeni, Kareeberg, Renosterberg, Thembelihle, Siyathemba and Siyancuma. De Aar is the main town in the area and other towns include Britstown, Campbell, Carnarvon, Colesberg, Copperton, Douglas, Griekwastad, Hanover, Hopetown, Hutchinson, Loxton, Marydale, Niekerkshoop, Norvalspont, Noupoort, Petrusville, Philipstown, Prieska, Richmond, Schmidtsdrif, Strydenburg, Van der Kloof, Vanwyksvlei, Victoria West and Vosburg. The Vanderkloof and Gariep dams, two of the major dams in South Africa is situated on the borders of the district municipality.

The Emthanjeni Local Municipality is the seat of the district and is located centrally on the main railway line between Johannesburg, Cape town, Port Elizabeth, and Namibia. It covers an area of 13 472 km^2. The main towns in the area are Britstown, De Aar, and Hanover.

Census 2011 shows the proportions of people living in urban areas, areas under traditional authority and on farms in the area (Table 1). In Ward 6 there are no areas that are under traditional leadership and about a quarter of the people in the area live on farms.

Table 1: Geotypes (source: Census 2011, households)

Area	Urban	Tribal/Traditional	Farm
Northern Cape Province	76%	16%	8%
Pixley Ka Seme DM	87%	0%	13%
Emthanjeni LM	94%	0%	6%
Ward 6	74%	0%	26%

In the Emthanjeni Local Municipality there are 16 schools, of which 13 are no-fee schools (Emthanjeni LM IDP, 2021/22). The Central Karoo Hospital is in De Aar and there are also some sport grounds in the area.

6.2 Description of the population

The baseline description of the population will take place on three levels, namely provincial, district and local. Impacts can only truly be comprehended by understanding the differences and similarities between the different levels. The baseline description will focus on the Northern Cape Province, Pixley Ka Seme District Municipality, Emthanjeni Local Municipality and Ward 6 of the Emthanjeni Local Municipality. The data used for the socio-economic description was sourced from Census 2011, the latest available official census data in South Africa. Census 2011 was a de facto census (a census in which people are enumerated according to where they stay on census night) where the reference night was 9-10 October 2011. The results should be viewed as indicative of the population characteristics in the area and should not be interpreted as absolute.

The following points regarding Census 2011 must be kept in mind (www.statssa.co.za):

- Comparisons of the results of labour market indicators in the post-apartheid population censuses over time have been a cause for concern. Improvements to key questions over the years mean that the labour market outcomes based on the post-apartheid censuses have to be analysed with caution. The differences in the results over the years may be partly attributable to improvements in the questionnaire since 1996 rather than to actual developments in the labour market. The numbers published for the 1996, 2001, and 2011 censuses are therefore not comparable over time and are higher from those published by Statistics South Africa in the surveys designed specifically for capturing official labour market results.
- For purposes of comparison over the period 1996–2011, certain categories of answers to questions in the censuses of 1996, 2001 and 2011, have either been merged or separated.
- The tenure status question for 1996 has been dropped since the question asked was totally unrelated to that asked thereafter. Comparisons for 2001 and 2011 do however remain.
- All household variables are controlled for housing units only and hence exclude all collective living arrangements as well as transient populations.
- When making comparisons of any indicator it must be considered that the time period between the first two censuses is of five years and that between the second and third census is of ten years. Although Census captures information at one given point in time, the period available for an indicator to change is different.

Where available, the Census 2011 data will be supplemented with data from Community Survey 2016.

6.2.1 Population and household sizes

According to the Community Survey 2016, the population of South Africa is approximately 55,7 million and has shown an increase of about 7.5% since 2011. The household density for the country is estimated on approximately 3.29 people per household, indicating an average household size of 3-4 people (leaning towards 3) for most households, which is down from the 2011 average household size of 3.58 people per household. Smaller household sizes are in general associated with higher levels of urbanisation.

The greatest increase in population since 2016 has been on local level (Table 2), although the increase is still below the national average. Population density refers to the number of people per square kilometre. In all the areas in the study area the population density has increased slightly since 2011.

Table 2: Population density and growth estimates (sources: Census 2011, Community Survey 2016)

Area	Size in km²	Population 2011	Population 2016	Population density 2011	Population density 2016	Growth in population (%)
Northern Cape Province	372,889	1,145,861	1,193,780	3.07	3.20	4.18
Pixley Ka Seme DM	103,410	186,351	195,595	1.80	1.89	4.96
Emthanjeni LM	13,472	42,356	45,404	3.14	3.37	7.20

The number of households in the study area has increased on all levels (Table 3), while the average household size has shown a decrease. This means there are more households, but with less members.

Table 3: Household sizes and growth estimates (sources: Census 2011, Community Survey 2016)

Area	Households 2011	Households 2016	Average household size 2011	Average household size 2016	Growth in households (%)
Northern Cape Province	301,405	353,709	3.80	3.38	17.35
Pixley Ka Seme DM	49,193	56,309	3.79	3.47	14.47
Emthanjeni LM	10,457	11,923	4.05	3.81	14.02

The total dependency ratio is used to measure the pressure on the productive population and refer to the proportion of dependents per 100 working-age population. As the ratio increases, there may be an increased burden on the productive part of the population to maintain the upbringing and pensions of the economically dependent. A high dependency ratio can cause serious problems for a country as the largest proportion of a government's expenditure is on health, social grants and education that are most used by the old and young population.

The total dependency ratio for Ward 6 is lower than on local level, but higher than on provincial level (Table 4). The same trend applies to the youth and aged dependency ratios, but not to the employed dependency ratio. Employed dependency ratio refers to the proportion of people dependent on the people who are employed, and not only those of working age. The employed dependency ratio for Ward 6 is much lower than on provincial level. This is most likely to the high incidence of farms in the ward where people reside at their place of employment.

Table 4: Dependency ratios (source: Census 2011).

Area	Total dependency	Youth dependency	Aged dependency	Employed dependency
Northern Cape Province	55.75	46.94	8.80	75.32
Pixley Ka Seme DM	60.36	50.64	9.71	76.57
Emthanjeni LM	60.07	50.73	9.34	76.71
Ward 6	58.84	49.56	9.28	71.46

Poverty is a complex issue that manifests itself on economic, social, and political ways and to define poverty by a unidimensional measure such as income or expenditure would be an oversimplification of the matter. Poor people themselves describe their experience of poverty as multidimensional. The South African Multidimensional Poverty Index (SAMPI) (Statistics South Africa, 2014) assess poverty on the dimensions of health, education, standard of living and economic activity using the indicators child mortality, years of schooling, school attendance, fuel for heating, lighting, and cooking, water access, sanitation, dwelling type, asset ownership and unemployment.

The poverty headcount refers to the proportion of households that can be defined as multidimensionally poor by using the SAMPI's poverty cut-offs (Statistics South Africa, 2014). The poverty headcount has decreased on provincial and district level since 2011 but have increased on local level (Table 5).

The intensity of poverty experienced refers to the average proportion of indicators in which poor households are deprived (Statistics South Africa, 2014). The intensity of poverty has decreased on all levels. The intensity of poverty and the poverty headcount is used to calculate the SAMPI score. A higher score indicates a very poor

community that is deprived on many indicators. On local level households have become more deprived since 2011.

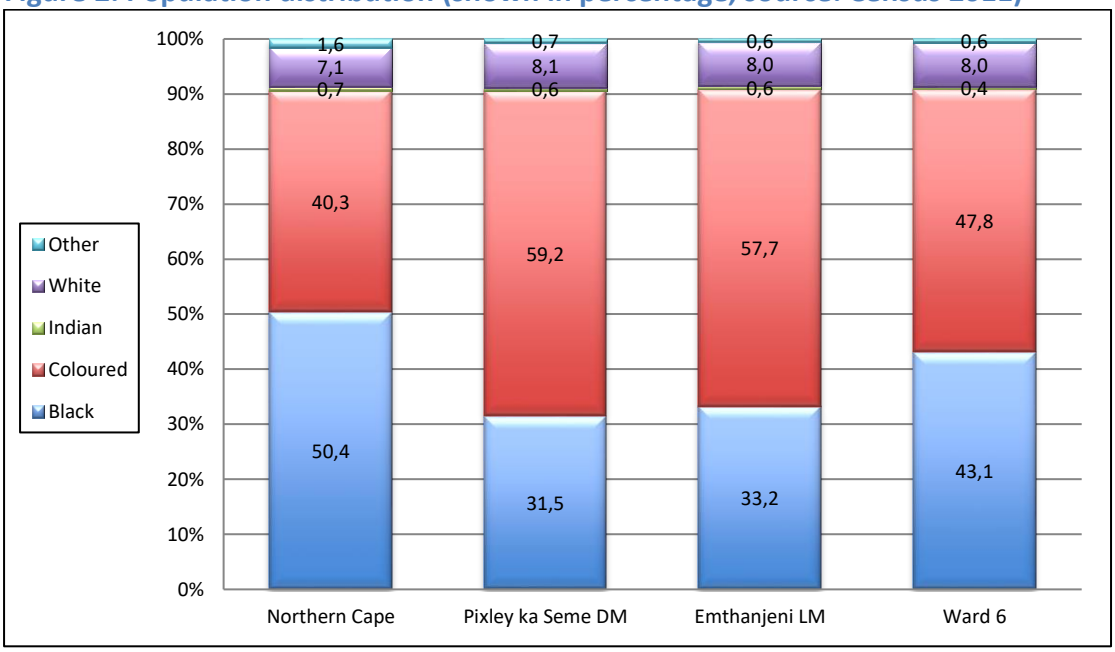
Table 5: Poverty and SAMPI scores (sources: Census 2011 and Community Survey 2016).

Area	Poverty headcount 2011 (%)	Poverty intensity 2011 (%)	SAMPI 2011	Poverty headcount 2016 (%)	Poverty intensity 2016 (%)	SAMPI 2016
Northern Cape Province	7.1	42.1	0.03	6.6	42.0	0.03
Pixley Ka Seme DM	7.2	42.7	0.03	6.0	41.7	0.03
Emthanjeni LM	3.3	41.1	0.01	4.2	40.2	0.02

6.2.2 Population composition, age, gender, and home language

In Ward 6 almost half of the population belongs to the Coloured population group (Figure 2), with just over two fifths of the population belonging to the Black population group. Ward 6 has a higher proportion of people belonging to the Black population group than on local or district level.

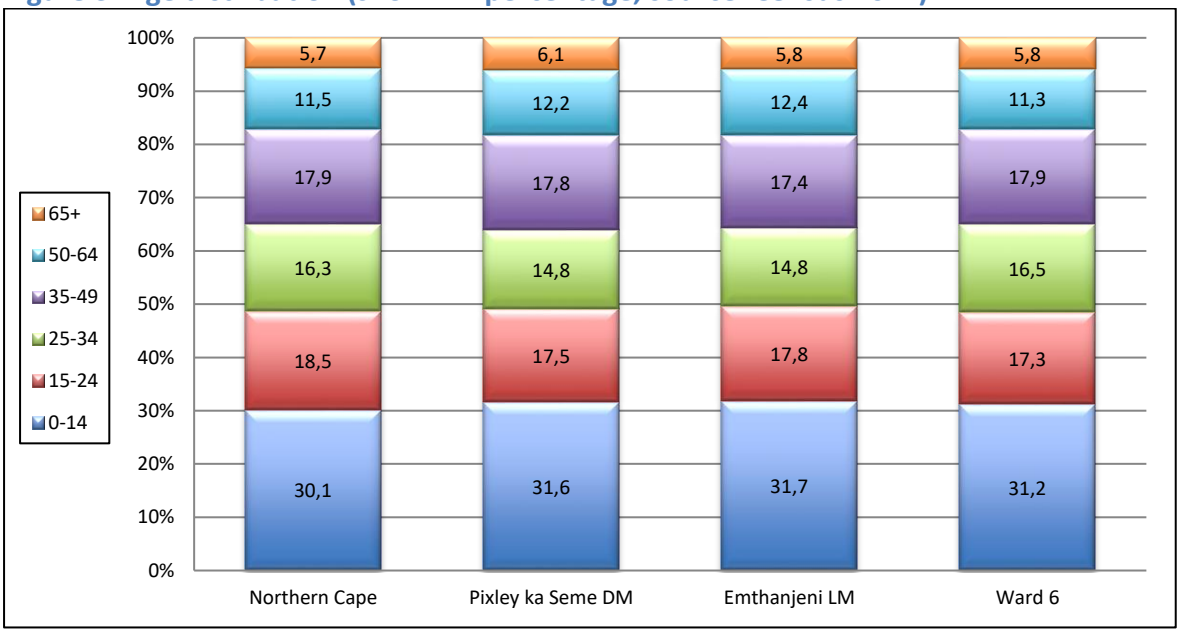
Figure 2: Population distribution (shown in percentage, source: Census 2011)



The average age in all the municipal areas are around 28 years, with the lowest average age (28.24) in Ward 6. Just below a third of the population in Ward 6 is aged

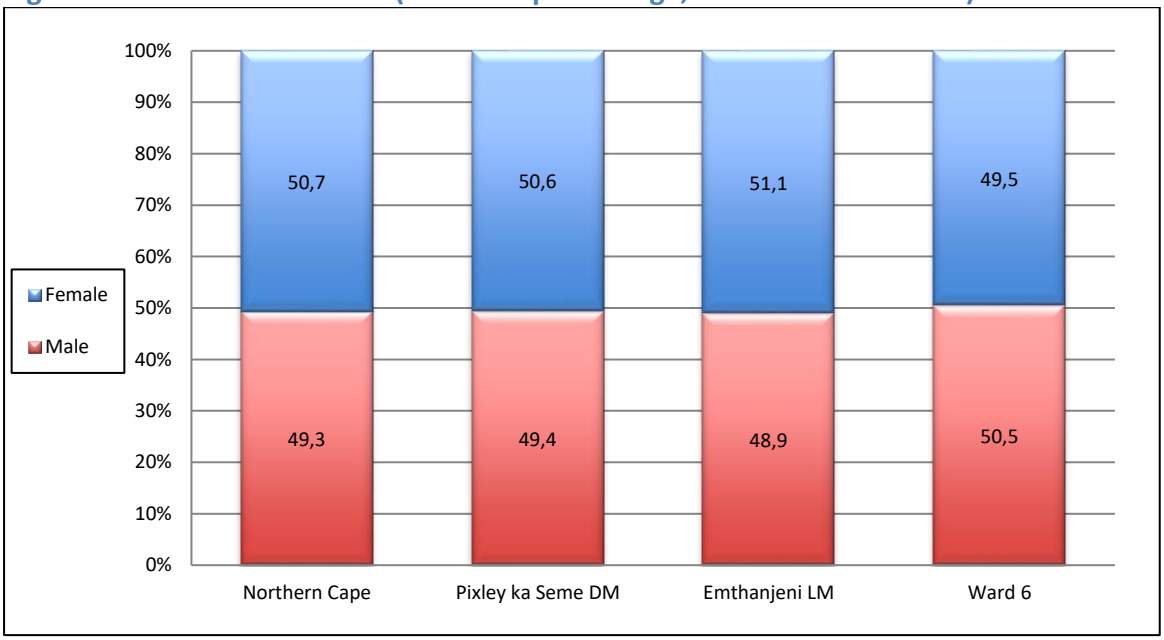
14 years or younger, with almost half aged 24 years or younger (Figure 3). Such a young population place a lot of pressure on resources and infrastructure of the area, and a great demand for future infrastructure and creation of livelihoods can be expected.

Figure 3: Age distribution (shown in percentage, source: Census 2011)



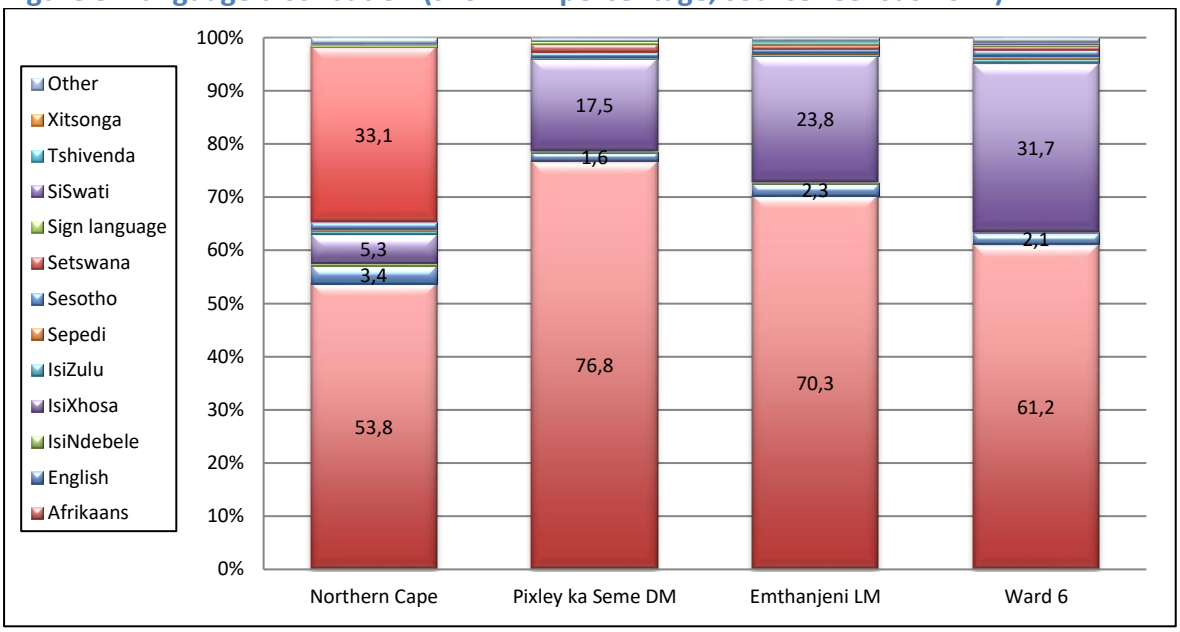
The gender distribution is more or less equal on all levels (Figure 4).

Figure 4: Gender distribution (shown in percentage, source: Census 2011)



Afrikaans is the home language of almost two thirds of the residents in Ward 6 (Figure 5), followed by almost a third with IsiXhosa as home language.

Figure 5: Language distribution (shown in percentage, source: Census 2011)

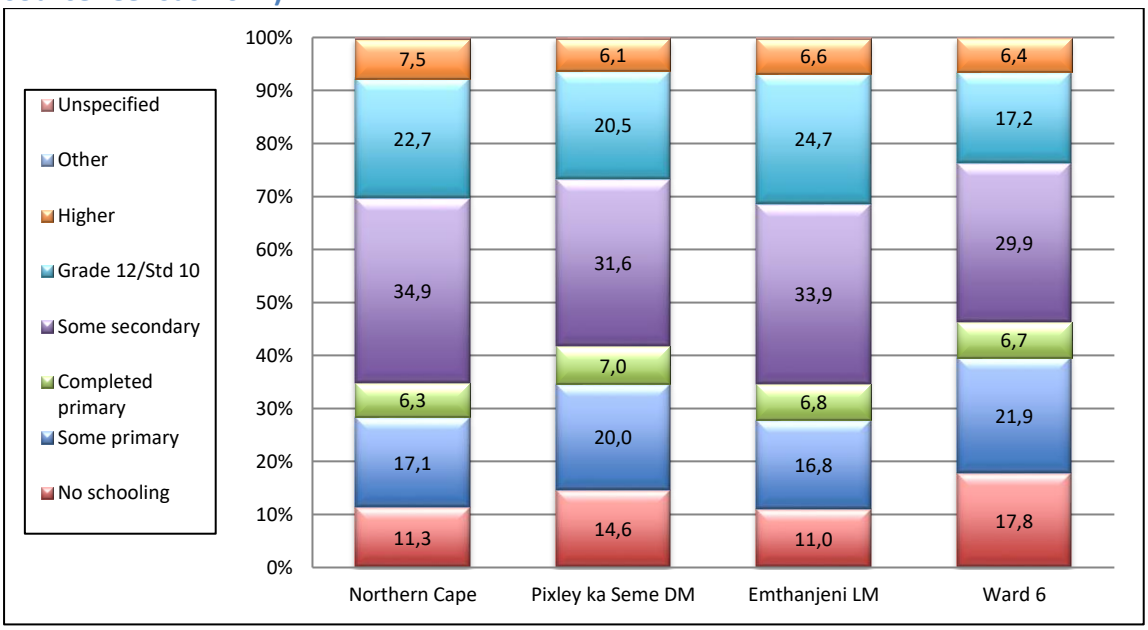


6.2.3 Education

About two fifths of the people in Ward 6 aged 20 years or older have no schooling or only some primary education (

Figure 6). This is higher than on local, district or provincial level. These high levels of illiteracy should be taken into consideration when consulting with farmworkers or communities on the project.

Figure 6: Education profiles (those aged 20 years or older, shown in percentage, source: Census 2011)



6.2.4 Employment, livelihoods, and economic activities

Ward 6 has the highest proportion of people aged between 15 – 65 years that are employed (Figure 7). Just over half of the people who are employed in Ward 6, are employed in the formal sector (Figure 8). This is much lower than on local or district level. About a quarter of the employed work in the informal sector, which is proportionately higher than on local or district level.

Figure 7: Labour status (those aged between 15 - 65 years, shown in percentage, source: Census 2011)

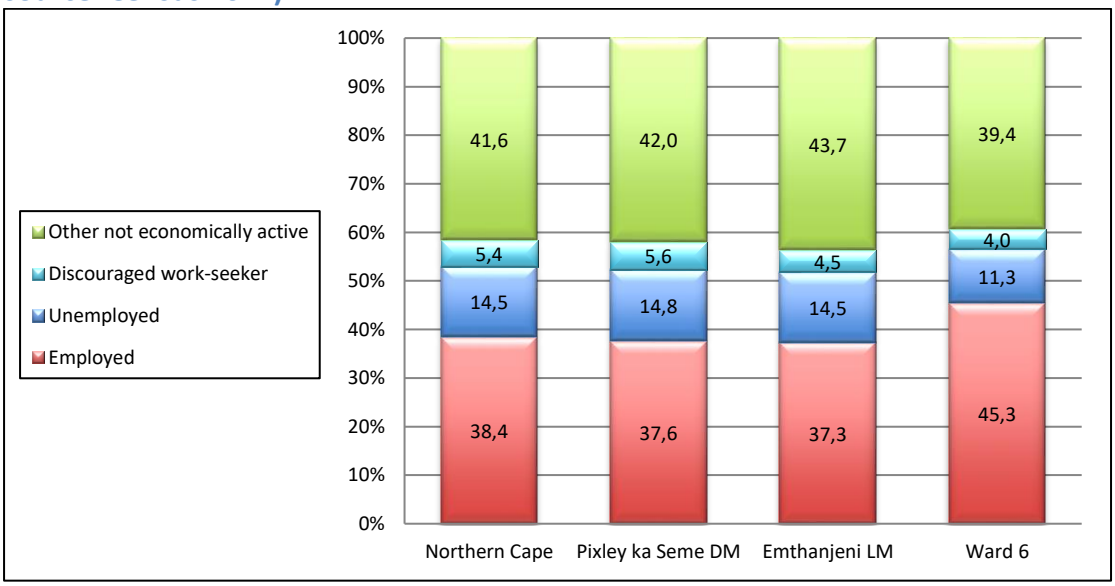
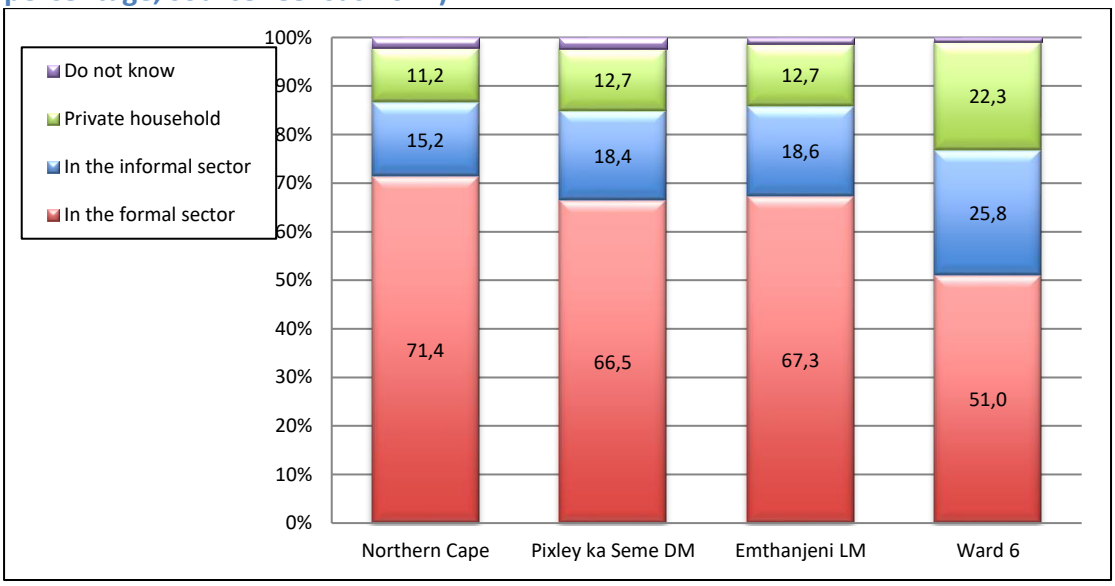
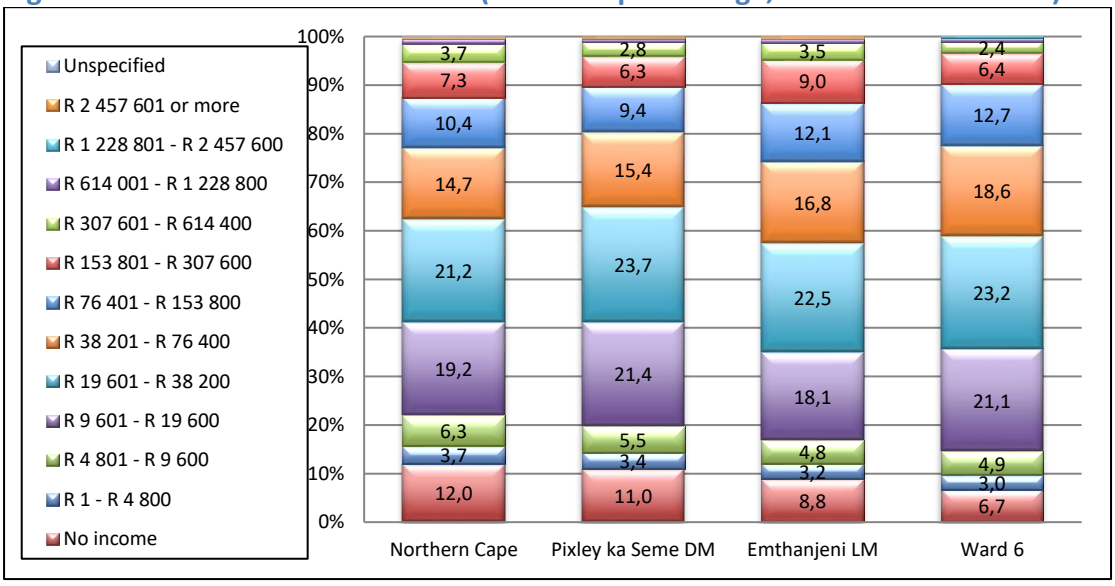


Figure 8: Employment sector (those aged between 15 - 65 years, shown in percentage, source: Census 2011)



The lowest proportion of people with no annual household income is on ward level (Figure 9). Almost 60% of the households in Ward 6 had an annual household income of below R38 201 in 2011.

Figure 9: Annual household income (shown in percentage, source: Census 2011)



Agriculture forms the backbone of the economy of the Emthanjeni LM (Emthanjeni LM IDP, 2021/22) and accounts for the largest labour/employment contributor to date. There is a big abattoir in De Aar that solely caters for sheep with a capacity of 1 000 carcasses a day. The area is famous for 'Karoo' mutton. Sheep, wool, and mutton are the main farming activities in the Britstown area while hunting of small game is

also very popular. Wool is exported to Gqeberha (formerly Port Elizabeth). Besides sheep farming, cattle, goat, pig, and game are also being farmed. The town of Hanover is well endowed with construction industry artisans. The manufacturing sector shows potential for growth through the introduction of renewable energy projects in De Aar and the surrounding areas. There are also stone crushers in the area that specialise in the manufacturing of sand, bricks cement and rocks. Other economic activities include services, retail, transport, and tourism.

Statistics South Africa (2021) has calculated the National Food Poverty Line (FPL) as R624 per capita per month for 2021 where the FPL is the Rand value below which individuals are unable to purchase or consume enough food to supply them with the minimum per-capita-per-day energy requirement for good health. The FPL is one of three poverty lines, the others being the upper bound poverty line (UBPL) and the lower bound poverty line (LBPL). The LBPL and UBPL both include a non-food component. Individuals at the LBPL do not have enough resources to consume or purchase both adequate food and non-food items and are forced to sacrifice food to obtain essential non-food items, while individuals at the UBPL can purchase both adequate food and non-food items. The national LBPL for 2021 is R890 per capita per month and the national UBPL R1 335 per capita per month respectively. Based on this, a household with four members needed an annual household income of approximately R30 000 in 2021 to be just above the FPL. In 2011 this figure was approximately R17 000. When comparing this with the SAMPI data of the corresponding period it seems as if there are more households below the poverty lines in the area than who are multidimensionally poor. This is due to the poverty lines using a financial measure and do not take into consideration payment in kind and livelihood strategies such as subsistence farming. If there were to be converted into a Rand value, the poverty line picture may have a closer resemblance to the SAMPI data.

6.2.5 Housing

Almost three quarters of the population of Ward 6 live in areas classified as formal residential, while just over a quarter live in areas classified as farms (Figure 10). More than 90% of households in Ward 6 live in houses or brick structures on separate stands

or yards (Figure 11), with caravans or tents the second most used dwelling type. This can most likely be ascribed to construction activities in the area.

Figure 10: Enumeration area types (shown in percentage, source: Census 2011)

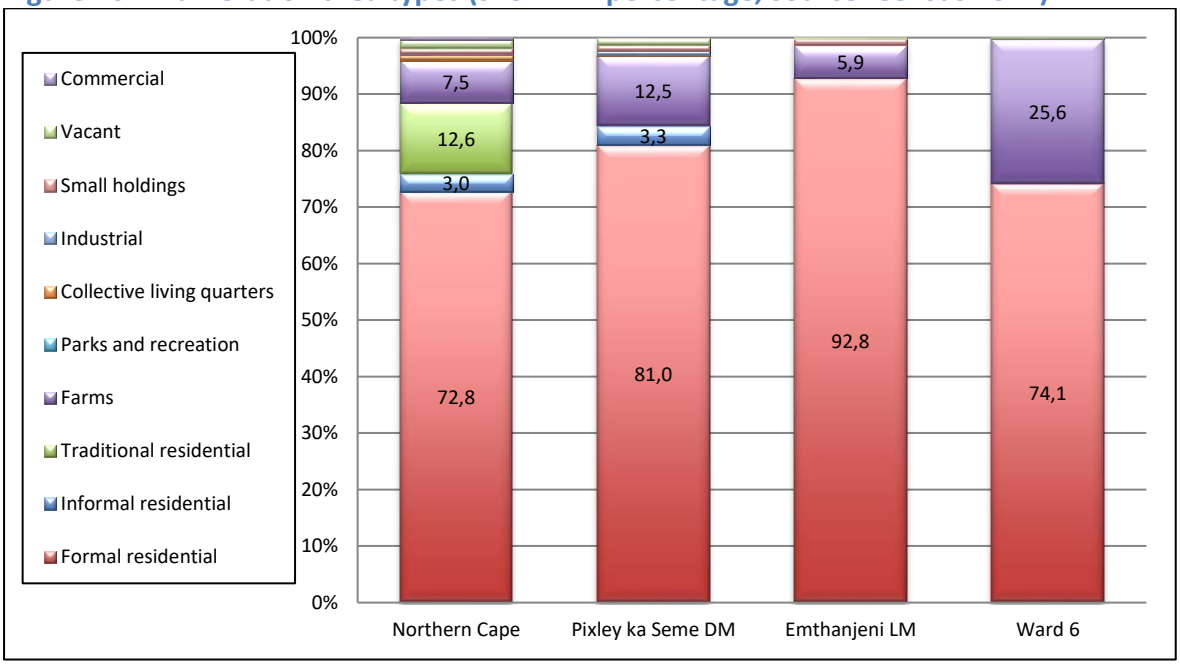
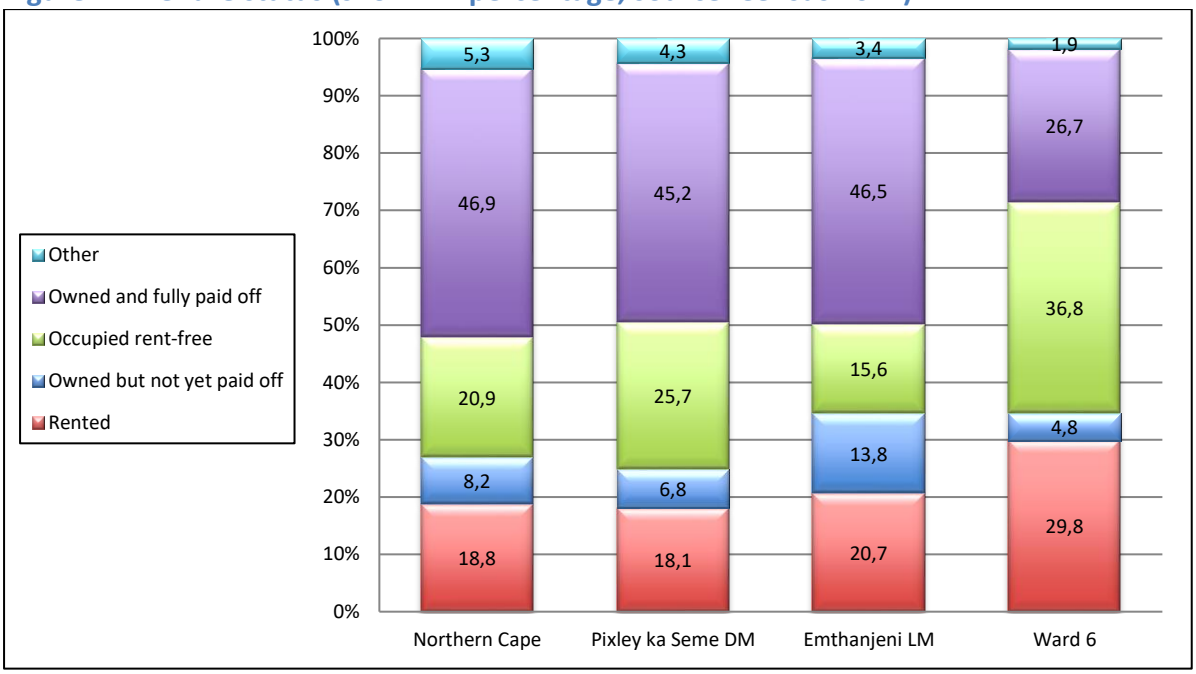


Figure 11: Dwelling types (shown in percentage, source: Census 2011)

The incidence of households renting their dwellings is much higher on ward level than on local, district or provincial level (Figure 12). This might be as a result of construction activities in the area. The incidence of households occupying their dwellings rent-free is much higher on ward level than on local, district or provincial level, and this is most likely due to farm workers that receive housing for their employers.

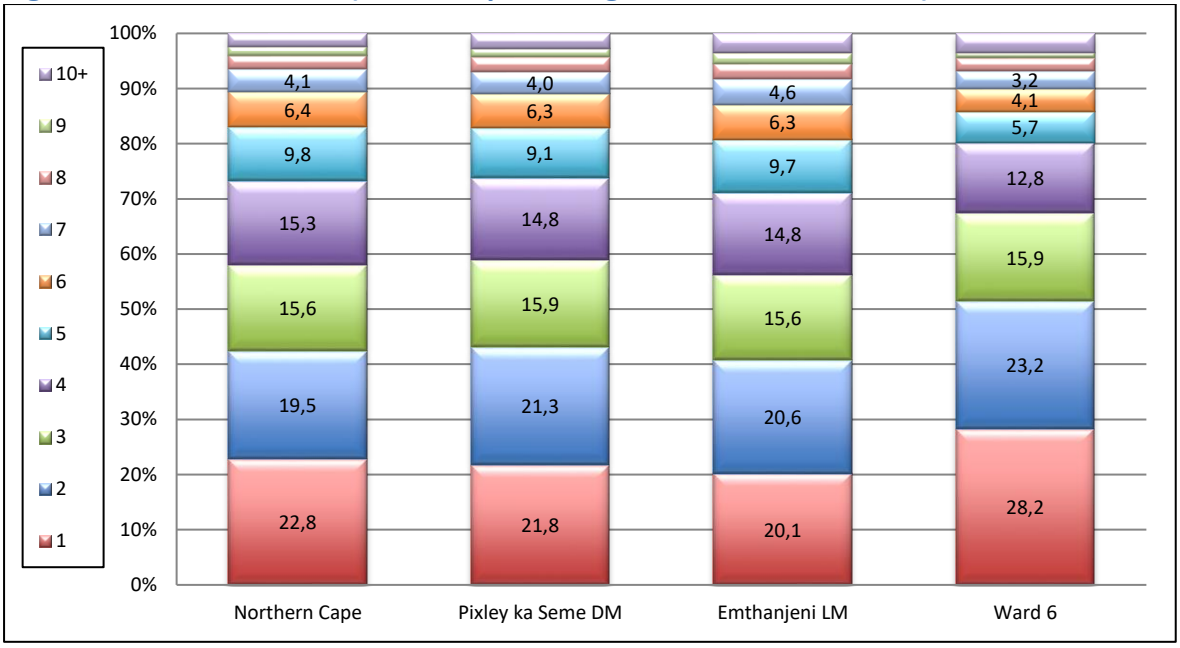
Figure 12: Tenure status (shown in percentage, source: Census 2011)



Households in ward level tend to consist of less members than on local, district or provincial level (

Figure 13), with just over half the households consisting of only one or two members.

Figure 13: Household size (shown in percentage, source: Census 2011)



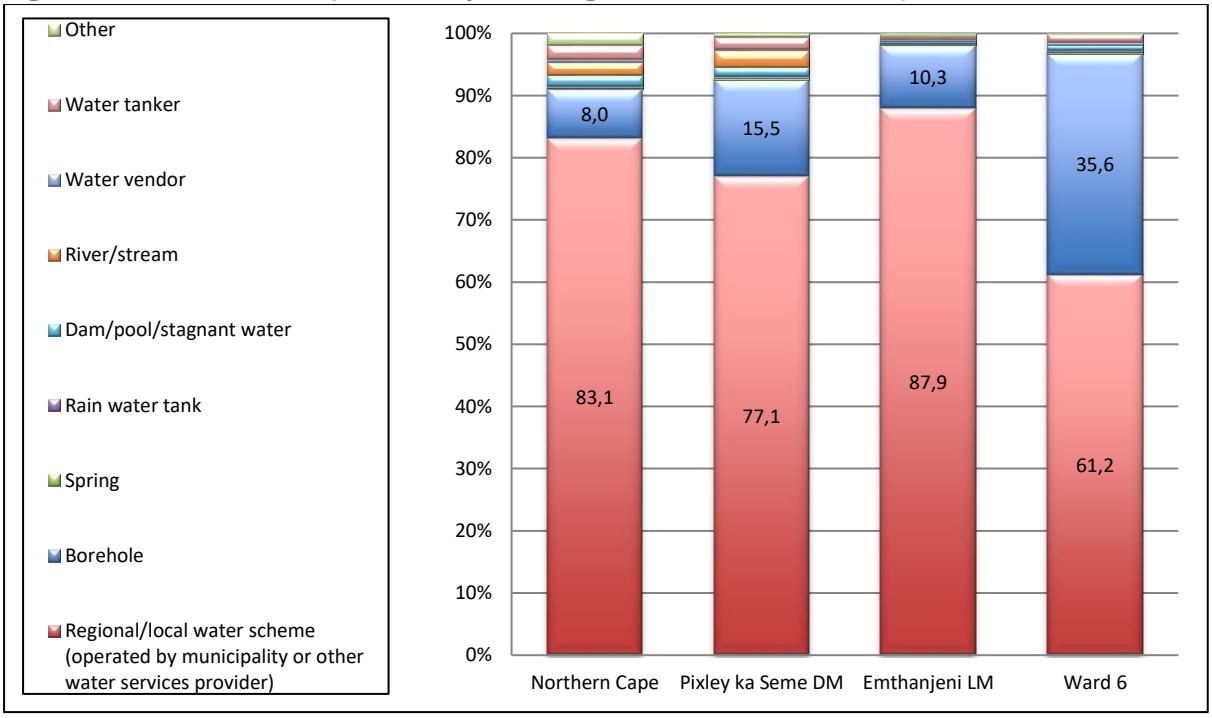
6.2.6 Access to basic services

Access to basic services such as water, sanitation and electricity relate to standard of living according to SAMPI (Statistics South Africa, 2014). Households that use paraffin, candles, or nothing for lighting; or fuels such as paraffin, wood, coal, dung or nothing for cooking or heating; have no piped water in the dwelling or on the stand and do not have flush toilets can be described as deprived in terms of these basic services.

Almost a third of the households in Ward 6 get their water from a borehole (

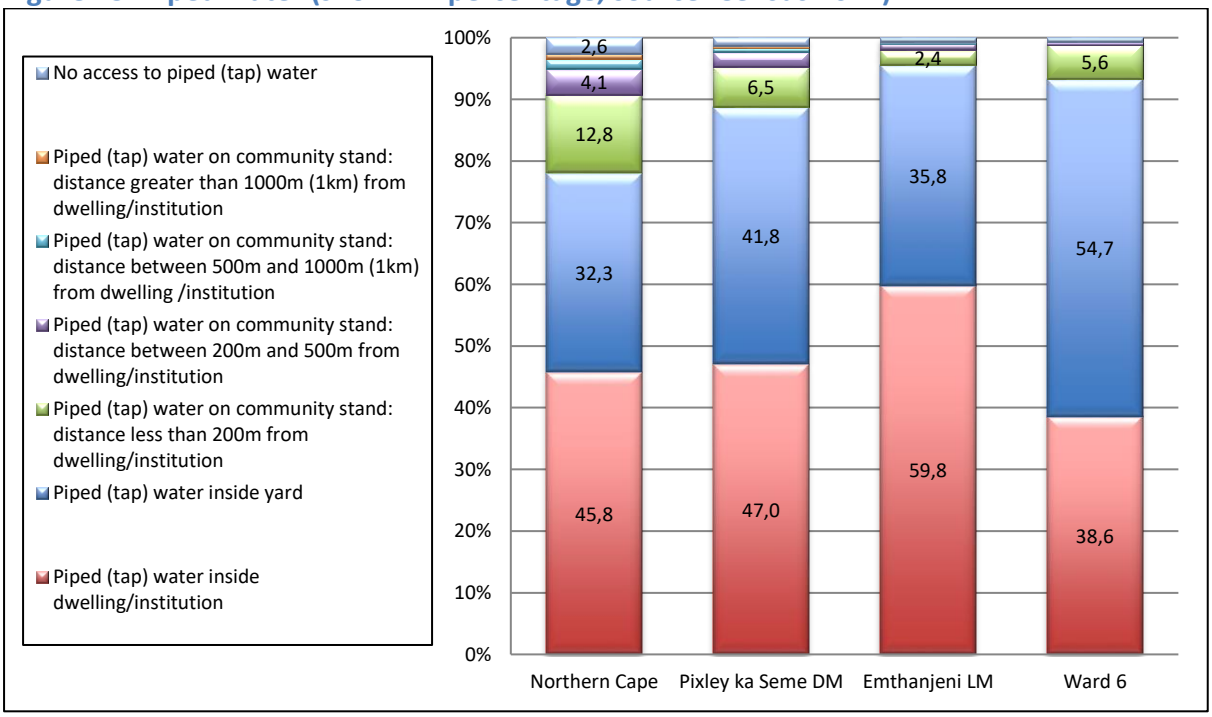
Figure 14), a much higher proportion than on local, district or provincial level, while just over 60% get their water from a regional or local water scheme, much lower than on local, district or provincial level.

Figure 14: Water source (shown in percentage, source: Census 2011)



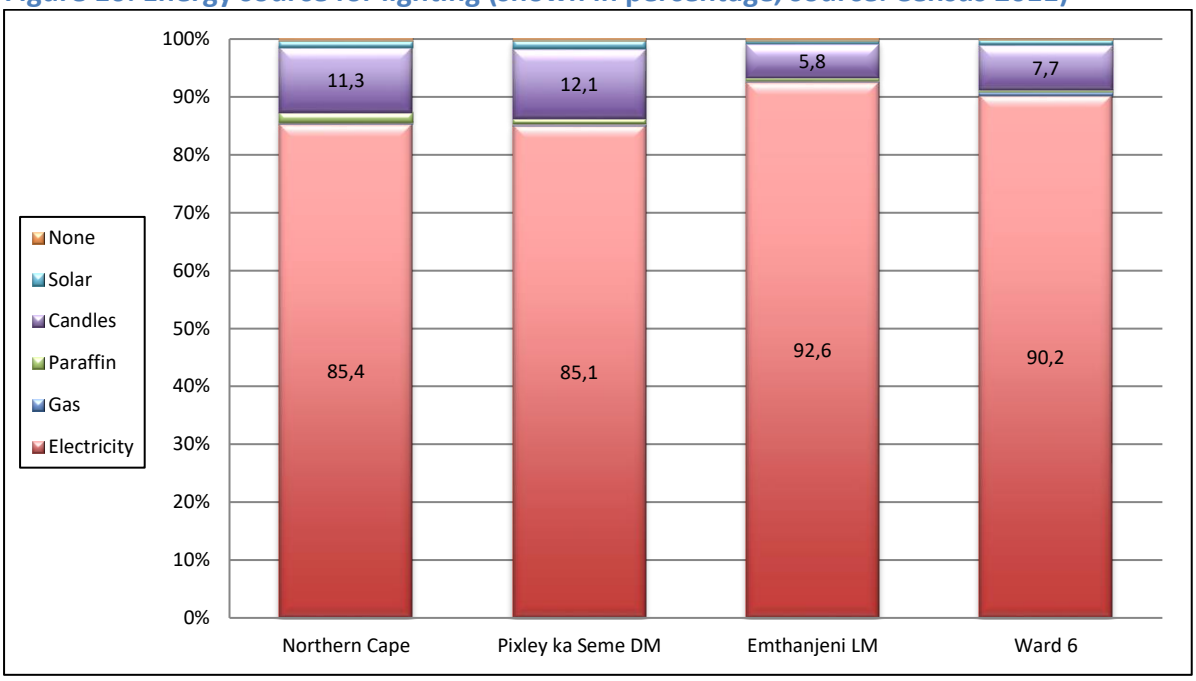
Just over a third of households in Ward 6 have access to piped water inside their dwellings (Figure 15), a lower proportion than on local, district or provincial level, while just over half of the households have access to piped water inside their yards.

Figure 15: Piped water (shown in percentage, source: Census 2011)



Access to electricity for lighting purposes give an indication of whether a household has access to electricity, as poor households sometimes only use electricity for lighting, but use other sources of energy for heat and cooking. The incidence of households with access to electricity on ward level is higher than on district or provincial level (Figure 16), with more than 90% of households having access to electricity for lighting purposes.

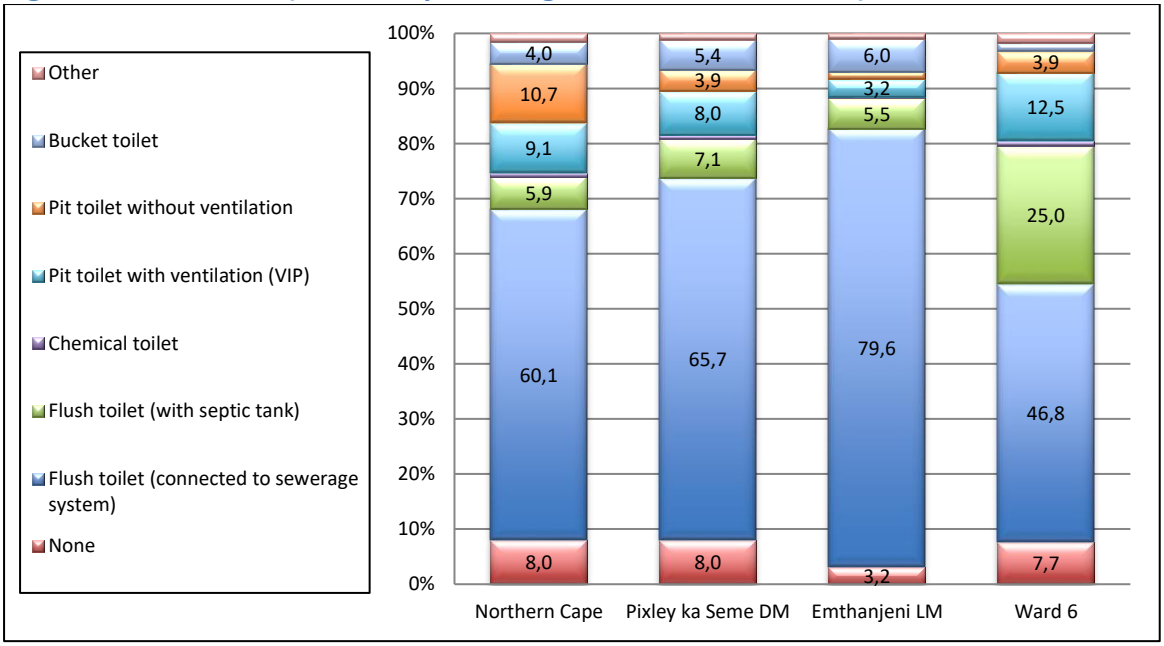
Figure 16: Energy source for lighting (shown in percentage, source: Census 2011)



More than 70% of households on ward level have access to flush toilets that is either connected to a sewerage system or with a septic tank (

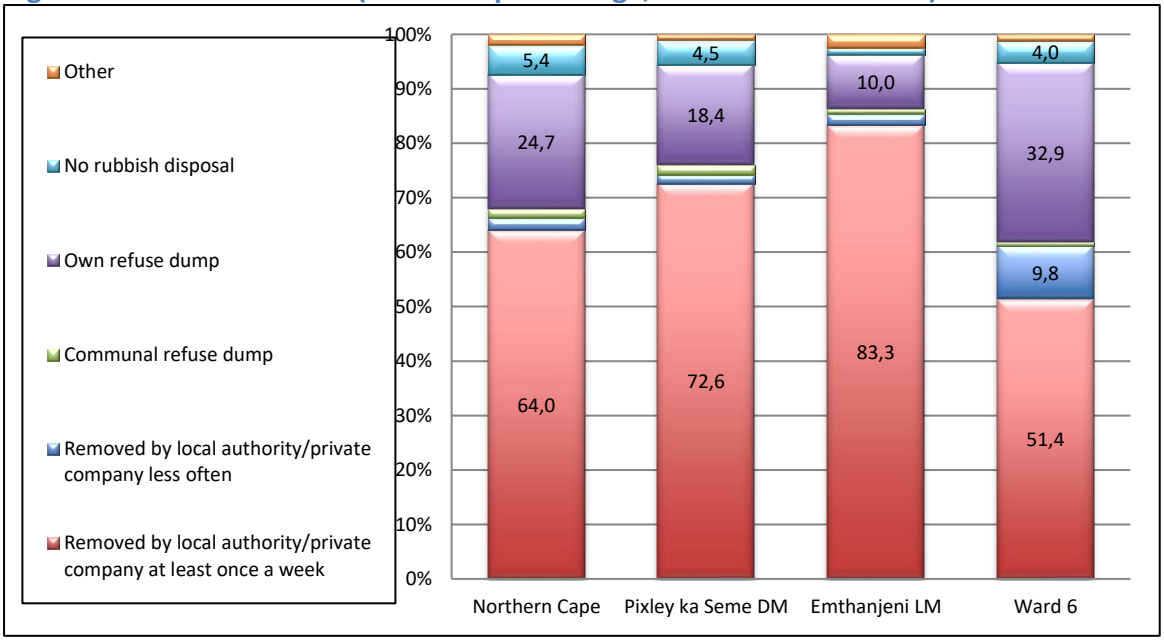
Figure 17). The highest proportion of flush toilets with a septic tank is found on ward level, as can be expected in an area with a high incidence of farms. The highest proportion of pit toilets with ventilation is also found on ward level.

Figure 17: Sanitation (shown in percentage, source: Census 2011)



Almost a third of households on a ward level have their own refuse dumps (Figure 18) with just over half of the households having their refuse removed by a local authority at least once a week. This is due to the high incidence of farms in the ward.

Figure 18: Refuse removal (shown in percentage, source: Census 2011)



6.3 Discussion of receiving environment

The receiving environment is located in Ward 6 of the Emthanjeni Local Municipality that is located in the Pixley Ka Seme District Municipality in the Northern Cape

province. The towns in the area are small and the proposed site is located between the towns of Hanover and De Aar. There are no areas under traditional leadership in the district and the site is surrounded by commercial farms.

The area showed an increase in population as well as the number of households since 2011, with the increase in the number of households greater than the increase in population. The household sizes have shown a decrease since 2011. This can be due to children leaving their parents' house to stay on their own and start families of their own.

In Ward 6, the proportion of households that are multidimensionally poor has increased, compared to a decrease on local level. This means that the households are deprived on a number of dimensions which mostly relate to access to basic services. Education levels are low and there are very few employment opportunities. Agriculture forms the backbone of the economy.

The detailed description of the area highlights the following important aspects:

- Documentation used for communicating about the project should be available in English and Afrikaans;

- High levels of illiteracy among certain groups means that written word will not in all cases be the best way to communicate with some of the communities. Additional ways to communicate with the communities that are culturally appropriate must be found;

- Finding the required skills in the area might be a challenge and using local labour might be a challenge. This must be taken into consideration when planning the project and it may be necessary to include a skills development component.

7 Stakeholder Identification and Analysis

7.1 Approach

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

7.2 List of stakeholders

The following stakeholders that may have an interest in or affected by the proposed Solar PV project have been identified:

Table 6: Detail of Stakeholder Groups.

Stakeholder Grouping	Organisation
Internal Stakeholders	
Soventix	Soventix Management Team Employees of Soventix
Construction company	Management and staff of construction company
Government	
Governmental departments and directorates	• Northern Cape Province • Pixley Ka Seme District Municipality • Emthanjeni Local Municipality • Department of Environment and Conservation, Northern Cape • Department of Energy • Department of Water and Sanitation • South African Heritage Resources Agency (SAHRA) • South African Police Services
State-owned entities and regulators	• Eskom Distribution • Eskom Transmission • Northern Cape Department of Roads and Public Works • Transnet • Northern Cape Province;

Stakeholder Grouping	Organisation
	• Pixley Ka Seme District Municipality; • Emthanjeni Local Municipality; • Square Kilometre Array (SKA)
Business	
Local Businesses	Various in De Aar and Hanover Northern Cape Chamber of Commerce and Industry De Aar Accommodation, Business and Tourism Portal Business E-zone De Aar
Contractors / Suppliers	Contractors providing sub-contracting services to Soventix related to the Solar PV project
Industrial Interest groups	South African Photovoltaic Industry Association (SAPVIA) South African National Energy Development Institute (SANEDI) Independent Power Producer Office
Environmental	
Environmental Interest groups	Endangered Wildlife Trust WESSA Birdlife South Africa Centre for Environmental Rights
Societal	
Tourism groups	De Aar Accommodation, Business and Tourism Portal Northern Cape Tourism Authority
Social Organizations	Community forums (e.g., employment, youth) Karoo Eisteddfod Trust
Residents/ Community	
Residents	Residents of informal settlements, home owners/tenants in De Aar and Hanover
Local farmers	Farmers and farm workers on directly affected properties Farmers and farm workers on neighbouring properties Other farmers and farm workers in the area

The identified level of interest of each stakeholder helps assist with designing the stakeholder engagement strategy for the project, and to decide how much time to devote to engaging with each stakeholder or group. This is a qualitative analysis that should ideally be done by the stakeholder engagement team of Soventix and revisited as needed, as the interest of stakeholders may change after the construction phase and in the operation phase. The engagement levels required for each group of stakeholders as revealed through this analysis may be more than consultation, for example they may include partnerships, involvement in community development plans or community monitoring, strategic planning, or any other activity. Knowing the

needs, issues and expectations of affected stakeholders assist with building and retaining good relationships with them, and with managing their expectations.

Table 7 below plots the stakeholders according to their ability to influence the company's activities (horizontal axis) and the degree to which they are affected by the proposed Solar PV plant, whether the impact is social, economic or environmental (vertical axis). In instances where the impact or influence is potentially significant individual stakeholder groups/organisations have been used. All other groupings are used in general.

Table 7: Stakeholder matrix.

Degree to which they are impacted on				
	High	Local Businesses Contractors / Suppliers	Local farmers	Soventix
	Medium	Social organisations Local residents Tourism groups	State-owned entities and regulators	Governmental departments and directorates
	Low	Environmental Interest groups	Industrial Interest groups	
		Low	**Medium**	**High**
		Ability to influence company's activities		

The stakeholders that will be impacted on most in both a positive and negative manner but have the least ability to influence the company's activities are local businesses, contractors, suppliers, and neighbouring farmers. Businesses and contractors that can supply goods and services to the project will be impacted on positively. Businesses that rely on the sense of place – tranquillity, views, and pristine Karoo experience - may be impacted on in a negative manner. These businesses include tourism service providers. Neighbouring farmers will not have the benefit of solar infrastructure on their land but will have to deal with the visual impact and the impact on their sense of place. Some of the properties have been owned by families for generations. These stakeholders are therefore seen as key stakeholders in the Solar PV project.

Government is also an important stakeholder in the sense that it must provide authorisation for the project, and that the economic impact of the project will be felt in the local and district municipalities. It must also provide services to De Aar and Hanover and deal with the boom-bust cycle that construction activities may cause.

8 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.

It must be stated that the impact tables and ratings have been adapted from the environmental sciences and that it is not always possible to compartmentalise the social impacts. For the sake of consistency with the EIA report, this has been attempted, but it is not innate to social sciences. Allowance for the changing and adaptive nature of social impacts should be made when interpreting the impact tables.

8.1 Impact Assessment Methodology

Social impacts were assessed using the approach outlined below. Social impacts were identified systematically by considering how the site-specific activities for each phase of development will interact with all elements of the receiving social environment. All impacts were measured against the current land-use activity (the no-go option/option of not implementing the activity) and systematically assessed by rating a suite of generic criteria established by the Department of Environmental Affairs and Tourism (DEAT 2002). The criteria are:

- Extent or spatial scale,
- Intensity or severity of the impact,
- Duration of the impact,
- Mitigation potential,
- Social acceptability,
- Degree of certainty,
- Status of the impact, and
- Legal requirements.

The magnitude and significance of impacts were determined by describing the impacts in terms of the above criteria. The criteria provide a consistent and systematic basis for the comparison and application of judgements.

The suite of criteria was sought for its applicability to EIA, specifically by making provision for the variety of perspectives. Significance is an anthropocentric concept that makes use of value judgements and science-based criteria. Judgement and values are used to greater extent in EIA than science-based criteria and standards (DEAT 2002). Considering value judgements can vary greatly amongst different stakeholders, professional judgement, such as that of the specialist, should ideally be used in conjunction with the different value judgements expressed by various stakeholders. In other words, significance should be communicated from a variety of perspectives other than the professional opinion of a multidisciplinary study team, and include environmental, socio-economic or cultural attributes perceived by society to be significant. Despite the potential variety of perspectives, they can be categorized into three broad forms of recognition for determination of impact significance, namely institutional (laws, plans or policy statements), public and technical (scientific or technical knowledge or judgement of critical resource characteristics) recognition (DEAT 2002). Consequently, the magnitude and significance of impacts were as far as possible determined by reference to legal requirements, accepted scientific standards and/or social acceptability.

Significance is relative and must always be set in a context to show whose values they represent. The selected criterion provides such a context, taking all three forms of recognition into account by asking whether impacts are legally, publicly and professionally recognized as important. The thresholds, against which significance of a given environmental effect was measured or determined, were provided by a set of ratings for each criterion. Thresholds of significance were as far as possible based on/determined by reference to legal requirements, accepted scientific standards or social acceptability. Ratings are High (H- 4), Moderate (M-3), Low (L-2) or No Impact (N-1) and determined according to clearly defined descriptors. The 'No Impact' rating includes reference to 'no impacts beyond prescribed thresholds'. In other words, mitigations that change the ratings of any particular criteria to 'N' do not necessarily infer zero impact, but rather that the impact is restricted to prescribed thresholds as defined in the goal and objective(s) of the proposed mitigation(s). The significance of

the impacts of the proposed project was assessed both with and without mitigation action.

Table 8: Impact Evaluation Criteria, Ratings and Descriptors.

Criteria	Ratings and Descriptors			
	High (4)	Moderate (3)	Low (2)	No Impact (1)
Spatial Scale/ Extent	Provincial, National, or International. Far beyond the site boundaries. Widespread. Impact affect closest towns.	Local (within the farm boundary) to Regional (beyond the farm boundary, impact affects neighbours).	Development footprint to within the site boundary.	No area is affected.
Intensity/ Magnitude	Functioning of processes will cease. Magnitude of impact exceeds legal limits, scientific standards or social acceptability.	Modified processes will continue. Disturbance of potential social systems or livelihood resources.	Social of economic processes are affected, but not modified. Disturbance of degraded areas.	Social or economic processes are not affected.
Duration	Permanent. Beyond decommissioning. Long term (>2yr).	Temporary. Lifespan of the operational phase. Medium term (>1<2yr).	Immediate, once-off. Lifespan of the construction phase. Short term (<1yr).	
Mitigation Potential	High potential to mitigate and achieve objectives.	There is a moderate potential to mitigate, and achieve objectives.	There is a potential to mitigate, but there remains a risk of the objectives not being met.	No mechanism for mitigation and achieving the objectives.
Acceptability	Unacceptable Abandon project or design.	Manageable with expensive regulatory controls and the project	Some risk to public health/ environment, but it is easily averted using	Acceptable No risk to public health/ environment.

		proponent's commitments.	simple controls/ mitigations.	
	Definite (D- 4)	**Probable (P -3)**	**Improbable (I- 2)**	**No Impact (N- 1)**
Degree of Certainty/Probability of the impact occurring	Substantial supportive data. Impact will occur regardless of preventive measures. High probability. >95%.	There is a chance/risk of the impact occurring. Moderate probability. 5-95%.	It is unlikely that the impact will occur. Low probability. <5%.	The impact will not occur. 0%.
	Negative	**Neutral**	**Positive**	
Status	Net loss of resource. Adverse.	No net loss or gain.	Net gain of resource. Beneficial.	

8.2 Social impacts during different phases of the project

The planning and design phase of the project occurs before any physical activities commence on site. The EIA process forms part of this phase, and the EIA is usually the means of introducing the affected communities to the proposed project. Unlike environmental impacts, social impacts can occur before any physical work on site is done, and rumours of development is enough to set off some social change processes and social impacts. In the case of the development of Phase 2 and 3 of the Soventix De Aar solar plant, the first phase has been approved. However, no construction activities have commenced. The previous EIA process was conducted in 2016, and in the time between 2016 and 2022 numerous other renewable energy development occurred in the area. The communities and affected parties are therefore more aware of the impacts that the proposed development may generate.

The three phases will be constructed sequentially, and there may be some overlap. Once civil works on Phase 1 are complete the civils' team would move onto Phase 2. Furthermore, each phase would be built sequentially, e.g., Phase 3 will be built in 4 x 100 MW blocks. Construction of each 100 MW block typically takes 12 to 15 months from start to finish (pers. comm. JP De Villiers, Managing Director, Soventix). Soventix indicated that there would be no construction camp housing the labour force, but that they will be transported to site from the nearest towns on a daily basis. The most

severe social impacts usually occur during this phase of the project since it is the phase when the most activities on site take place and where the most people are involved. Some of the construction phase social impacts will take place on site or in close vicinity of the site, whilst others will occur in the communities around the site.

The operational phase of the project is estimated to be approximately 20 years. During this phase there will be less activities on site, and the focus would be on maintaining the grounds, cleaning the modules, cleaning the offices, keeping the site secure and ensuring that the technology runs smoothly. Impacts in this phase will mostly be associated with these activities.

Impacts of the decommissioning phase will be similar to impacts experienced during the construction phase. Due to the dynamic nature of the social environment, it is difficult to assess the potential impacts in this phase to a high level of accuracy and it is recommended that another SIA should be conducted at the time of closure of the facility. The most significant impacts associated with the closure phase would be loss of employment opportunities, loss of secondary economic opportunities and loss of contributions to social development initiatives.

8.3 Impacts identified, mitigation and management plan

This section describes and assesses the specific social impacts that will be associated with the proposed solar electricity generation facility and associated infrastructure. Phase 1 of the project has been approved but has not been constructed yet. Phase 2 and 3 will enlarge the footprint of the facility. Therefore, most impacts generated by Phase 2 and 3 will be cumulative to the impacts identified in Phase 1. The impact of other renewable energy facilities in the region must also be considered. Section 8.2.5 discuss the regional cumulative impacts in more detail. The table below indicate which impacts has been identified in Phase 1 of the Soventix De Aar project:

Table 9: Impacts identified in Phase 1 and relevant to Phases 2 and 3

Impacts identified in Phase 1	Relative to Phase 2 and 3
Expectations about community benefits	Yes
Uncertainty amongst land owners	Yes
Change of land use/livelihoods	Yes

Traffic and roads	Yes
Damage to farm infrastructure	Yes
Safety and security concerns due to more people in the area	Yes
Social disturbance and community safety	Yes
Economic opportunities	Yes
Sense of place	Yes
Generation of renewable energy	Yes

When the mitigation and management of social impacts are considered, one must take into consideration that social impacts occur in communities surrounding the proposed project, and although the project proponent may be the catalyst for some impacts, there may be a number of external factors contributing to the impact. Many of these factors are outside the control of the project proponent. Many of the social impacts the proponent cannot mitigate alone, and partnerships with local government and Non-Profit Organisations are often required. Social impacts must be managed in the long term. This complex process requires insight in the social environment and community dynamics. The social environment adapts to change quickly, and social impacts therefore evolve and change throughout the project cycle.

8.3.1 Expectations and community relations

Description of impact

There are currently seven approved, operational or applications for solar projects in a 30km radius of the project sites. There are also some wind farms. These projects resulted in certain economic benefits and opportunities for the affected communities. There is an expectation from the affected communities and municipalities that the Soventix project will result in similar benefits and opportunities. Although this is not an entirely unrealistic expectation, given the previous experiences, it is important that the expectations about the magnitude of the positive impacts must be kept realistic. If Soventix does not manage stakeholder expectations from the beginning of the project, it can result in reputational damage for the company, bad stakeholder relationships and in the worst-case scenario violent protests. Community relations go

hand in hand with expectations. The better the relationship with the project impacted communities, the better the social license to operate from Soventix will be. Community relations will remain important throughout the project, but the basis for future relations is established in the beginning phases of a project.

Impact mitigation

Soventix must put a stakeholder engagement and communication strategy in place that will communicate in an open and honest way what kind of jobs will be created, who will qualify and how the recruitment process will work. The communication strategy must be used for the life of the project and adapted as required. To reach a wide audience, it is recommended that different media must be used, including social media, printed media, meetings, and a community liaison officer. It is important that Soventix liaise with the local municipality about the project opportunities, as the municipality is often the first port of call for the community. The municipality can be an important ally for Soventix if the relationship is based on mutual trust and respect.

8.3.2 Uncertainty

Description of impact

There is still a level of uncertainty amongst the directly affected landowners. The timelines for the project are not clear to them, they would like greater clarity about when the construction will start, how long it would be and what the layout and design of the solar panels will be. Other landowners have technical questions about practicalities and the implementation of the project. The farming community is close-knit, and people discuss the project amongst themselves. Soventix may harm their social license to operate if they do not clarify these aspects, since the uncertainty can change into mistrust, which is difficult to undo.

Impact mitigation

This impact can be addressed by means of the communication strategy discussed above. It is also important that a direct meeting must be conducted between the affected landowners (directly affected land owner and owners of neighbouring properties) and Soventix. In the long term a community liaison officer must be appointed for the project. This person will be the interface between Soventix and the

landowners and build trust relationships with them for the duration of the project. It is important that this person must be bilingual with a solid knowledge of Afrikaans, as it is the language that most stakeholders are comfortable with (excluding the local government, where English would be sufficient).

8.3.3 Change of land use/Livelihoods

Description of impact

The proposed site is situated in a rural area on a sheep farm. The site is currently used for grazing purposes. The construction of a solar electricity generating facility and its associated infrastructure will lead to a change of land use, and this change of land use can potentially impact negatively on the livelihood of the affected farmer, which is sheep farming. Although it will be a hybrid agrivoltaic system, meaning that sheep could continue to graze amongst the solar panels, the areas available for grazing will be less if the project is implemented, and this could mean that the farmer would need to cut down on his production rates, which would impact negatively on his livelihood. It is possible for sheep to graze in between the solar panels, but to achieve that the farmer would need more labour than he is currently using. The reason for this is that he would need to divide his flocks and have them graze in separate areas. This entails the movement of the flock between camps and managing of the flock in the solar area. During the construction phase all livestock would need to be moved to different parts of the farm as the construction activities may be distressing for the animals. This is also the case with game, but it is not that easy to move game around on the farms. Farmers indicated that they would not be able to introduce new game on their properties during the construction phase due to the sensitivity of game to environmental factors such as noise and constant movement. Construction traffic may impact on the movement of the livestock around the farm. Farmers are also concerned about the impact of the quality of the roads on their quality of life and ability to transport their goods.

Changing the land use means that the land in question must be rezoned from agricultural to renewable energy infrastructure (Draft ELM Land Use Scheme, 2021). This have tax implications for the farmer, as taxes on renewable energy infrastructure

is higher than taxes on agricultural land. Neighbouring farmers are also concerned that their property tax may be increased due to the development.

In some cases, the neighbouring farmers will benefit from the construction of the facility since they can offer accommodation or other related services that can supplement their income.

Impact mitigation

While it is true that the landowner will lose productive grazing areas, it must be considered that he will be compensated for the use of the land through a commercial transaction with Soventix. This should allow him to find an alternative source of grazing, either by buying or renting additional land. The increase in his taxes should also be considered in the renting transaction. In addition, the design of the solar farm is such that the land will still be used for grazing purposes.

Livestock must have right of way. Construction vehicles must wait for the animals to cross before they continue with their journey. The contractor must compensate the farmer for any losses of livestock due to irresponsible behaviour by the construction teams. A compensation policy must be compiled before the construction commence. The farmers must be given a construction programme with sufficient leeway to ensure that they can move their livestock before construction activities commence.

The principle of “locals first” must be used to ensure that neighbouring land owners benefit from requirements for accommodation or any other services that they can deliver.

8.3.4 Property values

Description of impact

Neighbouring farmers expressed their concerns about the potential impact of living adjacent to a solar facility on the value of their properties. A number of aspects such as interest rates, economic conditions, climate, terrain, carrying capacity and the availability of water, amongst others, can influence the property price of farms. Impacts on property values cannot be predicted with a high level of confidence, and as such should be treated with caution. Due to the recent droughts in the Karoo, even after receiving some rain prices remains depressed as it will take some time for the

natural grazing to recover and farmers to build their herds (Kriel, 2021). A search of estate agent's databases indicated only one or two farms for sale in the Hanover/De Aar area (Compare Private Property; AgriSell; Property24; SAFarmTraders; ReMax South Africa). No local studies could be found regarding the impact of solar farms on property prices of neighbouring properties. Local studies on the impact of wind farms on property prices indicates that there is no measurable or statistically significant effect on sales prices (Van Zyl & Kinghorn, 2022). American studies found that properties immediately adjacent to a solar farm may see a negative impact, but tactics to hide the solar farm from view could help offset those effects (ASFMRA press, 2021). Rich Kirkland, who has conducted more than 100 property valuation studies across 19 states concluded that: *"In rural and suburban areas, I'm not finding any consistent negative impact from solar farms as long as there's at least 100 feet between the [solar] farm and the property, and enough landscaping to hide the panels."* (ASFMRA press, 2021). In the Netherlands evidence was found that house prices within 1km of a solar farm decrease by 2-3%, but the researchers did not have a high level of confidence in their findings as there are relatively few solar farms in the Netherlands (Koster & Droes, 2020). It is therefore estimated that the proposed development will not have a significant impact on the property values, although there are many external factors that may influence this potential impact.

Impact mitigation

Impacts on property values are dependent on how the site is developed and managed to minimise negative biophysical and social impacts. The measures recommended in other specialist reports to these impacts (primarily the minimisation of visual, heritage, traffic and ecological impacts) and in this study would thus also minimise property value impacts. The following specific measures must be implemented:

- Screening the solar facility from the neighbouring properties in a way acceptable to the land owners must be investigated and agreed to.
- Where the proposed solar field is directly adjacent to a neighbour's fence line there should be a buffer zone between the panels and the fence as agreed in writing between Soventix and the directly affected neighbours during the EIA process, to ensure that it is included in the EIA authorisation.

Recommendations made in the Visual Impact Assessment should be considered in the discussion about and development of the buffer zone.

- Dust suppression measures must be implemented when required.

8.3.5 Traffic and roads

Description of impact

The main access is off the N10 between De Aar and Hanover, which enters the site from the west. The provincial unsurfaced road (Burgersville District Road) and the existing farm access road will also be used. Once on the farm, an Eskom servitude road will be used to access the main gate to the operational area and on-site substation. During the dry season the area is very dry and dusty. During the wet season, the roads can become muddy, and vehicles can get stuck easily. The access road is used by a number of farmers in the area to access their properties. It also traverses or is adjacent to some of the neighbouring properties. Stakeholders are concerned about the quality of the roads, especially if heavy construction vehicles are used. They are also concerned about the increase in traffic on their fence lines and how more traffic and strangers in the area will impact on their properties. The construction phase will generate significant additional traffic on the roads – just the transport of the workers will mean two trips per day, and then the delivery of construction material and management activities must also be considered. At the moment the local farmers do a lot of the road maintenance. They are concerned about the condition that the road will be in after the construction period. Another concern is the generation of dust. Although the proposed site is far from any communities, it is relatively close to some of the farmers, but the biggest concern is the impact that the dust will have on the quality of the grazing. Farmers acknowledge that the dust will be washed of by rain, but it is an arid area with relatively low rainfall in general. The municipality indicated that the road infrastructure in town started deteriorating when the first renewable projects started in the area.

Impact mitigation

It is acknowledged that Soventix will not be the only road user, but it must be considered that their presence will add significant wear and tear to the road. Soventix must contribute to the maintenance of the roads for the life of the project. This is

especially important in the construction phase, where the most severe impacts are expected. This agreement must be formalised between Soventix and the parties currently responsible for road maintenance. Dust suppression measures must be implemented in line with the recommendations from the EIA. These measures must consider the arid nature of the area and the scarcity of water. If possible, local service providers must be used for road maintenance and dust suppression activities. Vehicles must be clearly marked, and the necessary road signage must be erected on the affected roads to warn road users about the construction activities and traffic. Soventix must have a Traffic Management Plan to address the flow of traffic and road safety. Aspects such as speeding, driving while tired, transport of passengers, driving on un-tarred roads and general road safety must be included in the plan and in the induction of workers.

8.3.6 Damage to farm infrastructure

Description of impact

The movement of workers and vehicles on the site could cause damage to farm infrastructure (e.g., fencing, water troughs and gates), during construction and operation. Farm owners are concerned about the impact of fences on water flow during heavy rain. If fences are not kept clear of debris, there is a risk that it can affect the waterflow into dams in the area, which is critical in a dry area like the Karoo. Another concern is the waterflow around the wetland and the potential impact on the road. There is also a risk of stock loss due to farm gates being left open, or not being closed properly by construction teams.

Impact mitigation

If any damage to farm infrastructure or stock losses occurs, Soventix must compensate the affected landowner for his losses. Soventix must develop a grievance mechanism and a complaints procedure that allows the landowners to log their grievance and submit a claim for damages. The construction teams must be educated about the impact of damages to fences, water troughs and gates on the activities of the farmers through toolbox talks. Inspections of boundary fences and gates should be done on a daily basis in areas where there are activities. All fences should be inspected and be

kept clear of debris, especially in the rainy season, even if the fences are not crossing water courses.

8.3.7 Safety and security concerns

Description of impact

Farm safety is a concern in the rural areas of South Africa. Although there is a low incidence of farm attacks in the Karoo, farmers and farm workers are soft targets due to the isolation on farms and distance from emergency services. More people moving around in the area will make it easier for opportunistic criminals to enter the area without being noticed. Stock theft is a problem in the area, and one farmer reported that during the times that Transnet contractors work in the area they lose up to ten sheep a week. Farmers are concerned that the presence of the construction workers in the area will cause an increase in stock theft, due to people becoming aware of where the stock are kept. There are concerns that poaching incidents may increase, especially when the fencing is erected and when a number of construction teams are active in the area. There is also a possibility that petty theft or opportunistic crimes can take place. The municipality indicated that general crime levels increased during the construction phases of the renewable developments around the town. The municipality reported that once the construction teams left, they perceive that there is an increase in local petty crimes such as housebreaking which they attribute to loss of income amongst some community members. There will be less people in the area during the **operational phase** and fewer permanent workers onsite. Theft or vandalism of the PV panels or associated infrastructure may be of some concern during the operation phase.

There are game on the directly affected and neighbouring properties. The noise of **construction** activities may keep the animals away from the construction site, but during operation when the site is quieter it may become a risk if a large antelope is trapped inside the fenced area. There are also venemous snakes, and during the clearing of the site this may pose a risk to the workers. There is always a risk of snakes in the area and during the operation there may also be snake encounters.

Another safety concern is the hunting activities that take place on the adjacent farms. Although hunting is allowed throughout the year, hunting activities peak in the winter. With people permanently stationed on the Solar PV plant, there is a risk that they may be in danger from stray bullets or hunting accidents. High calibre guns are used for hunting, especially for bigger game.

Impact mitigation

Soventix should work with existing farmers' security groups and farmers' associations to create a farm access protocol for everybody that need to access the properties, and a safety plan. Soventix should also become a member of these forums. There are existing security systems in use that includes the use of cameras, and Soventix should use the same system to avoid any duplication and to ensure everyone is on the same page.

Soventix should give a roster to the directly affected landowners stating dates and approximate times that contractors will be on the farms. Farmers emphasised that they need to know of people accessing the farm ahead of time. It is too late to inform them when entering the property. All access arrangements should be made at least 24 hours before access is required. Soventix must meet with the landowners before the construction phase commence and formalise security arrangements.

All contractors and employees need to wear photo identification cards. Soventix and its contractors must develop an induction programme that includes a Code of Conduct for all workers (including sub-contractors). Any person that does any work on site must sign the Code of Conduct and presented with a copy. The Code of Conduct must include the following aspects:

- Respect for local residents, their customs and property.
- Respect for farm infrastructure and agricultural activities.
- No hunting or un-authorised taking of products or livestock.
- Zero tolerance of illegal activities by construction personnel including: prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting.
- Compliance with the Traffic Management Plan and all road regulations; and

- Description of disciplinary measures for violation of the Code of Conduct and company rules.

If workers are found to be in contravention of the Code of Conduct, which they will be required to sign at the beginning of their contract, they will face disciplinary procedures that could result in dismissal. Stock theft should be noted as a dismissible offence.

Vehicles should be marked as construction vehicles and should have Soventix or the contractor's logo clearly exhibited. Entry and exit points of the site should be controlled. Areas where materials are stockpiled must be fenced. If a security company is used, their schedules should be communicated to the landowners.

Workers and contractors must be educated about safety aspects in areas where there are wild animals. This could be done through toolbox talks. At least one person on site needs to be trained to relocate venomous snakes. The person responsible for first aid must be trained in dealing with snake bites. Soventix must have a zero-tolerance policy regarding poaching, and make it clear what the punishment and consequences would be. All poaching incidences must be reported to the local police.

Soventix must develop a protocol regarding hunting activities on neighbouring properties together with the owners. Soventix must be informed about any planned hunting activities at least 48 hours before it commences. This means that Soventix should invest in its relationship with its neighbours to ensure communication channels remains open. Soventix should check in with the direct neighbours once a month to ensure all grievances are dealt with and that the different parties remain informed about any planned activities.

8.3.8 Concerns about social disturbance and community safety

Description of impact

In a 2004 study it was found that in De Aar, 120 out of every 1 000 (12%) children starting school showed some sign of being touched by Foetal Alcohol Syndrome Disorder (FASD). This is the highest rate in South Africa (Urban et al, 2008). South Africa has the highest FASD in the world. Many of the children also showed signs of malnutrition (Olivier et al, 2016). FASD may lead to primary disabilities such as

intellectual disability, learning difficulties, poor impulse control, problems with attention, memory loss, social perception, reasoning and using judgement, cognitive processing, mathematics and language deficits, and developmental lags. Some secondary disabilities also associated with FASD include mental health problems, disrupted school experience, trouble with the law, custody, inappropriate sexual behaviour, and alcohol/drug problems (Streissguth et al, 2004). This means that a significant part of the population of De Aar can be seen as a vulnerable group susceptible to negative influences in society.

Safety concerns mentioned by people from Hanover and De Aar include social ills such as prostitution, relationships with minors, alcohol and drug abuse, gambling and fighting due to the presence of people from outside the area.

Many of the people in town are poor and depend on social grants to survive, and the project will introduce people who have more money available. While there are definite benefits, which will be discussed under the economic impacts, there are also potential threats and social disturbance. It must be noted that there are some people in the urban areas that keep livestock for subsistence purposes, and it has been reported that they are especially vulnerable to theft during times when there are more people moving around the area.

The municipality indicated that people coming from outside the area to work in the existing solar projects had a definite impact on the community. Different value systems lead to changes in behaviour, such as taverns being open on Sundays, sexual assaults, and an increase in the HIV rates. This may be a perception, as these aspects has been present in the community for a long time, but it must be acknowledged that these social ills are typically associated with an influx of people because of development. A massive influx of people is not expected, since there should be some skilled labour in the area as a result of the other solar projects that have been established in the last few years. However, if the number of solar developments in a 30km radius of the proposed development are all constructed at the same time, there may be cumulative impacts (See Section X). A significant impact on basic services such as schools, health care, sanitation, and other municipal services are not expected due

to the fact that a small number of temporary workers will enter the area for a limited period. The municipality indicated that there is a shortage of housing at the moment.

Impact mitigation

Mitigation for this impact is similar to mitigation for the impact on safety and security due to more people in the area. Soventix and its contractors must develop an induction programme that includes a Code of Conduct for all workers (including sub-contractors). The induction programme must include HIV/AIDS awareness, substance abuse programmes and education about alcohol abuse and gender-based violence. Any person that works on site must sign the Code of Conduct and presented with a copy. The Code of Conduct must include the following aspects:

- Respect for local residents, their customs and property.
- Respect for farm infrastructure and agricultural activities.
- No hunting or un-authorised taking of products or livestock.
- Zero tolerance of illegal activities by construction personnel including: relationships with minors; prostitution; illegal sale or purchase of alcohol; sale, purchase, or consumption of drugs; illegal gambling or fighting.
- Compliance with the Traffic Management Plan and all road regulations; and
- Description of disciplinary measures for violation of the Code of Conduct and company rules.

If workers are found to be in contravention of the Code of Conduct, which they will be required to sign at the beginning of their contract, they will face disciplinary procedures that could result in dismissal. Stock theft should be noted as a dismissible offence. Soventix must also establish a grievance mechanism and appoint a community liaison officer that the community can access easily. The grievance mechanism must be communicated to the affected communities. It is imperative for Soventix and the municipality to have a good relationship, since the parties will need each other to ensure that societal impacts can be mitigated.

8.3.9 Economic opportunities

Description of impact

The proposed project will create positive economic impacts in the area. The most direct impact on a community level is job creation. Soventix assume that there will be 650 construction staff during peak construction and 55 staff during operation. (pers.comm JP De Villiers, Managing Director, Soventix). The three phases will be built sequentially. There may be some overlap. Once civil works on Phase 1 are complete the civils' team would move onto Phase 2. Furthermore, each phase would be built sequentially, e.g., Phase 3 will be built in 4 x 100 MW blocks. Construction of each 100 MW block typically takes 12 to 15 months from start to finish (pers.comm JP De Villiers, Managing Director, Soventix).. Although the construction phase jobs are temporary and will not contribute to the unemployment levels in the long term, it would have a significant positive impact on the short term. The increase in disposable income (via the project workers) will result in increased demand for goods and services, and greater spending within the local community. Local businesses confirmed that during the construction of previous renewable energy facilities there was a definite positive economic impact in the town. Some of the positive impacts remained present, as a business owner reported a 40% increase of business, despite the recession. However, with an increase in economic activity from a boom-bust cycle created by construction events there are inherent risks. A local businessman explained that during the construction phase for another renewable energy facility there was an increase in eateries opening in De Aar. Lots of people applied for restaurant licences, but most places have subsequently closed down. The sustainability of businesses created during boom periods must be ensured and prospective first time business owners must be educated about the potential risks with opening a business.

It can be anticipated that there are semi-skilled and unskilled labour present in the area that has experience of construction work during the establishment of the existing solar farms in the area. The municipality noted that they feel that the skills transfer from renewable energy companies up to now has been limited, and they would like to see more skills transfer programmes on a local level.

Apart from the direct employment opportunities, there will also be significant indirect economic opportunities for local entrepreneurs. Opportunities include transport, fencing, road maintenance, accommodation, meals, and laundry services. Several

people reported that they established businesses that provide services to the renewable sector and has benefitted from the presence of these facilities in the area. The highly skilled technical people will need accommodation and other hospitality services while they reside in the area during the construction period. Some of the adjacent farms offer accommodation, which may be a viable option for some of the workers. Whilst some of the technical jobs need highly skilled people that are not available locally, service providers must make use of the secondary opportunities that are available locally.

The **operational phase** will have less direct economic opportunities in the form of job creation. It will create 55permanent positions, of which the number of semi-skilled and unskilled is not known. This will have a permanent positive impact on the people that will be employed. In addition, there may be limited secondary economic opportunities. It is estimated that the lifespan of the solar electricity generation plant is 20 years, however, this lifespan can be increased through on-going maintenance and refurbishment.

The Department of Energy (DoE), through the RFP document, requires that all renewable energy bidders must illustrate how the Project will benefit the local community. At present, the DoE is stipulating that one percent of revenue generated by the project must be contributed towards socio-economic development. In accordance with the relevant BBBEE legislation and guidelines, up to four percent of profit after tax could be used for community development over and above that associated with expenditure in the area. The BBBEE Scorecard specifies the following contributions (totalling four percent):

- Enterprise development – maximum of 15 points awarded for the contribution of three percent of profit after tax, or more; and
- Socio-economic development – maximum of five points awarded for the contribution of one percent of profit after tax, or more.

If these contributions are realised, the project has the opportunity to make a real difference in the local community. Between NGOs that serve the interest of the community as a whole and the municipality Soventix can be assisted with identifying

worthwhile projects that will be sustainable and lead to direct local benefits in the communities that will be affected by the project.

During the **decommissioning** phase opportunities similar to those created in the construction phase will be created.

Impact mitigation/enhancement

As far as possible local labour must be used for the project. This will minimise the potential negative social impacts on the community and optimise the positive impacts. Soventix need to liaise with the Local Economic Development section of the municipality, local leaders, and NGOs about their recruitment policy to ensure it is in line with the local practices and tap into existing knowledge. The recruitment policy must set reasonable targets for the employment of local people and women. Soventix and the municipality should identify these targets before recruitment commences. If there is a need for transferable skills, Soventix must ensure that people get on the job training as far as possible. The definition of "local" must be clarified with the affected stakeholders. Soventix must provide the local municipality with a list of skills required before the construction period commences, and the municipality must distribute the list to all stakeholders to allow them to prepare for the opportunities. All labour opportunities must be accessed through a labour desk in town, and no recruitment must be allowed on site.

The specialised equipment needed for the project will not be available locally, but as far as possible everything else must be procured locally. Soventix must develop a policy about local procurement. Workers from outside the area must be provided with a list of local service providers for their accommodation and other social needs. People that provided services to other solar farms in the area should be offered an opportunity to put their names on a list at the municipality to ensure that Soventix is aware of the available resources.

Benefits to local communities are required to be real and tangible. It is recommended that Soventix should achieve this through the establishment of a community trust. The final percentage contribution to the trust could only be calculated upon finalisation of the feed-in tariff as part of the Power Purchase Agreement, which is assumed not to

be calculated at the time of writing of this report. The trust should be administered by a board that should comprise of a range of representatives including representatives from the local community. The structure and operational objectives of the Community Trust should be determined at the time. It is envisaged that the development objectives/ projects identified and supported by the trust will be identified in collaboration with the local municipality, community representatives and NPOs in the area. Projects should be aligned with key needs as identified in the municipal Integrated Development Plan (IDP) and with input from local NPOs to ensure benefits are locally relevant. Another recommendation is that the renewable facilities in the area combine their efforts and contributions to socio-economic and enterprise development to make a bigger positive impact instead of diluting the impact with small, unrelated projects. A skills development project where skills required for renewable energy and the Fourth Industrial Revolution are taught locally must be considered. This will be to the benefit of the local people, municipalities, and current and future renewable energy developments in the area. Given the fact that social development is a process and takes a long time, these facilities, which all have a lifespan in excess of 20 years can potentially make a significant contribution in this arena if they combine forces.

8.3.10 Sense of place

Description of impact

There is a strong sense and spirit of place associated with the Karoo landscape. The surrounding farms are used for sheep farming, game farming and hunting. The current residents and farm owners have a strong sense of place associated with the farms. Many things can impact on a person's perception of sense of place. Farms are generally noisy places if one considers animal-sounds and farming activities. From the receptors' perspective, this kind of noise is acceptable and even attractive, because this is what living on a farm is all about. Noises such as alarms and reverse hooters are not "normal" and disturb the sense of place and the value that people place on the auditory environment. Although lights are used as a security measure on farms, one of the things people values is the absence of bright lights and that they can see the stars. Lights for any other use than lightening up their direct environment is seen as

invasive and disturbs the sense of place. Visual aspects are an important consideration in the experience of sense of place. If people are used to unspoiled vistas, or seeing open fields, the establishment of any buildings or infrastructure that they feel do not belong there can alter their sense of place. Sense of place refers to an individual's personal relationship with his/her local environment, both social and natural, which the individual experiences in his/her everyday daily life (Vanclay et al, 2015). It is highly personal, and once it is affected, it cannot be restored. It is also difficult to quantify. Part of the sense of place is the emotional attachment that the farmers have to their properties, and the hopes that they have for it to serve future generations (their children). The environmental philosopher Glenn Albrecht noted a consistent theme of distress caused by coal mining in Australia by the assault on the people's sense of identity, place, belonging, control, and good health. He identified a melancholia from the loss of solace and comfort connected with their home which he termed 'solastalgia' – a form of homesickness that one gets when one is still at 'home' associated with the major project impacts they experienced (Albrecht et al, 2007). Social impacts can therefore range from significant health impacts to the loss of a cherished landscape and associated loss of a sense of place.

The spirit of place associated with an area is an important factor in tourism and hunting and the marketing of these activities. Spirit of place refers to the unique, distinctive, and cherished aspects of a place. Whereas 'sense of place' is the personal feelings an individual has about a place, spirit of place refers the inherent characteristics of the place (Vanclay et al, 2015). In this case the spirit of place include the unique tangible and intangible heritage and biodiversity of the area.

Aspects that will impact on the sense and spirit of place include an increase in noise and activity levels from construction activities, but this will be a temporary impact during the construction phase. The **construction phase** will see a total transformation from the current setting and landscape of the proposed site. It is inevitable that the visual impact during the construction phase will be affected by dust, increase in vehicle traffic and other construction activities. Potential visual impacts caused by construction activities will include the visual changes brought about by clearance of vegetation for the solar arrays, ancillary buildings, and laydown areas; visual

disturbance caused by construction of roads, buildings, energy collectors, power lines, increased traffic (and number of large vehicles), worker presence and activity, and dust emissions. Other visual disturbances may include soil stockpiles (from excavation for building foundations and other structures), soil scars, as well as potential for invasive plant species to develop on disturbed soils and soil stockpiles, which may contrast with existing vegetation.

During the **operational phase**, visual impacts such as glare from the solar panels, buildings, power lines, lack of vegetation and light at night will also impact on the sense and spirit of place and will be an impact as long as the plant is operational. Modern solar modules are designed to absorb the solar radiation and hence are not susceptible to reflection or glinting. Nonetheless, the contrast between the solar arrays and surrounding vegetation will exist, in colour, form, line and texture. The impact of lights in a dark rural area known for its beautiful night sky is a special concern of land owners. Although the preferred site may not influence the sense of and spirit of place of the Karoo as such, it will have a significant impact on the sense and spirit of place of the direct neighbours.

Although there is visual and biodiversity impact assessment reports that suggest mitigation, it must be acknowledged that the sense of place will be altered permanently and given the personal experience of this impact from some stakeholders, successful mitigation is extremely hard to do. In the eye of the affected parties the only thing that will not alter the sense and spirit of the place in this instance is to avoid any further development.

There are various actions related to **decommissioning** of the facility that have an impact on sensitive visual receptors. Immediate visual impacts during decommissioning will be like those caused during construction of the facility, but of a much shorter duration. Impacts may include road redevelopment, removal of aboveground structures and equipment, movement and activities of workers, increased traffic, dust emissions and presence of dismantled equipment. Rehabilitation of the decommissioned site could entail grading, scarifying, seeding, and planting. Disturbed and rehabilitated areas may take a long time to recover to

pre-project conditions, and contrast between existing and newly planted vegetation may persist many seasons.

Decommissioning and removal of the facilities will include all the structures for PV and buildings and related concrete foundations. Reversibility of the visual impact is therefore moderate to high, keeping in mind that it may take several years for the vegetation to fully recover. The effect of decommissioning the plant could have a positive permanent improvement to the visual resources.

Impact mitigation

It is difficult to mitigate the impact on sense of place as it is experienced on a personal level. In general, the mitigation measures suggested in the other relevant specialist studies such as visual, terrestrial ecology and heritage should be adhered to. The relevant specialists will provide scientific mitigation measures for the aspects relevant to their studies. Sense of place is a personal experience, but successful rehabilitation will go a long way in recreating a rural sense of place. The public perception would be negative or positive depending on the successful implementation of the rehabilitation after construction. Specific mitigation measures include:

- Grievance mechanism and contact person that can deal with enquiries from local residents.
- Screening the solar facility from the neighbouring properties in a way acceptable to the land owners must be investigated and agreed to.
- Where the proposed solar field is directly adjacent to a neighbour's fence line there should be a buffer zone between the panels and the fence as agreed in writing between Soventix and the directly affected neighbours during the EIA process, to ensure that it is included in the EIA authorisation. Recommendations made in the Visual Impact Assessment should be considered in the discussion about and development of the buffer zone.
- Dust suppression measures must be implemented when required.
- Residents near the development site should be notified 24 hours prior to any planned activities that will be visible.
- Soventix should demarcate construction boundaries and minimise areas of surface disturbance.

- Construction of new roads should be minimised, and existing roads should be used where possible.
- Night lighting of the construction sites should be minimised within requirements of safety and efficiency.
- All structures and infrastructure associated with the proposed facilities should be dismantled and transported off-site on decommissioning.

8.3.11 Generation of renewable energy

Description of impact

The proposed project will generate renewable energy that will feed into the national electricity grid. This is in line with the National Development Plan and sustainable development. As such it is a positive impact.

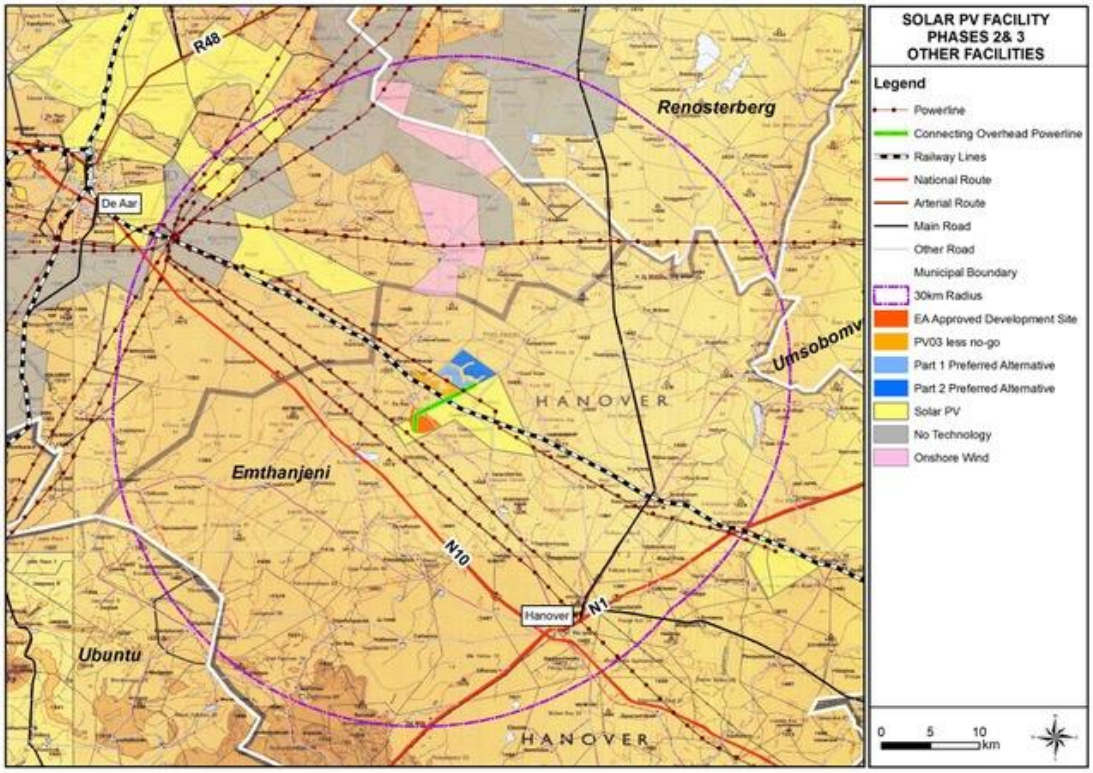
Impact mitigation/enhancement

This is a positive impact, and no mitigation is required. Local benefits will enhance the positive effects.

8.3.12 Cumulative impacts

The map below indicates the other renewable developments within a 30km radius of the proposed facility.

Figure 19: Other renewable developments within a 30km radius



The table below summarises the solar developments only and specify where in the process the developments are.

Table 10: Other solar developments in the area

No.	Name of development	EA No. and date	Status	Description of facility and associated infrastructure	Location (GPS)	Size of facility (MW)	Area of facility or property (ha)
1	The Proposed Construction of a Solar Energy Facility in the Emthanjeni Local Municipality tn the Northern Cape Province	DEA REF 12/12/20/2250 (Multiple amendments)	Approved (Not built)	Solar PV	30°42'13.39"S 24° 7'49.38"E	225 MW	7 000 (based on REEA_OR)
2	The Proposed Establishment of Photovoltaic (Solar Power) Farms In The Northern Cape Province (3 sites)	12/12/20/2258/4	Approved (Not built)	Solar PV	30°52'41.68"S 24°22'26.04"E		4 400 (based on REEA_OR)
		12/12/20/2258/3	Approved (Not built)	Solar PV	31° 0'20.03"S 24°37'47.09"E		650 (based on REEA_OR)
		12/12/20/2258/2	Operational	Solar PV and substation	31° 0'53.23"S 24°39'4.32"E (Linde site)	36.8 MW	120
3	The Proposed Development of a Photovoltaic Power Plant and Power Line near De Aar, Northern Cape	12/12/20/2313 (various amendments)	In progress	Solar PV and powerline	30°43'30.81"S 24° 4'6.08"E	30 MW	108 (based on REEA_OR)
4	Expansion of the Photovoltaic Solar Facility in Emthanjemi Local Municipality, Northern Cape on the property, Northern Cape Province	14/12/16/3/3/1/1122	Approved (not built)	Solar PV	30°59'7.87"S 24°38'12.25"E		50 (based on REEA_OR)
5	Proposed PV facility on farm Caroluspoort near De Aar	14/12/16/3/3/2/741	In progress	Solar PV	30°39'10.02"S 24° 7'35.65"E	300 MW	2 340 (based on REEA_OR)
6	Proposed PV facility on farm Jakhalsfontein near De Aar	14/12/16/3/3/2/744	In progress	Solar PV	30°33'15.82"S 24° 9'46.11"E		5 220 (based on REEA_OR)
7	Proposed photovoltaic (solar) energy plant on Vetlaagte Farm near De Aar, Northern Cape	12/12/20/2499	In progress	Solar PV	30°41'36.26"S 24° 3'39.49"E	100 MW	2 100 (based on REEA_OR)

The social impacts do not occur on the sites, but in the communities around the sites and in the towns closest to the sites. The operational renewable projects in the area resulted in certain economic benefits and opportunities for the affected communities. The current energy crisis means that some of the projects may be expedited, which will also accelerate the impacts. The impacts created by the Soventix project will be cumulative to the existing positive economic impacts, and extent the live of some of the positive social impacts. It can change some of the residents lives permanently in a positive manner.

However, there are also negative impacts as a result of these projects and unless the social impact management plan is implemented as recommended, these negative cumulative social impacts could affect the communities of Hanover and De Aar. The communities are vulnerable considering the high number of children born with Foetal Alcohol Spectrum Disorders, the high unemployment levels, and absence of opportunities. The municipality indicated that people coming from outside the area to work in the existing solar projects had a definite impact on the community. Different value systems lead to changes in behaviour, such as taverns being open on Sundays, sexual assaults, and an increase in the HIV rates. This may be a perception, as these aspects probably has been present in the community for a long time, but it must be acknowledged that these social ills are typically associated with an influx of people because of development. Since the proposed development may contribute to the influx of people into the environment, it can be anticipated that the current negative social impacts may continue.

Although municipal services are not currently under pressure, the development of a few renewable facilities within a short period of each other may cause pressure on these services in future. The municipalities depend on borehole water, which may run out and is only available when there is electricity available to run the water pumps. There is a current shortage of housing which will get worse should the area are exposed to a boom cycle of development. It must be acknowledged that it is almost impossible for the proponent to control the cumulative social impacts in the neighbouring towns. Therefore, it is important that the proponent have a good

working relationship with the local authorities, and that they mitigate the impacts that they can control, as suggested in the SIMP. Implementing the Corporate Social Responsibility strategy (see Section 10) will also assist with mitigating and managing cumulative impacts in the broader community.

Impact mitigation

The management of cumulative impacts must be a joint effort between Soventix, other players in the renewable energy field and the local and district municipality. The following specific mitigation measures are recommended for cumulative impacts:

- Invest in the development of SMME's or create a business incubator.
- Assist with the development of skills required in the construction and management of renewable energy facilities.
- Provide in-service training for candidates with potential.
- Invest in solar energy in the town -e.g. for water pumps and other municipal infrastructure.
- Encourage local manufacturing and maintenance service providers.
- Become part of the community police forum and invest in security measures such as cameras and lights.
- Create a renewable energy forum that meets on a quarterly basis. Discuss potential projects and alignment between different parties in this forum.
- Discuss and develop social plans in conjunction with the municipality.
- Discuss siting of construction camps or temporary accommodation with the town planning teams of the municipality and pool resources to ensure sustainability.

8.4 Social impact ratings

The table below shows the impact ratings for the project.

Table 11: Social impact ratings

Phase	Aspect	Impact	Mitigation Action	Extent	Magnitude	Duration	Probability	Significance	Acceptability	Status	Mitigation potential (to meet objectives)
Planning & Design	Establishment, application and operation of this and other renewable facilities in the region.	Expectations and community relations	Without	3	3	3	4	36	2	Negative	M
			With	3	2	2	3	21	1	Neutral	
		Reason for Score:	In a country with high unemployment levels and few opportunties unmanaged expectations can lead to violence in a community and damage of the community's social fabric.								
	Time lapsed between project negotiation and project implementation	Uncertainty	Without	3	2	3	4	32	2	Negative	H
			With	3	1	2	3	18	1	Neutral	
		Reason for Score:	Farmers already experience this impact and feel that it interferes with their abiliity to continue with life as usual.								
Construction	Change of land use	Change in livelihood activities of directly affected and neighbouring properties	Without	3	3	2	4	32	3	Negative	M
			With	3	2	2	3	21	2	Neutral	
		Reason for Score:	The directly affected land owner will have to change his livelihood strategies permananetly. Neighbouring farms will only be affected in the construction period and this may be positive if there are econmic benefits associated with the changes, such as new opportunities to generate income								
	Construction activities such as transport of workers and materials	Impact on road quality and safety	Without	3	3	2	4	32	3	Negative	M
			With	3	2	2	3	21	2	Negative	

		Reason for Score:	Local and farm roads are already impacted and in the rainy season it gets worse. The maintenance of municipal and provincial roads are not optimal								
	Construction activities such as transport of workers and materials	Damage to farm infrastructure	Without	3	3	2	4	32	3	Negative	H
			With	3	2	2	3	21	2	Negative	
		Reason for Score:	Damage of farm infrastructure during construction is almost inevitable, but if all mechanisms is in place it is relatively straight forward to mitigate.								
	Presence of construction teams in the area	Safety and security concerns	Without	3	3	2	4	32	3	Negative	H
			With	3	2	2	3	21	2	Negative	
		Reason for Score:	More people in an area makes it easier for opportunistic criminals to take advantage of the situation								
	Presence of construction teams in the area and adjacent towns	Social disturbance and community safety	Without	4	3	2	3	27	2	Negative	M
			With	3	2	2	2	14	2	Negative	
		Reason for Score:	There will be an influx of people, but there are also local people with skills from the other projects taking place in the area.								
	Construction and development of renewable energy facility	Economic opportunities	Without	4	3	2	3	27	1	Positive	H
			With	4	4	3	4	44	1	Positive	
		Reason for Score:	A variety of economic opportunities will arise on a local, provincial and national level								
	Construction and development of renewable energy facility	Local experience of sense and spirit of place	Without	2	4	3	4	36	3	Negative	H
			With	2	3	2	3	21	3	Negative	
		Reason for Score:	The visual qualities of the environment will change. Neighbours expressed concerns about the visual impacts.								
Operation	Change of land use	Change in livelihood activities for directly affected landowner and new opportunities for neighbouring properties	Without	3	3	4	3	30	1	Positive	H
			With	3	2	4	4	36	2	Positive	
		Reason for Score:	Land owner will benefit from rental agreement and new economic opportunities may be presented to the neighbouring properties								
	Change of land use by neighbour	Impact on value of property	Without	3	2	3	3	24	2	Neutral	M
			With	3	1	3	2	14	1	Neutral	

	Reason for Score:		Research indicates that impact on property prices are negligible							
	Operational activities and movement of people	Impact on road quality and safety	Without	3	2	4	3	27	2	Negative	H
			With	3	1	4	3	24	2	Neutral	
	Reason for Score:		Traffic volumes during operation will be significantly lower and mostly be around and on the site							
	Operational activities and movement of people	Damage to farm infrastructure	Without	3	2	4	3	27	2	Negative	H
			With	2	1	4	2	14	1	Neutral	
	Reason for Score:		There are less activities during the operation phase, so impact is unlikely, and should it occur it can be mitigated easily							
	Operational activities and movement of people	Safety and security concerns	Without	3	3	4	3	30	3	Negative	M
			With	3	2	4	2	18	2	Neutral	
	Reason for Score:		Although impacts are less likely to occur, the severity if they occur will be high, especially if there are hunting activities on neighbouring properties							
	Operational activities associated with the solar facility	Economic opportunities	Without	3	2	3	3	24	2	Positive	H
			With	4	3	4	4	44	1	Positive	
	Reason for Score:		The project has the potential to contribute to sustainable socio-economic development							
	Visual disturbances associated with solar facility	Sense and spirit of place	Without	3	3	4	4	40	2	Negative	M
			With	3	2	4	3	27	2	Negative	
	Reason for Score:		Sense and spirit of place is a highly personal experience, but can also change over time							
	Operating solar facility	Availability of renewable energy	Without	4	4	4	4	48	1	Positive	H
			With	4	4	4	4	48	1	Positive	
	Reason for Score:		Renewable energy is a sustainable source of energy and it will assist with alleviating the current energy							
Decommissioning	Change of land use	Change in livelihood activities	Without	3	3	2	4	32	3	Negative	M
			With	3	2	2	3	21	2	Neutral	
	Reason for Score:		If the solar facility is removed similar impacts than in the construction phase will occur							

Construction activities such as transport of workers and materials	Impact on road quality and safety	Without	3	3	2	4	32	3	Negative	M
		With	3	2	2	3	21	2	Negative	
Reason for Score:		There will be an increase in traffic and construction teams will be required to break down the facility								
Construction activities such as transport of workers and materials	Damage to farm infrastructure	Without	3	3	2	4	32	3	Negative	H
		With	3	2	2	3	21	2	Negative	
Reason for Score:		More traffic and vehicles will be on the site and the adjacent properties								
Presence of construction teams in the area	Safety and security concerns	Without	3	3	2	4	32	3	Negative	H
		With	3	2	2	3	21	2	Negative	
Reason for Score:		As in the construction phase, there will be more people entering the area								
Presence of construction teams in the area	Economic opportunities	Without	4	3	2	3	27	1	Positive	H
		With	4	4	3	4	44	1	Positive	
Reason for Score:		New economic opportunities will be created in the short term, similar to the construction phase								
Removal of solar infrastructure	Sense and spirit of place	Without	3	3	4	3	30	1	Positive	H
		With	3	2	4	4	36	1	Positive	
Reason for Score:		When the solar panels are removed and the landscape is rehabilitated some individuals will feel that the sense and spirit of place is restored.								

8.5 Social impact management plan

The table below presents the social impact management plan that is suggested for the life of the project. The social impact management plan does not replace the social mitigation measures but must be implemented in addition to the suggested mitigation measures.

Table 12: Social impact management plan

SOCIAL IMPACT MANAGEMENT PLAN				
Phase	**Management action**	**Timeframe for implementation**	**Responsible party for implementation (frequency)**	**Responsible party for monitor/audit/review (frequency)**
Planning and Design Phase	Develop social impact management plan	As soon as project enters public domain	Applicant (involve municipality where appropriate)	CLO *Internal once appointed* Social expert *External but not legally required*
	Appoint appropriately qualified community liaison officer (CLO) to deal with social aspects of the project throughout the life of the project	Before consultation with stakeholders start (excluding EIA consultation)	Applicant Appointment for the life of the project	Not required apart from usual HR processes
	Develop community relations and stakeholder engagement strategy	Before consultation with stakeholders start (excluding EIA consultation)	Applicant Continued for the life of project	CLO *Internal* *No external review required*
	Develop safety plan, access protocols, grievance mechanism and compensation policy	In consultation with stakeholders	Applicant Continued for the life of project	CLO *Internal* *No external review required*
Construction Phase	Monitoring of social mitigation and management measures	Throughout construction	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
	Implementation of community	Throughout construction	Applicant (CLO)	Management

	relations and stakeholder engagement strategy		Continued for the life of project	*Once a year or as required*
	Implement safety plan, access protocols, grievance mechanism and compensation policy	Throughout construction	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
Operation Phase	Monitoring of social mitigation and management measures	Throughout operation	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
	Implementation of community relations strategy	Throughout operation	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
	Implement safety plan, access protocols, grievance mechanism and compensation policy	Throughout operation	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
Decommissioning, Closure and Rehabilitation Phase	Implement safety plan, access protocols, grievance mechanism and compensation policy	Throughout decommissioning until all rehabilitation activities have ceased	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
	Continue community relations strategy and stakeholder engagement plan until all activities on site cease and rehabilitation is completed	Throughout decommissioning until all rehabilitation activities have ceased	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*
	Implement social mitigation for closure	Throughout decommissioning	Applicant (CLO) Continued for the life of project	Management *Once a year or as required*

9 Analysis of alternatives

Several potential sites have been considered, but three sites have been identified as preferred in consultation with the Environmental Assessment Practitioner, Client, and Landowner. All the potential alternatives were in the proximity of the preferred site. During the EIA phase of the project, all the specialists identified sensitive areas after the specialist studies were completed. The site boundaries were adapted accordingly. From a social perspective, the impacts will be similar irrespective of the site chosen therefore it is recommended that the bio-physical specialist studies are used as a guide to establish the most suitable alternative.

10 Need and desirability

The Guideline for Need and Desirability (DEA,2017) deals with the *Need and Desirability* in terms of the EIA regulations. This document presents certain questions to engage with to determine the need and desirability of a proposed project. The SIA deals with the need and desirability from a social perspective throughout the document, firstly by describing the socio-economic baseline environment and secondly through assessing impacts and suggesting mitigation measures. The questions posted in the Guideline for Need and Desirability guided the information presented in the SIA document.

The legislative and policy context relevant to the project is discussed in Section 4 of this report and confirms that the project is in line with local legislation and policies. The project outcomes align with the national, local, and regional planning objectives in terms of economic development and sustainability. The project will use a natural, renewable resource and assist with decreasing the country's reliance on coal as a source of energy. The project will not affect the environmental rights of any of the affected stakeholder groups and no-one's livelihoods will be affected in a negative manner. The project will contribute to livelihood strategies of stakeholders in the area – directly through job creation and secondary economic opportunities, and indirectly through enterprise and socio-economic development by means of a community trust. Should the mitigation measures be implemented as recommended, the contribution to long-term sustainable outcomes will be significant. The project will complement the socio-economic benefits in the area. Given the rural setting of the site there will be a need to transport goods and people over a distance, but the negative impact of this aspect can be mitigated by the secondary economic opportunities that the need for transport service providers will create.

There are vulnerable people that will be affected by the project. The vulnerable groups include the poor and unemployed people in the urban areas, people suffering from FASD, the elderly, women, children, and the farm workers in the rural areas. In terms of participation a background information document aimed at these groups were produced and presented in Afrikaans, which is the dominant language in the area, and

English. The project offers opportunities for semi- and unskilled labourers, which will ensure that the vulnerable groups are not excluded from economic opportunities. Mitigation measures on how to enhance these opportunities are suggested in the report. The mitigation measures include aspects such as gender equality.

The project will not result in any unfair discrimination or affect the social and environmental rights of any of the stakeholder groups, should the mitigation measures be implemented as suggested. From a social perspective the positive impact that the project will have on the affected environment outweighs the negative impacts by far, and where there are negative impacts, it can be mitigated.

The table below shows the questions posed in the Guideline for Need and Desirability (2017) and indicate where in the report the questions were addressed and provide responses to the questions where required.

Table 13: Need and desirability of project from social perspective

Question	Response
2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?: 2.1.1. The IDP and any other strategic plans, frameworks of policies applicable to the area, 2.1.2. Spatial priorities and desired spatial patterns, 2.1.3. Spatial characteristics, and 2.1.4. Municipal Economic Development Strategy ("LED Strategy").	Addressed in Section 6 of the report
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area? 2.2.1. Will the development complement the local socio-economic initiatives, or skills development programs?	Addressed in Section 6 and Section 8 of the report
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The proposed development is in a rural area and the closest communities are in Hanover and De Aar. There are farmers and farm workers in closer proximity. Recommendations made in Sections 8 and 11 of the report refers to this aspect.
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The life of the project is estimated to be 20 years. The most severe impacts will be in the construction phase, and more positive impacts will continue through the life of the project. Given the nature of the development and the potential long term positive social impacts it can be seen as a sustainable project.
2.5. In terms of location, describe how the placement of the proposed development will: 2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other, 2.5.2. reduce the need for transport of people and goods, 2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of	2.5.1. See Section 8.3.9 The project will create residential and employment opportunities in the closest towns. During the construction phase the hospitality industry will be a particular beneficiary. There will be limited long term residential and employment opportunities. 2.5.2. Given that the site is far from town, the project will not reduce the need for transport of people and goods. See Sections 8.3.5. 2.5.3. Given the rural nature of the site there will be no impact on

thresholds in terms public transport), 2.5.4. compliment other uses in the area, 2.5.5. be in line with the planning for the area, 2.5.6. for urban related development, make use of underutilised land available with the urban edge, 2.5.7. optimise the use of existing resources and infrastructure, 2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), 2.5.9. discourage "urban sprawl" and contribute to compaction/densification, 2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, 2.5.11. encourage environmentally sustainable land development practices and processes, 2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), 2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), 2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and 2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	public transport. 2.5.4. There are other similar developments in the area, and it can be operated parallel to the farming activities. 2.5.5. Addressed in Section 5 of the report 2.5.6. N/A 2.5.7. No existing infrastructure will be used, but sunlight will be used as natural resource. 2.5.8. N/A 2.5.9. N/A 2.5.10. N/A 2.5.11. The project will provide renewable energy and it will be designed in such a way that the farmer can still utilise the land around the infrastructure if needed. 2.5.12. The site for the proposed development has been chosen due to the potential to feed into existing power supply lines, and due to the suitability of the area for solar farming. 2.5.13. The investment will bring significant social development and economic opportunities to the area, and will diversify the economy. This will decrease the areas vulnerability to external shocks with economic implications. 2.5.14. See Section 8.3.10 2.5.15. The project do have the potential to contribute to a more integrative settlement, especially if recommendations in Section 9 are implemented.
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?: 2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? 2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	2.6.1. See Section 3.2. 2.6.2. See Section 8 where these aspects are discussed and assessed. 2.6.3. The information used in the SIA is based on the official data received from the municipalities and StatsSA. Given that municipalities are subject to public consultation processes, the assumption is made that the data is correct. A conservative approach was taken to the identification of impacts in the scoping phase. In the impact assessment phase of the project the impacts presented in the scoping reports were triangulated through a participation process to ensure that the assumptions were correct, and to close any gaps in the data. Given the nature of the project, no critical social resources should be affected, and once commissioned, there is a relatively low risk for social disruption. Communities were consulted about the social mitigation measures during the impact assessment phase to ensure that the measures suggested are acceptable to the communities affected by the project.
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: 2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	2.7.1. See Section 8. 2.7.2. See Section 8.

2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	See Section 8. It is not anticipated that the social impacts resulting from the proposed project will have significant ecological impacts.
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The information provided in the SIA were fed into the other specialist studies and used to ensure that the best practical environmental option was chosen, whilst the social aspects were also considered.
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Given the proximity of the project from communities, the adverse environmental impacts do not have social or environmental justice implications. Renewable energy is a clean form of energy and benefits the greater society. The DoE requires that local communities must benefit from these kinds of development. If the recommendations in Section 9 of the report is implemented, there can be a positive socio-economic impact far greater than the footprint of the project.
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The environmental resources affected by the proposed development where not used by local communities. The project aims to provide clean energy to South Africa, therefore it assist with protecting ecosystem services. Any economic opportunities will be shared in an equitable manner. See Section 8.
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Environmental health and safety are legal requirements and will also be written into the project specifications. Also see Section 8.
2.13. What measures were taken to: 2.13.1. ensure the participation of all interested and affected parties, 2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, 2.13.3. ensure participation by vulnerable and disadvantaged persons, 2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, 2.13.5. ensure openness and transparency, and access to information in terms of the process, 2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and 2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?	See public participation section in EcoLeges EIA report. Also see Section 7 of this report. The SIA did additional consultation to the EIA public consultation. The one-on-one interviews ensured that there were time to explain the project in a non-threatening environment. People were interviewed in the language of their choice. Through the process vulnerable groups were identified, and additional measures have been developed to make sure that they can participate effectively. Woman and youth were specifically included in the consultation to ensure that their voices are heard.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle- and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	A discussion with the local municipality conducted as part of the SIA confirmed that the development is in line with the local priorities.

2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Will form part of the Soventix operational procedures in line with South African legislation
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects: 2.16.1. the number of temporary versus permanent jobs that will be created, 2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), 2.16.3. the distance from where labourers will have to travel, 2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and 2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	See Section 8.3.9.
2.17. What measures were taken to ensure: 2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and 2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	No specific intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment took place as a result of this specific project No conflicts of interests have arisen as a result of this project.
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest and that the environment will be protected as the people's common heritage?	No specific measures was taken
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The mitigation measures are seen as realistic and the implementation of the SIMP (See Section 8.4) will ensure that the social impacts will be managed. The life of the project is 20 years, and there will be no or very little residual impacts.
2.20. What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The applicant is responsible for implementing the Environmental Management Programme.
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	All the specialists identified sensitive areas after the specialist studies were completed. The site boundaries were adapted accordingly. This assisted with selecting the best practicable environmental option.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	See Section 8.3.12 of the report

11 Recommendations regarding Corporate Social Responsibility Projects (CSR)

Corporate social responsibility (CSR) is a form of corporate self-regulation incorporated into a business model. CSR policy functions as a built-in, self-regulating mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards, and international norms. Through the RFP document the Department of Energy (DoE), requires that all renewable energy bidders must illustrate how the Project will benefit the local community. This must be done through:

- Enterprise development; and
- Socio-economic development.

When considering potential projects to invest in, Soventix should keep in mind that social development is a long-term process, and not something that can be achieved in a couple of years. The recommendation is therefore that Soventix identifies a sustainable project that they can be involved with and grow throughout the life of their project. Given that enterprise and socio-economic development are not the core business of Soventix, the best option is to liaise with a local NGO/NPO that have the expert knowledge on how to implement these kinds of projects. This will ensure that money and resources are not wasted but used optimally from the start of the project. There are a number of other renewable energy developments taking place in the area, and pooling resources and co-investing in projects must be investigated. Since the focus of the operational solar facilities is on De Aar, Soventix must consider focussing on Hanover to ensure resources are shared optimally. Potential CSR projects can include:

- Business incubator – development of entrepreneurs and SMME's.
- Skills development programme aimed at skills required for the Fourth Industrial Revolution.
- Investment in higher education such as the Veritas School, which is the only secondary school with in the Pixley Ka Seme region that over both technical and main stream education.
- Educational campaigns to prevent FASD amongst pregnant mothers.

- Programmes focussing on early intervention services for children born with FASD (between birth and 36 months is a critical time for these children to learn critical skills).
- Special education programmes to meet the needs of older children with FASD.
- Investment in programmes that address gender-based violence.

12 Stakeholder Engagement Plan

Social impacts already start in the planning phase of a project and as such it is imperative to start with stakeholder engagement as early in the process as possible. A stakeholder engagement plan will assist Soventix to outline their approach towards communicating in the most efficient way possible with stakeholders throughout the life of the project. Such a plan cannot be considered a once off activity and should be updated on a yearly basis to ensure that it stays relevant and to capture new information. Stakeholders must provide input in the Stakeholder Engagement Plan.

The Soventix Stakeholder Engagement Plan should have the following objectives:

- To identify and assess the processes and/or mechanisms that will improve the communication between local communities, the wider community and Soventix.
- To improve relations between Soventix staff and the people living in the local communities.
- To provide a guideline for the dissemination of information crucial to the local communities in a timely, respectful, and efficient manner.
- To provide a format for the timely recollection of information from the local communities in such a way that the communities are included in the decision-making process.

The Stakeholder Engagement Plan 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 to stakeholders early in the decision-making process in ways that are meaningful and accessible, and this communication should be continued throughout the life of the project.
- Stakeholder Consultation – each consultation process should be planned out, consultation should be inclusive, the process should be documented, and follow-up should be communicated.

- Negotiation and Partnerships – add value to mitigation or project benefits by forming strategic partnerships and for controversial and complex issues, enter into good faith negotiations that satisfy the interest of all parties.

- Grievance Management – accessible and responsive means for stakeholders to raise concerns and grievances about the project must be established throughout the life of the project.

- Stakeholder Involvement in Project Monitoring – directly affected stakeholders must be involved in monitoring project impacts, mitigation, and benefits. External monitors must be involved where they can enhance transparency and credibility.

- Reporting to Stakeholders – report back to stakeholders on environmental, social, and economic performance, both those consulted and those with more general interests in the project and parent company.

- Management Functions – sufficient capacity within the company must be built and maintained to manage processes of stakeholder engagement, track commitments and report on progress.

It is of critical importance that stakeholder engagement takes place in each phase of the project cycle and it must be noted that the approach will differ according to each phase. The stakeholder analysis done in Section 7 of this report must inform the stakeholder engagement strategy.

13 Proposed Grievance Mechanism

In accordance with international good practice Soventix 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 they have been adversely affected by the project during any stage of its development. Grievances may take the form of specific complaints for actual damages or injury, general concerns about project activities, incidents and impacts, or perceived impacts. The IFC standards require Grievance Mechanisms to provide a structured way of receiving and resolving grievances. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities and is at no cost and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders. 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 communication regularity.
- Written records.
- Dialogue and site visits; and
- Timely resolution.

Based on the principles described above, the grievance mechanism process involves four stages:

- Receiving and recording the grievance.
- Acknowledgement and registration.
- Site inspection and investigation; and
- Response.

The Grievance Mechanism should be communicated to all stakeholders.

14 Conclusions and recommendations

The aim of this report is to identify potential social impacts associated with the proposed establishment of a solar electricity generation facility and associated infrastructure. The project will have a positive economic impact in the rural area. None of the potential negative social impacts are severe, and all the impacts can be mitigated.

Based on the findings of this study, the following key recommendations are made:

- Mitigation about safety and security must be implemented as soon as construction commences. The process must involve local security groups and landowners.
- A community liaison officer that is trusted by the community and has the necessary skills must be appointed before construction commences.
- Protocols on farm access, compensation, communication, and road maintenance must be agreed upon and be in place before construction commences.
- The solar facility must be screened from the neighbouring properties by means of trees or other vegetation as recommended by a botanist.
- The social plans for the facility must be generated with input from the local municipality and other key stakeholders.
- A grievance mechanism and claims procedure must be in place and shared with all the stakeholders before the construction commences; and
- Economic benefits must be enhanced, and local labour and procurement should be prioritised.

None of the social impacts identified are so severe that the project should not continue. Based on the findings of this report, it is recommended that the project continues, on the conditions that the mitigation measures are implemented.

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