

# HYPERION SOLAR DEVELOPMENT 2

Northern Cape Province

Social Impact Assessment – Scoping Report

August 2018

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**Prepared for:**

Cyraguard (Pty) Ltd



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## PROJECT DETAILS

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<b>Title</b>	:	Social Impact Assessment (SIA) Scoping Report for the Proposed Hyperion Solar Development 2 near Kathu, in the Northern Cape Province
<b>Authors</b>	:	Savannah Environmental (Pty) Ltd Sarah Watson
<b>Client</b>	:	Cyraguard (Pty) Ltd
<b>Report Revision</b>	:	Revision 0
<b>Date</b>	:	August 2018

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## SPECIALIST DECLARATION OF INTEREST

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I, Sarah Watson, declare that –

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

Sarah Watson

\_\_\_\_\_  
Name

  
\_\_\_\_\_  
Signature

August 2018

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Date

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## ACRONYMS

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BA	Basic Assessment
DEA	Department of Environmental Affairs (National)
DENC	Department of Environment and Nature Conservation (Northern Cape)
DM	District Municipality
DoE	Department of Energy
DRC	Democratic Republic of Congo
EA	Environmental Authorisation
EAP	Economically Active Population
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GNR	Government Notice
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEP	Integrated Energy Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
km	Kilometre
kV	Kilovolt
LED	Local Economic Development
LM	Local Municipality
MW	Mega Watt
MWh	Mega Watt Hour
NEMA	National Environmental Management Act (No. 107 of 1998)
NC	Northern Cape
NDP	National Development Plan
PGDS	Provincial Growth and Development Strategy
PoSEIA	Plan of Study for EIA
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
RE	Renewable Energy
REIPPP	Renewable Energy Independent Power Producer Procurement
RSA	Republic of South Africa
SDF	Spatial Development Framework
SEF	Social Energy Facility
SIA	Social Impact Assessment
SIP	Strategic Infrastructure Project
VIA	Visual Impact Assessment
VIP	Ventilated Improved Pit

# 1. INTRODUCTION

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Cyraguard (Pty) Ltd are proposing the development of Hyperion Solar Development 2, a Photovoltaic (PV) solar energy facility (SEF) and associated infrastructure, on a site near Kathu, in the Northern Cape Province. Hyperion Solar Development 2 comprises a commercial SEF, and is intended to form part of the Department of Energy's (DoE's) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme. The REIPPP Programme aims to secure up to 14 725MW<sup>1</sup> of new generation capacity from renewable energy sources, while simultaneously diversifying South Africa's electricity mix, and positively contributing towards socio-economic and environmentally sustainable growth.

Hyperion Solar Development 2 requires Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA) in accordance with the National Environmental Management Act (No. 107 of 1998) (NEMA), and the Environmental Impact Assessment (EIA) Regulations (GNR 326) (2014, as amended), subject to the completion of a full Scoping and EIA process.

Sarah Watson of Savannah Environmental (Pty) Ltd has been appointed as the independent social consultant responsible for undertaking a Social Impact Assessment (SIA) as part of the EIA process being undertaken for the project.

## 1.1. Project Description

Hyperion Solar Development 2 will have a generation capacity of up to 75MW, and will utilise PV solar technology for the generation of electricity. The project will comprise the following key infrastructure and components:

- » Arrays of PV panels (static and tracking PV system) with a contracted capacity of up to 75MW.
- » Mounting structures to support the PV panels.
- » Cabling between the project components, to be laid underground where practical.
- » On-site inverters to convert the power from a direct current to an alternating current.
- » An on-site substation to facilitate the connection between the solar energy facility and the Eskom electricity grid.
- » A new 132kV overhead power line (OHPL) between the on-site substation and the existing Ferrum Substation<sup>2</sup>.
- » Battery storage mechanism with a storage capacity of up to 300MWh.
- » Water purification plant.
- » Site Offices and Maintenance Buildings, including workshop areas for maintenance and storage.
- » Batching plant.
- » Temporary laydown areas.
- » Internal access roads and fencing around the development area.

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<sup>1</sup> Source: <https://www.ipp-renewables.co.za/>

<sup>2</sup> The construction of the 132kV overhead power line will be assessed as part of a separate Basic Assessment (BA) process which will consider feasible alternatives for the power line route.



Hyperion Solar Development 2 is proposed on the Remaining Extent of the Farm Lyndoch 432 (the project site), which is located approximately 14km north of the town of Kathu. The project site is situated within Ward 07 of the Gamagara Local Municipality (LM), which forms part of the John Taolo Gaetsewe District Municipality (DM), in the Northern Cape Province (refer to **Figure 1.1**). Access to the site is currently obtained via an unsurfaced farm road which can be accessed from the N14 National Road, located approximately 3km south-east of the project site. Two alternatives are being assessed as part of the EIA process with respect to site access (refer to **Figure 1.2**). These include:

- » Alternative 1 – upgrading approximately 3.6km of the T26 gravel road between the project site and the N14.
- » Alternative 2 – the construction of a new access road and the formalisation of an informal access road (consisting of a two tyre track serving as a fire break in some places) between the project site and the T25, approximately 5km in length.

These site access alternatives will be assessed in further detail during the EIA Phase.

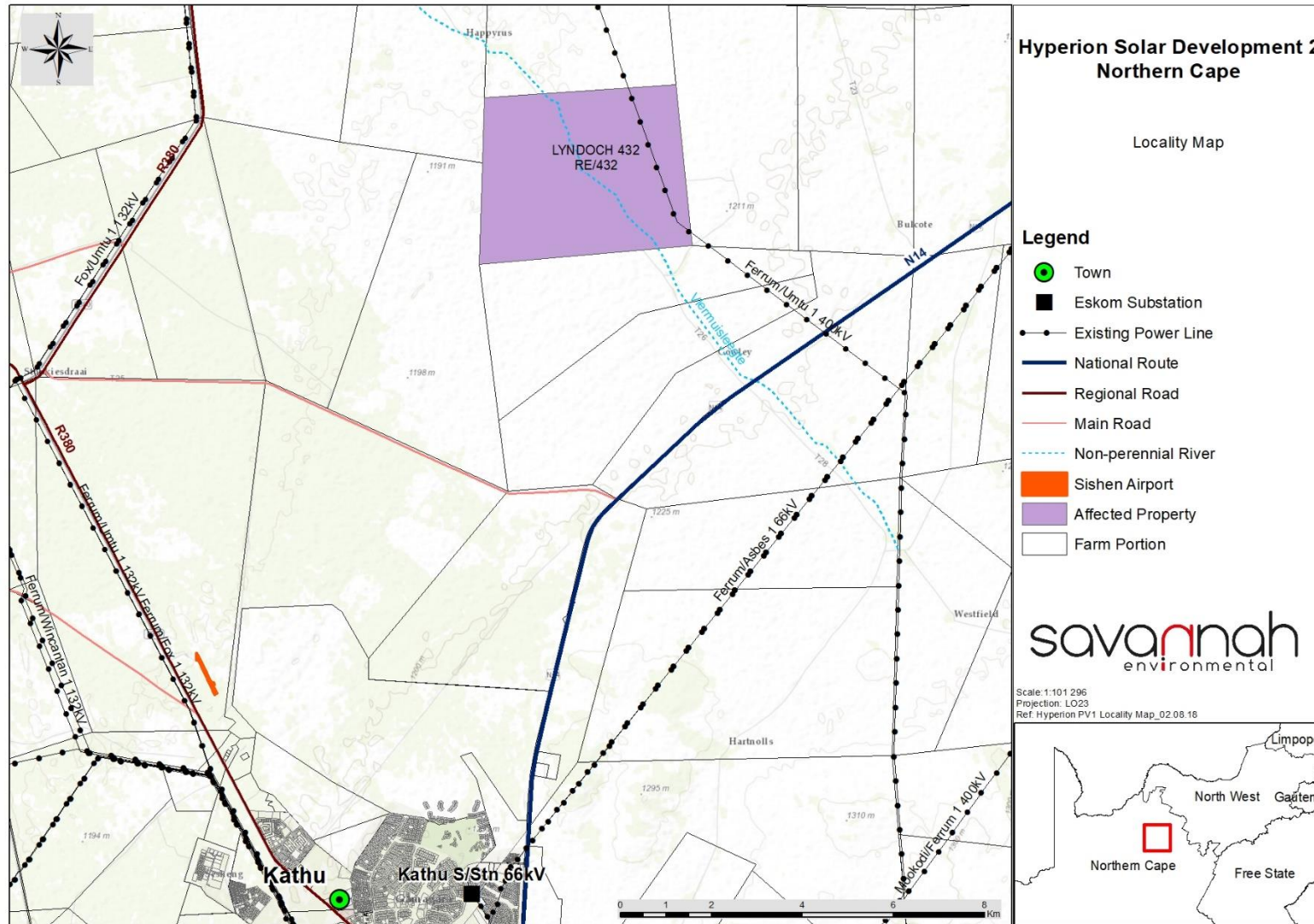


Figure 1.1: Locality map for Hyperion Solar Development 2

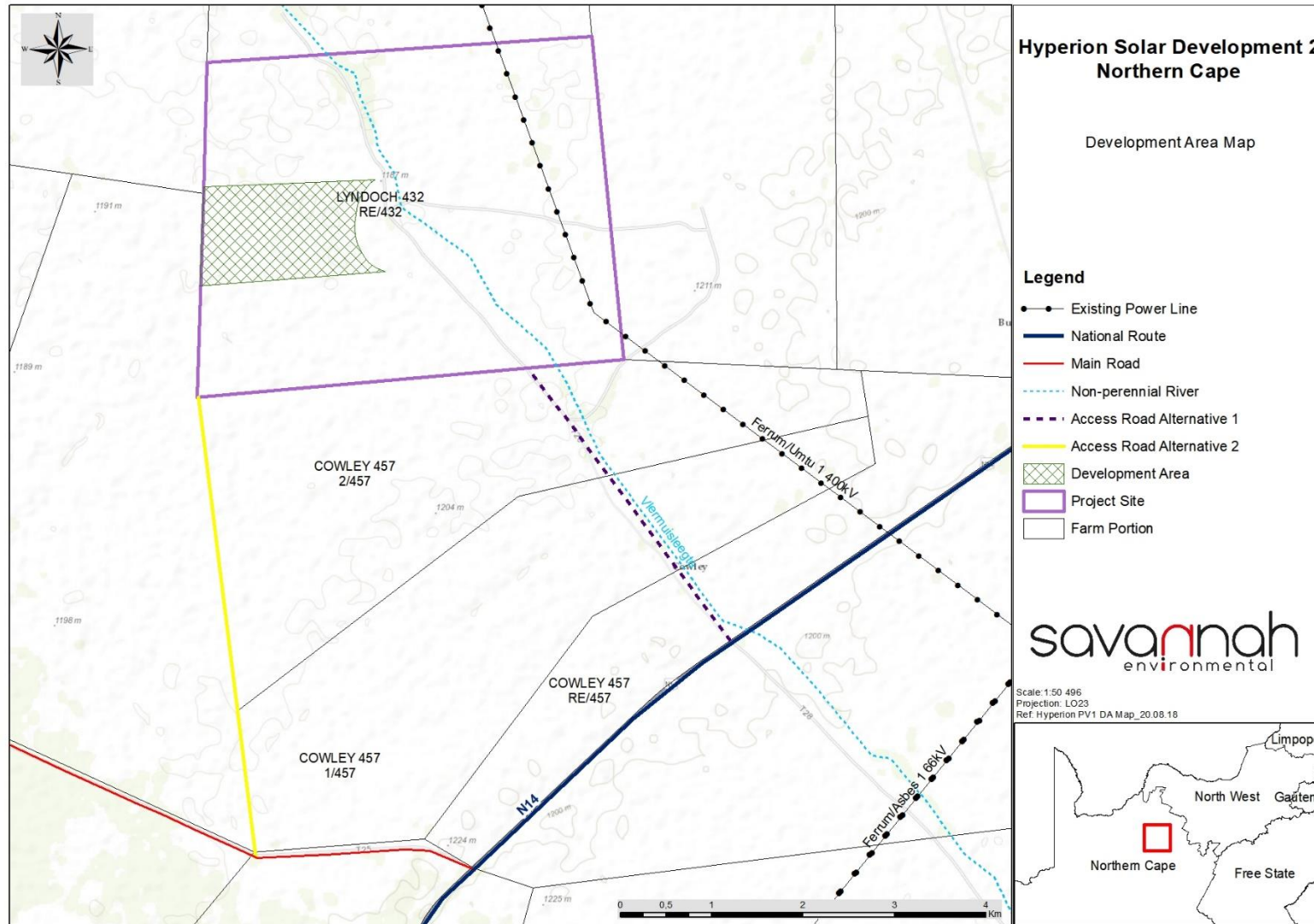


Figure 1.2: Map showing the development area for Hyperion Solar Development 2.

**Table 1.1** provides information regarding the project site identified for Hyperion Solar Development 2.

**Table 1.1: A description of the project site identified for Hyperion Solar Development 2.**

<b>Province</b>	Northern Cape Province
<b>District Municipality</b>	John Taolo Gaetsewe DM
<b>Local Municipality</b>	Gamagara LM
<b>Ward Number(s)</b>	Ward 07
<b>Nearest Town(s)</b>	<ul style="list-style-type: none"> <li>» Kathu (approximately 14km south of the project site)</li> <li>» Dibeng (approximately 18km west of the project site)</li> <li>» Kuruman (approximately 34km east-north-east of the project site)</li> </ul>
<b>Farm Portion(s), Name(s) &amp; Number(s)</b>	Remaining Extent of the Farm Lyndoch 432
<b>SG 21 Digit Code (s)</b>	C04100000000043200000
<b>Current Zoning</b>	Agriculture
<b>Current land use</b>	Agriculture
<b>Site Extent</b>	1 600ha

## 1.2. Objective of the Scoping Process

This SIA Scoping Report has been prepared as part of the Scoping process being undertaken for Hyperion Solar Development 2. The purpose of this SIA Scoping Report is to provide details on the nature and extent of Hyperion Solar Development 2, and the main issues and potential social impacts associated with the construction, operation, and decommissioning of the project, based on the available information. The inputs contained within this SIA Scoping Report are intended to provide a high-level overview of the social environment within which the project is proposed, and set the scene for issues which will be addressed in detail as part of the EIA Phase specialist investigations.

The objective of this SIA Scoping Report is therefore to:

- » Identify and review policies and legislation which may have relevance to the activity from a social perspective.
- » Provide comment on the need and desirability of the proposed activity from a social perspective.
- » Identify potential impacts and risks associated with the preferred activity and technology alternatives.
- » Identify key social issues to be addressed in the EIA Phase.
- » Agree on the level of assessment to be undertaken, including the methodology to be applied to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site.

## 1.3. Details of the Independent Specialist

This SIA has been undertaken by Sarah Watson of Savannah Environmental.

- » Sarah Watson is an Environmental Consultant at Savannah Environmental. She has a Bachelor of Social Science Honours Degree in Geography and Environmental Management (B.Soc.Sci. Honours GEM) from the University of KwaZulu-Natal (UKZN). Sarah has over 8 years of experience as a consultant in the field of environmental and social impact assessment and management. Sarah has experience conducting

environmental and social impact assessment processes for a range of projects in the telecommunications, residential, industrial, bulk infrastructure, rural development, and energy sectors.

#### 1.4. Structure of this SIA Scoping Report

This SIA Scoping Report has been structured as follows:

- » **Chapter 2** provides an overview of the methodology and approach utilised in preparing this SIA Scoping Report.
- » **Chapter 3** provides an overview of the legislative and policy environment within which Hyperion Solar Development 2 is proposed.
- » **Chapter 4** provides the socio-economic profile of the Gamagara LM, John Taolo Gaetsewe DM, Northern Cape Province, and South Africa as a whole.
- » **Chapter 5** describes the potential social impacts which have been identified for the project and which will be assessed in more detail as part of the EIA.
- » **Chapter 6** provides the conclusion of the SIA Scoping process conducted to date, and recommendations for further study to be incorporated into the Plan of Study for EIA (PoSEIA) to be submitted for decision-making by the DEA.

## 2. METHODOLOGY AND APPROACH

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### 2.1. Purpose of the Study

The International Principles for Social Impact Assessment define SIA as:

*"The processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by those interventions"*.

In addition, the International Principles for Social Impact Assessment define social impacts as changes to one or more of the following:

- » People's way of life – that is, how they live, work, play and interact with one another on a day-to-day basis.
- » Their culture – that is, their shared beliefs, customs, values and language or dialect.
- » Their community – its cohesion, stability, character, services and facilities.
- » Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose.
- » Their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources.
- » Their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity.
- » Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties.
- » Their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

The purpose of this SIA Scoping Report is therefore to:

- » Provide baseline information describing the social environment within which the project is proposed, and which may be impacted (both positively and negatively) as a result of the proposed development.
- » Identify, describe and assess possible social risks / fatal flaws and social impacts that may arise as a result of the proposed development (in terms of the construction, operation, and decommissioning phases).
- » Suggest ways in which negative impacts can be avoided, minimised, or their significance reduced, and positive impacts maximised or enhanced.

### 2.2. Approach to the Study

This SIA Scoping Report provides a snapshot of the social setting within which Hyperion Solar Development 2 is proposed. It provides an overview of the manner and degree to which the current status quo is likely to change or be impacted on by the construction, operation and decommissioning of the project, as well as the manner in which the social environment is likely to impact the development itself.

The SIA Scoping process completed to date comprised the following:

- » Collection and review of existing information, including Provincial, DM, and LM plans; policies; programmes; Census data; and available literature from previous studies conducted within the area. Project specific information was obtained from the project proponent.
- » Identification of potential direct, indirect and cumulative impacts likely to be associated with the construction, operation, and decommissioning of the proposed project.
- » Preparation of a SIA Scoping Report for inclusion in the Scoping Report to be prepared for the project.

### **2.2.1. Collection and Review of Existing Information**

Existing desktop information which has relevance to the proposed project, project site and / or surrounds was collected and reviewed. The following information was examined as part of this process:

- » Project maps.
- » Google Earth imagery.
- » A description of the project (as provided by the project proponent).
- » Census data (2011).
- » Planning documentation such as Provincial Growth and Development Strategies (PGDSs), LM and DM Integrated Development Plans (IDPs), Spatial Development Frameworks (SDFs), and development goals and objectives.
- » Relevant legislation, guidelines, policies, plans, and frameworks.
- » Available literature pertaining to social issues associated with the development and operation of solar PV power plants and associated infrastructure.

### **2.3. Limitations and Assumptions**

The following assumptions and limitations are applicable to this SIA Scoping Report:

- » Data derived from the 2011 Census, Northern Cape Provincial Spatial Development Framework (PSDF) (2012), John Taolo Gaetsewe DM Final Draft Integrated Development Plan (IDP) 2018 – 2019 (2017), John Taolo Gaetsewe DM Phase 5 Draft Spatial Development Framework (SDF) (2017), and Gamagara LM IDP 2017 – 2022 (2017) was used to generate the majority of information provided in the baseline profile of the study area. The possibility therefore exists that the data utilised may be out of date, and may not provide an accurate reflection of the current status quo.
- » This SIA Scoping Report is intended to provide an overview of the current social environment and assist in the identification of potential social impacts which require further investigation as part of the EIA phase. As a result, no consultation has been conducted with key stakeholders as part of the Scoping process to date.
- » This SIA Scoping Report was prepared based on information which was available to the specialist at the time of preparing the report. The sources consulted are not exhaustive, and the possibility exists that additional information which might strengthen arguments, contradict information in this report, and / or identify additional information might exist.
- » Some of the projections reflected in this SIA Scoping Report (i.e. with regards to employment opportunities likely to be created, and local content expenditure etc.) may be subject to change, and therefore may be higher or lower than those estimated by the project proponent.

- » It is assumed that the motivation for, and planning and feasibility study of the project were undertaken with integrity; and that information provided by the project proponent was accurate, and true at the time of preparing this SIA Scoping Report.



### 3. LEGISLATION AND POLICY REVIEW

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The legislative and policy context applicable to a project plays an important role in identifying and assessing the potential social impacts associated with the proposed development. In this regard, a key component of the SIA process is to assess a proposed development in terms of its suitability with regards to key planning and policy documents.

The following key pieces of documentation were reviewed as part of this legislation and policy review process:

#### **National Policy and Planning Context:**

- » Constitution of the Republic of South Africa (1996).
- » National Environmental Management Act (No. 107 of 1998) (NEMA).
- » White Paper on the Energy Policy of the Republic of South Africa (1998).
- » White Paper on the Renewable Energy Policy (2003).
- » National Energy Act (No. 34 of 2008).
- » Integrated Energy Plan (IEP) (2016).
- » Integrated Resource Plan for Electricity (IRP) 2010 – 2030 (2011).
- » National Development Plan (NDP) 2030 (2012).
- » Strategic Infrastructure Projects (SIPs).

#### **Provincial Policy and Planning Context:**

- » Northern Cape Provincial Spatial Development Framework (PSDF) (2012).

#### **Local Policy and Planning Context:**

- » John Taolo Gaetsewe DM Final Draft Integrated Development Plan (IDP) 2018 – 2019 (2017).
- » John Taolo Gaetsewe DM Phase 5 Draft Spatial Development Framework (SDF) (2017).
- » Gamagara LM IDP 2017 – 2022 (2017)

#### **3.1. National Policy and Planning Context**

Any project which contributes positively towards the objectives mentioned within National policies could be considered strategically important for the country. A review of the National policy environment suggests that the increased utilisation of Renewable Energy (RE) sources is considered integral to reducing South Africa's carbon footprint, diversifying the National economy, and contributing towards social upliftment and economic development. As the proposed project can be considered a RE project, and would contribute RE supply to Provincial and National targets set out and supported within these National policies, it is considered that the project fits within the National policy framework.

A brief review of the most relevant National legislation and policies is provided below.

##### **3.1.1. Constitution of the Republic of South Africa (1996)**

The Constitution of the Republic of South Africa, 1996 is the supreme law of South Africa, and forms the foundations for a democratic society in which fundamental human rights are protected. The Bill of Rights contained in Chapter 2 of the Constitution enshrines the rights of all people in South Africa, and affirms the

democratic values of human dignity, equality and freedom. Section 24 of the Constitution pertains specifically to the environment. It states that:

24. Everyone has the right –

- (a) To an environment that is not harmful to their health or well-being; and
- (b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
  - (i) Prevent pollution and ecological degradation.
  - (ii) Promote conservation.
  - (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts.

### **3.1.2. National Environmental Management Act (No. 107 of 1998) (NEMA)**

The National Environmental Management Act (No. 107 of 1998) (NEMA) is South Africa's key piece of environmental legislation, and sets the framework for environmental management in South Africa. It provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being as contained within the Bill of Rights. In accordance with this, it states that:

- » *The State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities.*
- » *Sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.*
- » *Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

In addition, the National environmental management principles contained within NEMA state that:

- » *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*
- » *Development must be socially, environmentally and economically sustainable.*
- » *The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment*

The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA.

### **3.1.3. White Paper on the Energy Policy of the Republic of South Africa (1998)**

The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of RE and encouraging new entries into the generation market. South Africa has an attractive range of cost effective renewable resources, taking into consideration social and environmental costs. Government policy RE is thus 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.
- » Addressing constraints on the development of the renewable industry.

The policy states that the advantages of RE include; minimal environmental impacts during operation in comparison with traditional supply technologies, 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. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The White Paper on Energy Policy therefore supports the advancement of RE sources and ensuring energy security through the diversification of supply.

### **3.1.4. White Paper on the Renewable Energy Policy (2003)**

The White Paper on Renewable Energy Policy supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of RE, and aims to create the necessary conditions for the development and commercial implementation of RE technologies. The position of the White Paper on RE is based on the integrated resource planning criterion of:

*"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."*

The White Paper on RE sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing RE in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive RE resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy Policy fosters the uptake of RE in the economy and has a number of objectives that include: ensuring equitable resources are invested in renewable technologies; directing public resources for implementation of RE technologies; introducing suitable fiscal incentives for RE and; creating an investment climate for the development of the RE sector.

The White Paper on Renewable Energy of 2003 set a target of 10 000GWh to be generated from RE by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the RE summit of 2009. The objectives of the White Paper on Renewable Energy Policy are considered in six focal areas, namely; financial instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based and regulatory instruments. The policy supports the investment in RE facilities as they contribute towards ensuring energy

security through the diversification of energy supply, reducing GHG emissions and the promotion of RE sources.

### **3.1.5. National Energy Act (No. 34 of 2008)**

The purpose of the National Energy Act (No. 34 of 2008) is 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; while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies (REs).

The objectives of the Act, are to amongst other things, to:

- » Ensure uninterrupted supply of energy to the Republic.
- » Promote diversity of supply of energy and its sources.
- » Facilitate energy access for improvement of the quality of life of the people of the Republic.
- » Contribute to the sustainable development of South Africa's economy.

The National Energy Act therefore recognises the significant role which electricity plays in growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of RE facilities for the greater environmental and social good, and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place. It also provides the legal framework which supports the development of RE facilities for the greater environmental and social good.

### **3.1.6. Integrated Energy Plan (IEP) (2016)**

The purpose and objectives of the Integrated Energy Plan (IEP) are derived from the National Energy Act (No. 34 of 2008). The IEP takes into consideration the crucial role that energy plays in the entire economy of the country and is informed by the output of analyses founded on a solid fact base. It is a multi-faceted, long-term energy framework which has multiple aims, some of which include:

- » To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.
- » To guide the selection of appropriate technologies to meet energy demand (i.e. the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).
- » To guide investment in and the development of energy infrastructure in South Africa.
- » To propose alternative energy strategies which are informed by testing the potential impacts of various factors such as proposed policies, introduction of new technologies, and effects of exogenous macro-economic factors.

A draft version of the Integrated Energy Plan (IEP) was released for comment on 25 November 2016. 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 development of the IEP is an ongoing continuous process. It is reviewed periodically to take into account changes in the macroeconomic environment, developments in new technologies and changes in National priorities and imperatives, amongst others.

The 8 key objectives of the integrated energy planning process are as follows:

- » 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.
- » Objective 8: Increase access to modern energy.

### **3.1.7. Integrated Resource Plan for Electricity (IRP) 2010-2030 (2011)**

The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's National electricity plan. The primary objective of the IRP is to determine the long term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The current iteration of the IRP, led to the Revised Balanced Scenario (RBS) that was published in October 2010. Following a round of public participation which was conducted in November / December 2010, several changes were made to the IRP model assumptions. The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then “balanced” in accordance with qualitative measures such as local job creation.

The Policy-Adjusted IRP reflected recent developments with respect to prices for renewables. In addition to all existing and committed power plants, the plan includes 9.6GW of nuclear; 6.25GW of coal; 17.8GW of renewables; and approximately 8.9GW of other generation sources such as hydro, and gas.

An IRP 2010 – 2030 Update Report was prepared and released in November 2013, which estimated the energy demand in 2030 to be in the range of 345TWh – 416TWh as opposed to 454TWh as was originally expected in the policy-adjusted IRP. This equates to a reduction from 67 800MW to 61 200MW of reliable generating capacity. This IRP Update report was not adopted by Parliament and was therefore never implemented.

In November 2016 a draft IRP Update – Assumption, Base Case Results and Observations (Revision 1) document was released for comment. The update process estimated that 18GW of PV generation capacity would be required by the end of 2050; in addition to 15GW of coal-fired generation capacity, 37GW of wind, 20GW of nuclear, 34GW of gas, and 2.5GW of import hydro. The 2030 figures in the Base Case excluded the capacity already procured or under procurement (i.e. 6.2GW of renewable energy and 900MW of coal from IPP projects), and therefore differ from those in the IRP 2010 – 2030 (2011).

On 27 August 2018 the Draft IRP 2018 was released for comment. The Draft IRP 2018 is based on least-cost supply and demand balance and takes into account security of supply and the environment (i.e. with regards to minimising negative emissions and water usage). According to the Draft IRP 2018 key input assumptions that changed from the promulgated IRP 2010 – 2030 (2011) include, amongst others,

technology costs, electricity demand projection, fuel costs and Eskom's existing fleet performance and additional commissioned capacity. For the period ending 2030, the Draft IRP 2018 proposes a number of policy adjustments to ensure a practical plan that will be flexible to accommodate new, innovative technologies that are not currently cost competitive, the minimisation of the impact of decommissioning of coal power plants, and the changing demand profile.

The recommended updated Plan is as depicted in **Figure 3.1**.

	Coal	Nuclear	Hydro	Storage (Pumped Storage)	PV	Wind	CSP	Gas / Diesel	Other (CoGen, Biomass, Landfill)	Embedded Generation
2018	39 126	1 860	2 196	2 912	1 474	1 980	300	3 830	499	Unknown
2019	2 155					244	300			200
2020	1 433				114	300				200
2021	1 433				300	818				200
2022	711				400					200
2023	500									200
2024	500									200
2025					670	200				200
2026					1 000	1 500		2 250		200
2027					1 000	1 600		1 200		200
2028					1 000	1 600		1 800		200
2029					1 000	1 600		2 850		200
2030			2 500		1 000	1 600				200
<b>TOTAL INSTALLED</b>	<b>33 847</b>	<b>1 860</b>	<b>4 696</b>	<b>2 912</b>	<b>7 958</b>	<b>11 442</b>	<b>600</b>	<b>11 930</b>	<b>499</b>	<b>2600</b>
<b>Installed Capacity Mix (%)</b>	<b>44.6</b>	<b>2.5</b>	<b>6.2</b>	<b>3.8</b>	<b>10.5</b>	<b>15.1</b>	<b>0.9</b>	<b>15.7</b>	<b>0.7</b>	

- Installed Capacity
- Committed / Already Contracted Capacity
- New Additional Capacity (IRP Update)
- Embedded Generation Capacity ( Generation for own use allocation)

**Figure 3.1: Proposed Updated plan for the Period Ending 2030 (Source: Draft IRP 2018).**

Based on the Draft IRP 2018 there is currently 1 474MW of installed PV capacity, while an additional 814MW has been committed between 2020 and 2022, and an additional 5 670MW capacity has been allocated between 2025 and 2030.

### 3.1.8. National Development Plan (NDP) 2030 (2012)

The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030. The NDP aims to achieve this by drawing on the energies of its people, growing and inclusive economy, building capabilities, enhancing the capacity of the state and promoting leaderships and partnerships throughout society.

While the achievement of the objectives of the NDP requires progress on a broad front, three priorities stand out, namely:

- » Raising employment through faster economic growth.
- » Improving the quality of education, skills development and innovation.
- » Building the capability of the state to play a developmental, transformative role.

In terms of the Energy Sector's role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:

- » Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- » Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- » Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed project will assist in reducing carbon emissions targets and creating jobs in the local area, as well as assist in creating competitive infrastructure based on terms of energy contribution to the National grid.

### **3.1.9. Strategic Infrastructure Projects (SIPs)**

The Presidential Infrastructure Coordinating Committee (PICC) are integrating and phasing investment plans across 18 Strategic Infrastructure Projects (SIPs) which have the following 5 core functions:

- » To unlock opportunity.
- » Transform the economic landscape.
- » Create new jobs.
- » Strengthen the delivery of basic services.
- » Support the integration of African economies.

A balanced approach is being fostered through greening of the economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development and enabling regional integration.

SIP 8 of the energy SIPs supports the development of RE projects as follow:

- » SIP 8: Green energy in support of the South African economy:

*Support sustainable green energy initiatives on a National scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities.*

The development of the proposed project is therefore also aligned with SIP 8 as it constitutes a green energy initiative which would contribute clean energy in accordance with the IRP 2010 – 2030.

### **3.2. Provincial Policies**

This section provides an overview of the most relevant Provincial policies. Hyperion Solar Development 2 is considered to align with the aims of these policies, even if its contributions to achieving the goals therein are only minor.

#### **3.2.1. Northern Cape Provincial Spatial Development Framework (PSDF) (2012)**

The Northern Cape Provincial Spatial Development Framework (PSDF) (2012) states that the overarching goal for the Province is to enable sustainability through sustainable development. The Province considers social and economic development as imperative in order to address the most significant challenge facing the Northern Cape, which is poverty.

The PSDF considers the release of greenhouse gas (GHG) emissions created by human activity as the key cause of global warming, which in turn could result in major negative effects and disasters in the short- and medium-term. This effect would increasingly undermine human development gains. Innovative strategies would have to be implemented to reduce the impact of global deterioration.

The PSDF identifies key sectoral strategies and plans which are considered to be the key components of the PSDF. Sectoral Strategy 19 refers to a Provincial renewable energy strategy. Within the PSDF, a policy has been included which states that renewable energy sources (including the utilisation of solar energy) are to comprise 25% of the Province's energy generation capacity by 2020.

The overall energy objective for the Province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the Province through appropriate financial and fiscal instruments.

Considering the need for the development of renewable energy facilities in order to achieve the objective of sustainability, the development of the proposed solar energy facility within the Northern Cape, and within the study area, is considered to be aligned with the Northern Cape PSDF.

### **3.3. District and Local Municipalities Policies**

The strategic policies at district and local level have similar objectives for the respective areas, namely to accelerate economic growth, create jobs, and uplift communities. Hyperion Solar Development 2 is considered to also align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

#### **3.3.1. John Taolo Gaetsewe DM Final Draft Integrated Development Plan (IDP) 2018 – 2019 (2017)**

The vision of the John Taolo Gaetsewe DM as contained within the Final Draft IDP 2018 – 2019 is:

*“Working together for a better life for all in the district.”*



The mission statement of John Taolo Gaetsewe DM reflects what the DM will do in an ongoing manner to strive towards achieving its vision. The mission of the John Taolo Gaetsewe DM is:

*"Accelerating the implementation of integrated development initiatives and providing support to local municipalities."*

In terms of development priorities the Final Draft 2018 – 2019 IDP determined that the results of the 2016 Community Survey suggest that the number of people residing within the DM is increasing, as a direct result of mining related activities. Implications for the DM in this regard include:

- » The scope and extent of the DM's Spatial Development Framework (SDF).
- » Service delivery demands placed on the DM and its local municipalities.
- » The grading of the LMs, and the resources (i.e. grants and subsidies) made available to them.

The activities of the DM need to reflect its population demographics, both in terms of service delivery, as well as in terms of employment equity. Gender, racial and disability population demographics have been identified as being of particular importance in this regard. As a result, special interest groups, such as the youth, women and persons with disabilities require specific focus in the strategic priorities of the DM.

The implementation of Hyperion PV 1 would contribute towards addressing some of the John Taolo Gaetsewe DM's development priorities through the creation of new employment opportunities which could support a portion of the increasing population, while the increase in revenue from the project could assist in the municipality in addressing service delivery demands.

### **3.3.2. John Taolo Gaetsewe DM Phase 5 Draft Spatial Development Framework (SDF) (2017)**

The main economic sectors applied within the John Taolo Gaetsewe DM include eco-tourism, agriculture, mining and community services. Even though the development of renewable energy is not specifically mentioned as part of the framework, the development of a solar energy facility within the area will add to the current economic sectors. That specifically includes community services as the development of a solar energy facility will aid in the provision of electricity, as well as employment opportunities and skills development on a local level.

The SDF states that one of the key objectives for the DM is to attract new business. With the proposed development of a solar energy facility within the area, other developers might be encouraged to consider the area as a viable location for further development. This could attract new business to the area and promote financial and socio-economic development within the DM.

### **3.3.3. Gamagara LM Integrated Development Plan (IDP) 2017 – 2022 (2017)**

The vision for the Gamagara LM as contained within the IDP 2017 – 2022 is as follows:

*"Build prosperous and sustainable communities."*

The Mission of the Gamagara LM is as follows:

*"To provide universal, sustainable services to the community in order to attain a safe and healthy environment, as well as socio-economic development by exploiting economic benefits and strengthening stakeholder relations."*

The following strength, weaknesses, threats and opportunities have been identified for the Gamagara LM:

<b>Strengths:</b>	<b>Weaknesses:</b>
<ul style="list-style-type: none"> <li>» High potential for economic growth:                             <ul style="list-style-type: none"> <li>* The municipality is at the centre of all economic activities around the mining industry in the region. The industrial area growth and development is phenomenal as many small industries and big industry come to the area so as to serve the mining needs in the area.</li> <li>* Small businesses have the potential to grow and serve the improving commercial and mining economic set-up. These businesses either provide mines with equipment or the sub-contract to big contractors in the mine.</li> </ul> </li> <li>» High tourism potential:                             <ul style="list-style-type: none"> <li>* Gamagara has a vast number of heritage sites that still need to be exploited. These include religious monuments and heritage sites, the oasis of the Kalahari, the caves, etc.</li> </ul> </li> <li>» Political maturity and stability:                             <ul style="list-style-type: none"> <li>* Co-operation between political parties in delivering services is a progressive one.</li> <li>* Ward Committees are functional and meeting their obligations as required.</li> <li>* There is strong political leadership and support to the municipal functioning.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>» Infrastructure:                             <ul style="list-style-type: none"> <li>* Inadequate infrastructure to cater for the rapid development in the municipality.</li> <li>* Ageing infrastructure.</li> </ul> </li> <li>» Ineffective internal systems and controls:                             <ul style="list-style-type: none"> <li>* Communicating available systems and controls to junior officials is lacking and leading to some of the crucial tasks not being performed accordingly e.g. delegation of power.</li> <li>* Culture of non-payment is prevalent in the municipality because credit control policy is not fully implemented.</li> <li>* The municipality does not have a culture of retaining skilled personnel due to inconsistent implementation of policies or lack of induction of new employees.</li> <li>* Lack of by-laws to guide and enforce compliance e.g. credit control.</li> </ul> </li> </ul>
<b>Opportunities:</b>	<b>Threats:</b>
<ul style="list-style-type: none"> <li>» Developmental potential:                             <ul style="list-style-type: none"> <li>* Integration of stakeholder contribution to the development of the municipality is possible e.g. sector departments, mining industry, commercial industry, agricultural industry and tourism industry.</li> <li>* There is a potential to acquire more land for development.</li> <li>* Improve infrastructure and create jobs.</li> </ul> </li> <li>» Internal systems could be improved:                             <ul style="list-style-type: none"> <li>* Can improve on the credit control system to encourage culture of payment for services and increase municipal revenue.</li> <li>* Improve customer care and uphold to the Batho Pele Principle.</li> <li>* Enhance the LED and Tourism markets by disseminating the LED and Tourism strategy to</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>» National and International economic trends may destabilise the municipality to achieve its goals.</li> <li>» Retrenchments from the mines may affect the municipal revenue.</li> <li>» Influx of job seekers in the area is causing infrastructure system failure as they overload the system.</li> </ul>

members of the community using various methods of awareness.

The implementation of Hyperion Solar Development 2 would contribute somewhat towards addressing some of the weaknesses and threats identified for the Gamagara LM. Specifically with regards to contributing towards Local Economic Development (LED) market, municipal revenue, and job creation.

### **3.4. Conclusion**

The review of relevant legislation, policies and documentation pertaining to the energy sector indicate that renewable or green energy (i.e. energy generated by naturally occurring renewable resources) and therefore the establishment of Hyperion Solar Development 2 is supported at a National, Provincial, and local level, and that the proposed project will contribute positively towards a number of targets and policy aims. Specifically those relating to social and economic development and upliftment, and employment creation.

## 4. SOCIAL PROFILE

Hyperion Solar Development 2 is proposed on the Remaining Extent of the Farm Lyndoch 432, in Ward 07 of the Gamagara LM, of the John Taolo Gaetsewe DM, in the Northern Cape Province (refer to **Table 4.1**).

**Table 4.1: Spatial Context of the Proposed Project Site.**

Component	Description / Dimensions
Project Property Farm Name and Number	Remaining Extent of the Farm Lyndoch 432
Closest Town	<ul style="list-style-type: none"> <li>» Kathu (approximately 14km south of the project site)</li> <li>» Dibeng (approximately 18km west of the project site)</li> <li>» Kuruman (approximately 34km east-north-east of the project site)</li> </ul>
Municipal Ward	Ward 07
Local Municipality	Gamagara LM
District Municipality	John Taolo Gaetsewe DM
Province	Northern Cape Province
Preferred Access	<p>Access to the site is currently obtained via an unsurfaced farm road which can be accessed from the N14 National Road, located approximately 3km south-east of the project site. Two alternatives are being assessed as part of the EIA process with respect to site access. These include:</p> <ul style="list-style-type: none"> <li>» Alternative 1 – upgrading approximately 3.6km of the T26 gravel road between the project site and the N14.</li> <li>» Alternative 2 – the construction of a new access road and the formalisation of an informal access road (consisting of a two tyre track serving as a fire break in some places) between the project site and the T25, approximately 5km in length.</li> </ul>

This Chapter provides an overview of the social environment of the Province, DM, and LM within which Hyperion Solar Development 2 is proposed for development, and provides the social basis against which potential issues can be identified.

### 4.1. Northern Cape Province

The Northern Cape Province is located in the north-western extent of South Africa, and comprises South Africa's largest Province, occupying an area approximately 372 889km<sup>2</sup> in extent, equivalent to nearly one third (30.5%) of the country's total land mass. It is also South Africa's most sparsely populated Province with a population of 1 145 861, and a population density of 3.1/km<sup>2</sup>. It is bordered by the Western Cape, and Eastern Cape Provinces to the south, and south-east; Free State, and North West Provinces to the east; Botswana and Namibia, to the north; and the Atlantic Ocean to the west. The Northern Cape is the only South African Province which borders Namibia, and therefore plays an important role in terms of providing linkages between Namibia and the rest of South Africa. The Orange River is a significant feature, and is also the main source of water in the Province, while also constituting the international border between the Northern Cape and Namibia.

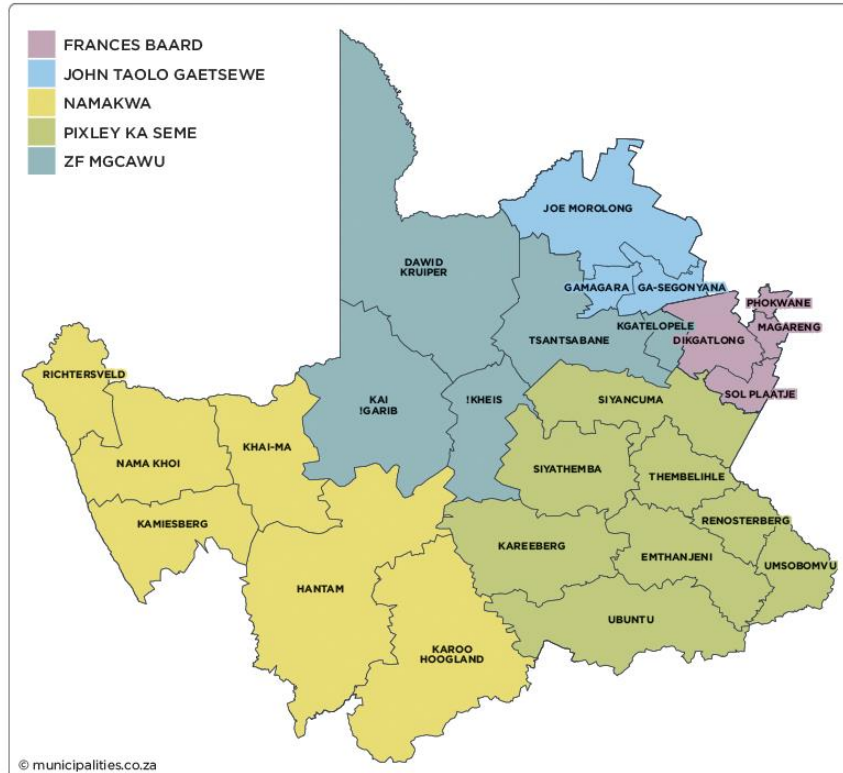
The Northern Cape offers unique tourism opportunities including wildlife conservation destinations, natural features, historic sites, festivals, cultural sites, stars gazing, adventure tourism, agricultural tourism, ecotourism, game farms, and hunting areas, etc. The Province is home to the Richtersveld Botanical and Landscape

World Heritage Site, which comprises a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site under the World Heritage Convention. The Northern Cape is also home to 2 Transfrontier National Parks, namely the Kgalagadi Transfrontier Park, and the Richtersveld /Ai-Ais Transfrontier Park, as well as 5 National Parks, and 6 Provincial Reserves.

The Northern Cape also plays a significant role in South Africa's science and technology sector, as it is home to the Square Kilometre Array (SKA), the Southern African Large Telescope (SALT), and the Karoo Array Telescope (MeerKAT).

The Northern Cape makes the smallest contribution to South Africa's economy (contributing only 2% to South Africa's Gross Domestic Product per region (GDP-R) in 2007). At 26%, the mining sector is the largest contributor to the Provincial GDP. The Northern Cape's mining industry is of National and international importance, as it produces approximately 37% of South Africa's diamond output, 44% of its zinc, 70% of its silver, 84% of its iron-ore, 93% of its lead and 99% of its manganese.

In 2007, the agricultural sector contributed 5.8% to the Northern Cape GDP per region which was equivalent to approximately R1.3 billion. The agricultural sector also employs approximately 19.5% of the total formally employed individuals (LED Strategy). The sector is experiencing significant growth in value-added activities, including game-farming; while food production and processing for the local and export market is also growing significantly (PGDS, July 2011). Approximately 96% of the land is used for stock farming; including cattle and sheep or goats, as well as game farming; while approximately 2% of the Province is used for crop farming, mainly under irrigation in the Orange River Valley and Vaalharts Irrigation Scheme (LED Strategy).



**Figure 4.1: Map showing the municipalities of the Northern Cape Province (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).**

#### 4.2. John Taolo Gaetsewe DM

The John Taolo Gaetsewe DM (previously known as the Kgalagadi DM) is situated in the north-eastern extent of Northern Cape Province. It is the second smallest DM in the Province in terms of land mass (27 283km<sup>2</sup>, equivalent to 7.32% of the total Provincial land mass), and third largest in terms of population (224 799, equivalent to 19.62% of the total Provincial population), with the second highest population density of 8.2/km<sup>2</sup>. The John Taolo Gaetsewe DM is bordered by ZF Mgcawu DM to the south-west, and south; Frances Baard DM to the south-east; Dr Ruth Segomotsi Mompati DM of North West Province to the east; and Botswana to the north. The DM comprises 3 Local Municipalities, namely: Gamagara, Ga-Segonyana, and Joe Morolong Local Municipalities. In 2006 the boundaries of the John Taolo Gaetsewe DM were demarcated to include the once north-western part of Gamagara and Olifantshoek, along with its surrounds, into the Gamagara LM.

The John Taolo Gaetsewe DM comprises 186 towns and settlements, approximately 80% of which comprise villages. Predominant towns within the DM include: Bankhara-Bodulong, Deben, Hotazel, Kathu, Kuruman, Mothibistad, Olifantshoek, Santoy, and Van Zylsrus. It is characterised by a mixture of land uses, of which agriculture and mining are dominant. The main economic sectors within the DM include agriculture, mining, and retail. The DM holds potential as a viable tourist destination and has numerous growth opportunities in the industrial sector.



**Figure 4.2: Map showing the municipalities of the John Taolo Gaetsewe DM (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).**

#### 4.3. Gamagara LM

The Gamagara LM occupies an area of approximately 2 619km<sup>2</sup> in extent, equivalent to approximately 10% of the DM land mass, and is the smallest of the 3 LMs which comprise the John Taolo Gaetsewe DM. The

Gamagara LM has the smallest population (41 617), and is the second most densely populated LM of the John Taolo Gaetsewe DM with a population density of 16/km<sup>2</sup>. The Gamagara LM is situated approximately 200km north-east of Upington and 280km north-west of Kimberley in the southern to south-western extent of the John Taolo Gaetsewe DM. It is bordered by the Gamagara LM to the north, the Ga-Segonyana LM to the east, and the Tsantsabane LM of the ZF Mgcawu DM of the Northern Cape Province to the south and west.

The Gamagara LM comprises five towns, namely: Kathu, Shesheng, Dibeng, Dingleton, and Olifantshoek. Kathu is the largest town, and is also the administrative centre of the Gamagara LM. Olifantshoek is the second largest town, and is located near the Gamagara River to the north-west of Kathu, and Dingleton is the smallest of the five towns, and is located in the centre of the mining activities directly south of Kathu.

The Gamagara LM has experienced considerable population growth, increasing from 23 202 people in 2001 to 41 617 people in 2011 (Census 2011). Such an increase in population can be attributed to an in-migration of people (predominantly men) in search of employment opportunities from the mining activities within the LM.

In terms of tourist attractions, the Gamagara LM is home to an endemic camel-thorn tree forest known as the Kathu Forest, which was registered as a National Heritage site in 1995. The Kathu Forest which is situated north of the town of Kathu (approximately 12km south of the project site) has been declared a protected woodland in terms of Section 12(1) (c) of the National Forests Act (No. 84 of 1998) (NFA). The Kathu Forest is a unique woodland of exceptionally large camel-thorn trees (*Acacia erioloba*). The woodland is approximately 4 000ha in extent and comprises one of only two such woodlands in the world. In addition to the Kathu Forest other tourist attractions within the Gamagara LM include the mines (the area boasts the largest single pit, open cast iron ore mine in the world, and is the starting point of the Sishen – Saldanha railway line), and the Kathu archaeological complex comprising three heritage sites in and around the town of Kathu, which includes the Kathu town lands, Kathu pan and the Best wood pan.

#### **4.4. Project Site**

Hyperion Solar Development 2 is proposed on the Remaining Extent of the Farm Lyndoch 432, which is located approximately 14km north of Kathu. Other towns in proximity of the project site include Dibeng, located approximately 18km west of the project site, and Kuruman, located approximately 34km east-north-east of the project site. Built infrastructure in the form of farm homesteads and workers quarters occur within and around the project site, and may be impacted on (i.e. in terms of nuisance and / or visual impacts) as a result of the proposed project.

The Vlermuisleegte, a non-perennial river, bisects the project site in a north-west to south-east direction, and the Ferrum / Umtu 1 400kV power line bisects the eastern half of the project site in a north to south direction. The N14 National road occurs approximately 4km south of the project site, and traverses the area in an east to west direction, while a number of gravel roads occur within the project site.

#### **4.5. Baseline Description of the Social Environment**

The following subsections provide an overview of the socio-economic profile of the Gamagara LM within which Hyperion Solar Development 2 is proposed. In order to provide context against which the LM's socio-economic profile can be compared, the socio-economic profiles of the John Taolo Gaetsewe DM, Northern

Cape Province, and South Africa as a whole have also been provided where applicable. The data presented in this section have been derived from the 2011 Census, the Local Government Handbook South Africa 2018, the Northern Cape Provincial Spatial Development Framework (PSDF), and the John Taolo Gaetsewe DM and Gamagara LM IDPs.<sup>3</sup>

#### 4.5.1. Population Size

Understanding the population dynamics of an area is important as it provides an overview of the human capital present within an area. It therefore provides an insight into the potential labour pool, from which workers may be sourced; as well as the local communities which may either be impacted on, or benefit from, a particular project. Population trends within an area also affect economic growth, and the demand for goods and services.

The Gamagara LM has a population of 41 617, which is equivalent to approximately 18.5% of the DM population, 3.6% of the Provincial population, and less than 0.1% of the National population. The Gamagara LM also has a population density of 4.4/km<sup>2</sup>, which is almost half of the DM's population density (8.2/km<sup>2</sup>).

Between 2001 and 2011, the LM experienced a population growth rate of 5.8% per year. This is in contrast to the DM, Province, and South Africa as a whole, which all experienced population growth rates of 1.6%, 1.4% and 1.5% per year respectively. The Gamagara LM's considerable population growth rate can be attributed to individuals moving into area in search of employment opportunities as a result of the significant mining activities occurring within the region.

**Table 4.2: Overview of general statistics of South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

Census 2011	Area (km <sup>2</sup> )	Population total	Male	Female	Population density/km <sup>2</sup>	Population growth rate (2001 – 2011)
South Africa	1 220 813	51 770 560	25 188 791	26 581 769	42.4	1.5%
Northern Cape	372 889	1 145 861	564 972	580 889	3.1	1.4%
John Taolo Gaetsewe DM	27 283	224 801	108 966	115 835	8.2	1.6%
Gamagara LM	2 619	41 617	22 710	18 907	4.4	5.8%

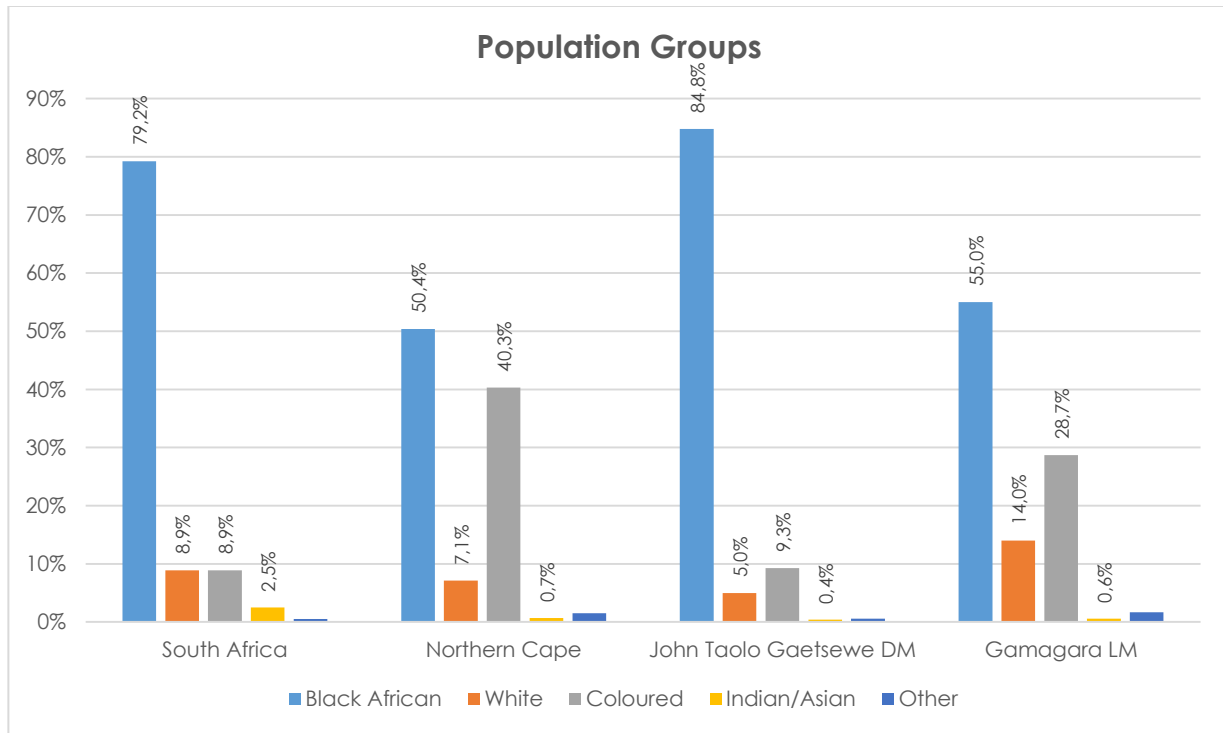
#### 4.5.2. Population Group

Information on population group dynamics provides a better understanding of the cultural dynamics which may be prevalent within the area. This is important in terms of determining the potential for community support, the likely community structure and appropriate / most-suited consultation practises to utilise when engaging with the local communities (and whether different communication strategies should be adopted for different community groups).

<sup>3</sup> While information was derived from the Local Government Handbook South Africa 2018, Northern Cape PSDF, and John Taolo Gaetsewe DM and Gamagara LM IDPs, these sources largely made use of statistical information derived from the Census 2011. The information presented in this Chapter may therefore be outdated, but is considered sufficient for the purposes of this assessment (i.e. to provide an overview of the socio-economic characteristics against which potential impacts can be identified and their significance assessed).



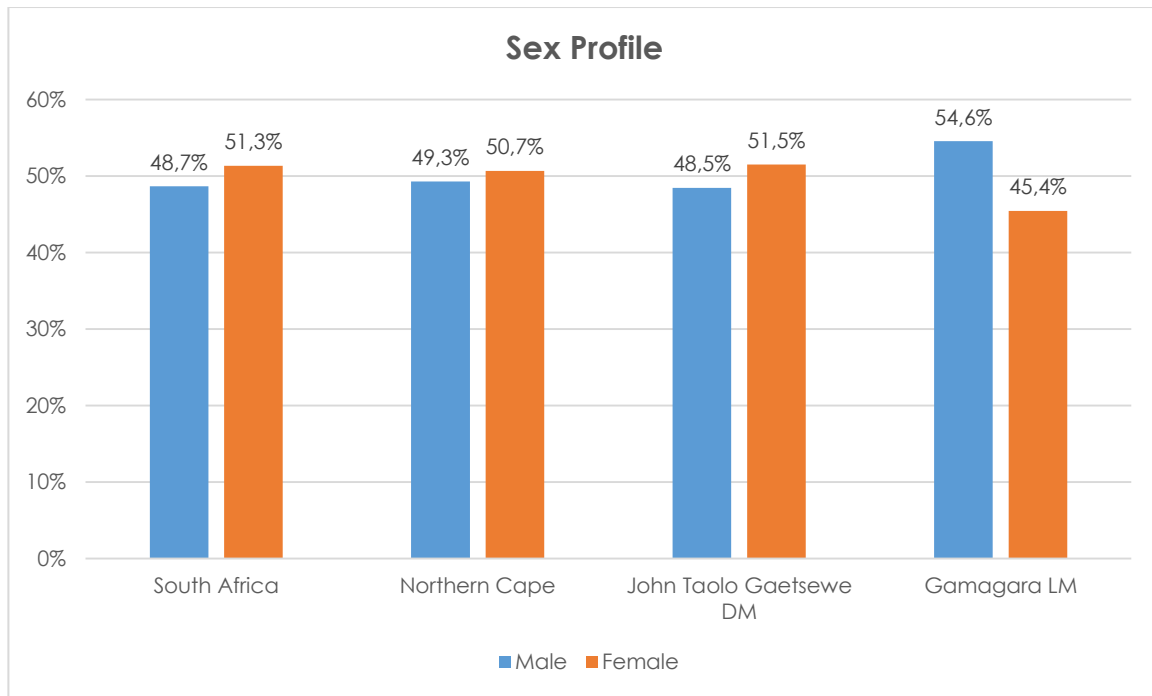
According to Census 2011, the majority of approximately 55% of the Gamagara LM population are Black African, followed by 28.7% which are Coloured, 14% which are White, and 0.6% which are Indian / Asian. This population structure differs from that of the John Taolo Gaetsewe DM which is characterised by a majority of 84.8% comprising Black African, followed by 9.3% Coloured, and 5% White; but is somewhat similar to the Northern Cape Provincial population structure, which is also characterised by a much more predominant split between African and Coloured populations, and a much larger proportion of the population (40.3%) comprising Coloured individuals.



**Figure 4.3: Population groups of South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

**4.5.3. Sex Profile**

The sex profile of a population has significance in terms of gender distribution, and understanding the gender roles prevalent within the area. The Gamagara LM is male dominated with males making up 54.6% of the population, and females make up the remaining 45.4%. This differs from the DM, Provincial and National populations, which are all female dominated. Such a profile can again be attributed to the fact that a significant number of male individuals may have moved into the LM in search of employment opportunities, thus resulting in a male dominated population.



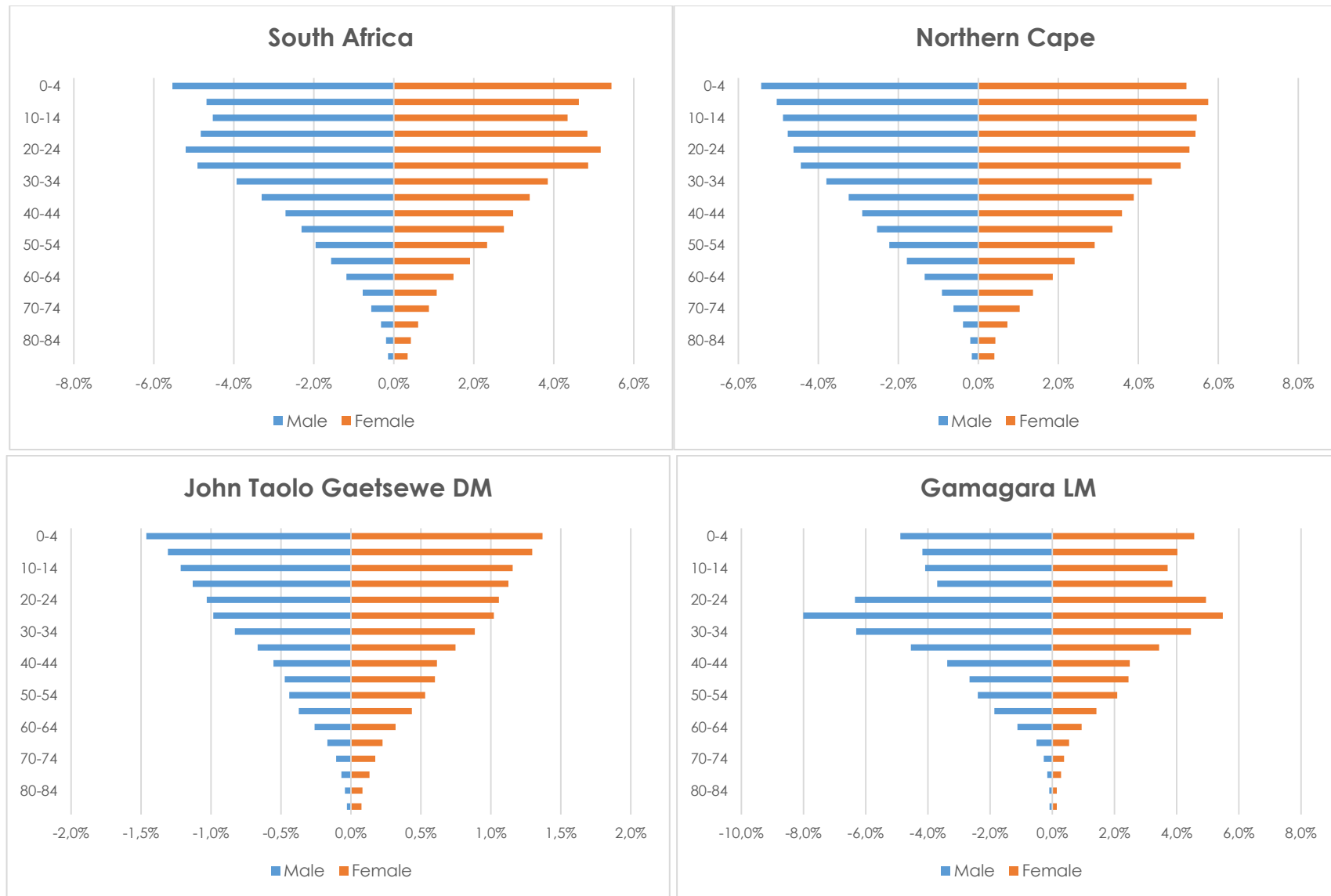
**Figure 4.4: Sex profile within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

#### 4.5.4. Age Profile

The age structure of a population is important for planning purposes, as it provides insight into what services may be required, and the level to which such services are required. For example, populations which are youth dominated (between 0 and 14 years of age) indicate a large school going population, and highlight the need for youth care and education (i.e. crèche, primary, secondary, and tertiary) facilities across different levels. Similarly populations which are dominated by an economically active age group (between 15 and 64 years of age) highlight the need to provide suitable employment and business opportunities, while populations with a predominately aged structure (i.e. over 65 years of age) indicate a high proportion of the population which are of retirement age. Such a portion of the population would no longer be economically active, and would indicate a need for services which cater to the elderly members of society, including the provision of adequate health care and nursing facilities.

According to **Figure 4.5** the age structure of the Gamagara LM, differs significantly from that of the John Taolo Gaetsewe DM, Northern Cape Province and South African National populations. The South African National population is characterised by a large proportion of youth specifically between 0 – 4 years, and 15 – 29 years as represented by the convex shape. The Northern Cape Provincial population and John Taolo Gaetsewe DM while also youth dominated, are far more uniform in their distribution with no significant outliers in any one population group. Conversely however, the Gamagara LM is characterised by a much larger proportion of males aged between 20 and 39 years of age, and to a smaller extent females of the same age group, as reflected by a convex shape in the population age graph.

The higher proportion of potentially economically active persons within the Gamagara LM implies that there is a considerable human resource base for development projects to involve local population. The economically active population represents the largest proportion of the population, which means that focus needs to be placed on employment creation.

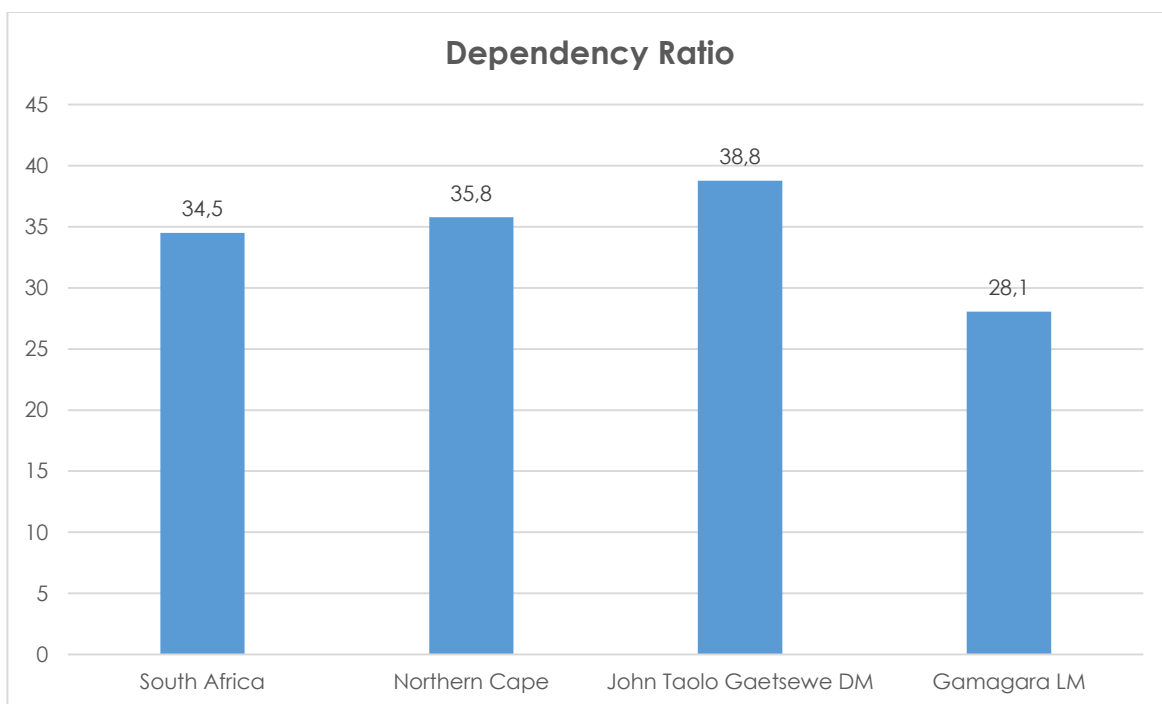


**Figure 4.5: Age profile within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

#### 4.5.5. Dependency Ratio

An area's dependency ratio provides an indication of that portion of the population which is dependent on the economically active portion of the population based on functional age groups. The dependent portion of the population typically comprises youth below 15 years of age which are yet to enter the workforce, and individuals 65 years and older which would typically already have retired from the workforce. In addition to not contributing towards the economy, such individuals are also likely to have additional needs which need to be catered for, such as access to suitable education facilities for the school going population, and access to health care facilities in the case of the aged population. The dependency ratio is calculated by combining the number of children aged under 15 years, and the number of adults aged 65 years and older, and dividing this by the working age population (i.e. those ages between 15 and 64 years of age).

The Gamagara LM has a dependency ratio of 28.1, implying that for every 100 people within the Gamagara LM, 28.1 (i.e. over a quarter) of them are considered dependent. This figure is considerably lower than that of the John Taolo Gaetsewe DM (i.e. 38.8), Provincial (35.8) and National (34.5) dependency ratios.

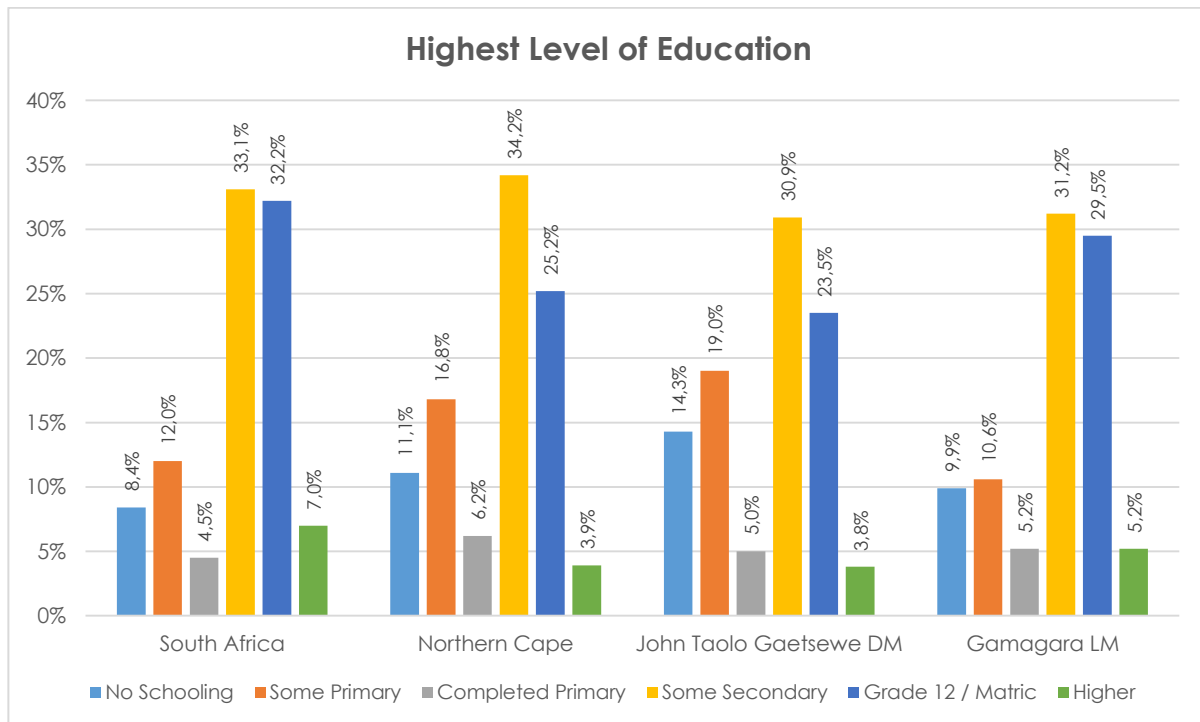


**Figure 4.6: Dependency ratio of South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

#### 4.5.6. Education Levels

Education plays a pivotal role in community development. The level of education influences growth and economic productivity of a region. There is a positive correlation between a higher level of education and the level of development, and standard of living. Education levels in any given population will influence both economic and human development. While low levels of education typically lead to a low skills base within an area, high levels of education have the opposite effect, resulting in a skilled or highly skilled population. Household and personal income levels are also either positively or adversely affected by education levels.

**Figure 4.7** depicts the highest level of education received by the adult population aged 20 years and older in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM.



**Figure 4.7: Highest Level of Education in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

Approximately 9.9% of the Gamagara LM population aged 20 years and older have received no form of schooling. This figure is lower than the DM (14.3%), and Provincial (11.1%) averages, but higher than the National (8.4%) average. The majority of 31.2% of the LM population have received some secondary education, followed by 29.5% which have completed Matric (which correlates with the DM, Provincial, and National trends). Approximately 5.2% of the LM population have received some form of higher / tertiary education.

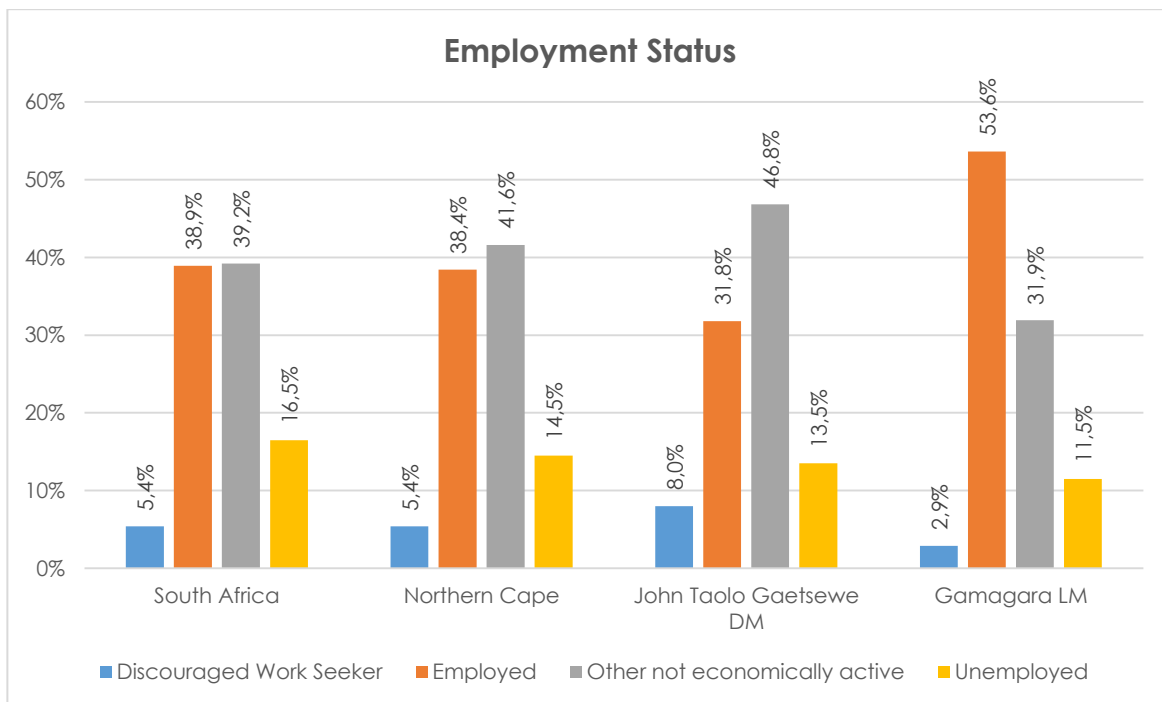
Due to the fact that a smaller than average proportion of the Gamagara LM population have received no form of schooling (9.9%), and due to the fact that over a third (34.7%) of the LM population which have received some form of schooling have completed Matric, or higher, it can be expected that a considerable proportion of the population will either be skilled, or have a low-skill level, and would therefore be suitable for employment across a range of non-skilled, low-skill or skilled sectors. The need for skills development opportunities in order to improve the skills, and income levels of the area, would therefore need to be assessed in detail as part of the socio-economic development and upliftment initiatives of the project should it come to fruition.

#### 4.5.7. Employment

The employment profile of an area is an important indicator of human development, as poverty and unemployment are closely correlated. The quality of labour is reflected, amongst other things, by the educational profile of the economically active population and the availability of training facilities in the region. The term labour force refers to those people who are available for employment in a certain area. According to Statistics South Africa, the definitions of the following employment indicators are:

- » Economically active person: "A person of working age (between 15 and 65 years inclusive) who is available for work, and is either employed, or is unemployed but has taken active steps to find work in the reference period."
- » Employed: "Those who performed work for pay, profit or family gain for at least one hour in the seven days prior to the interview or who were absent from work during these seven days, but did have some form of paid work to return to."
- » Official and expanded definition of unemployment: "The unemployed are those people within the economically active population who: (a) did not work during the seven days prior to the interview, (b) want to work and are available to start work within two weeks of the interview, and (c) have taken active steps to look for work or start some form of self-employment in the four weeks prior to the interview."
- » Labour force: "All employed and unemployed persons of working age".
- » Unemployment rate: "The percentage of the economically active population that is unemployed."

The employment profile of an area is also an important indicator of the level of disposable income and subsequently the expenditure capital of the residing population.



**Figure 4.8: Employment Status in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

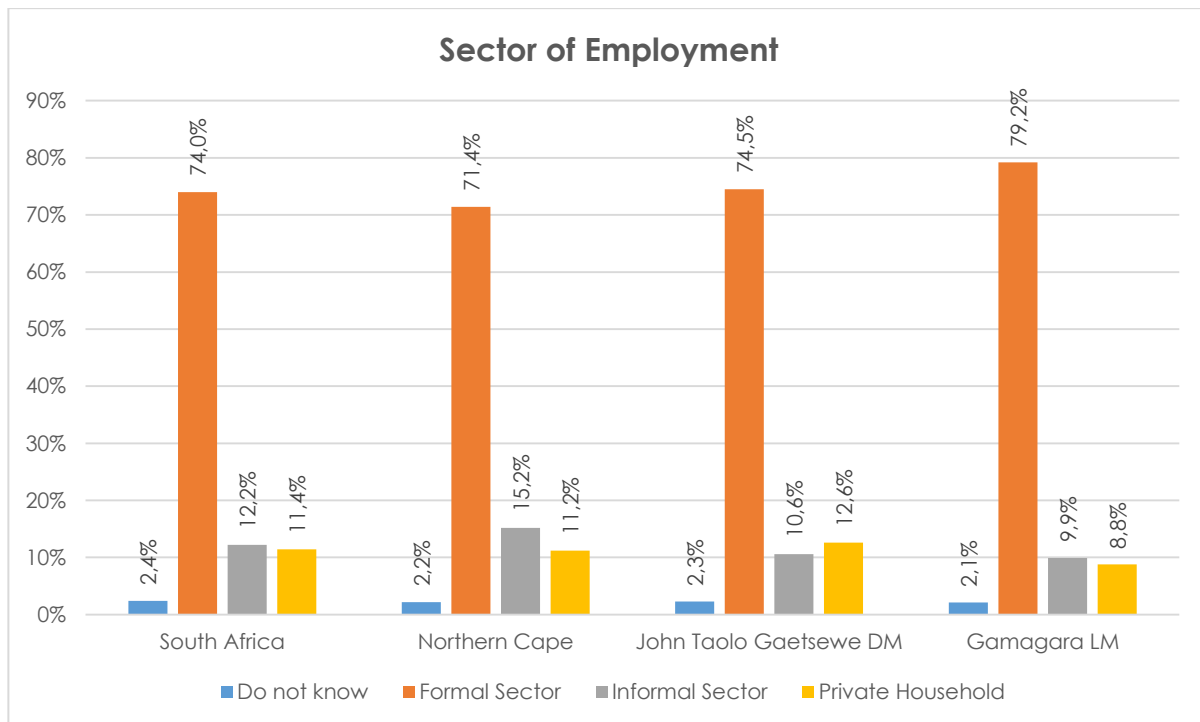
Of the Gamagara LM's labour force (i.e. individuals ages between 15 and 64 years of age) approximately 31.9% are not economically active. This refers to the economically inactive portion of the population who are able and available to work, but who do not work, and who are not looking for work. Such a figure is of significance as it demonstrates a population's willingness and desire to find employment. The economically inactive proportion of the Gamagara LM's labour force is significantly lower than the DM (46.8%), Provincial (41.6%), and National averages (39.2%). This high proportion of the economically inactive population implies that irrespective of the size of the LM and DM labour forces, a smaller proportion would be available to absorb employment opportunities. The possibility therefore exists that labour may need to be sourced from elsewhere (i.e. from outside of the John Taolo Gaetsewe DM and Gamagara LM). This also implies that there

may be limited human capital available within the John Taolo Gaetsewe DM and Gamagara LM, without the provision of training and development of young and economically active people in occupations in the relevant fields needed.

Approximately 11.5% of the Gamagara LM's labour force is unemployed. This means that 11.5% of the economically active population within the LM are currently unemployed, but are willing and able to work, and are actively seeking employment. The unemployment rate for the LM is lower than the DM (13.5%), Provincial (14.5%), and National averages (16.5%). In addition, the employed proportion of the population within the LM (53.6%) is considerably higher than the DM (31.8%), Provincial (38.4%), and National averages (38.9%).

According to the Gamagara LM IDP 2017 – 2022, the employment rate will only grow once the skills level within the LM improves. Currently the mines require a minimum of Grade 10 to be employed. Such a scenario has created a barrier to the employment of those individuals that do not have a Grade 10 to be absorbed in the labour market, which increases the unemployment and dependency rate in the LM, and as a result the payment of services will also ultimately suffer.

In order to fully understand the employment levels within an area it is also important to gain an understanding of the type of employment. Specifically, whether the employed population are employed in the formal or informal sector. The informal sector refers to that portion of the economy that is not taxed or monitored by government. The contribution made by the informal sector also does not contribute towards a country's Gross Domestic Product (GDP) or Gross National Product (GNP). South Africa's informal sector provides income for more than 2.5 million workers and business owners, with approximately 1 in every 6 employed South African's being employed in the informal sector.



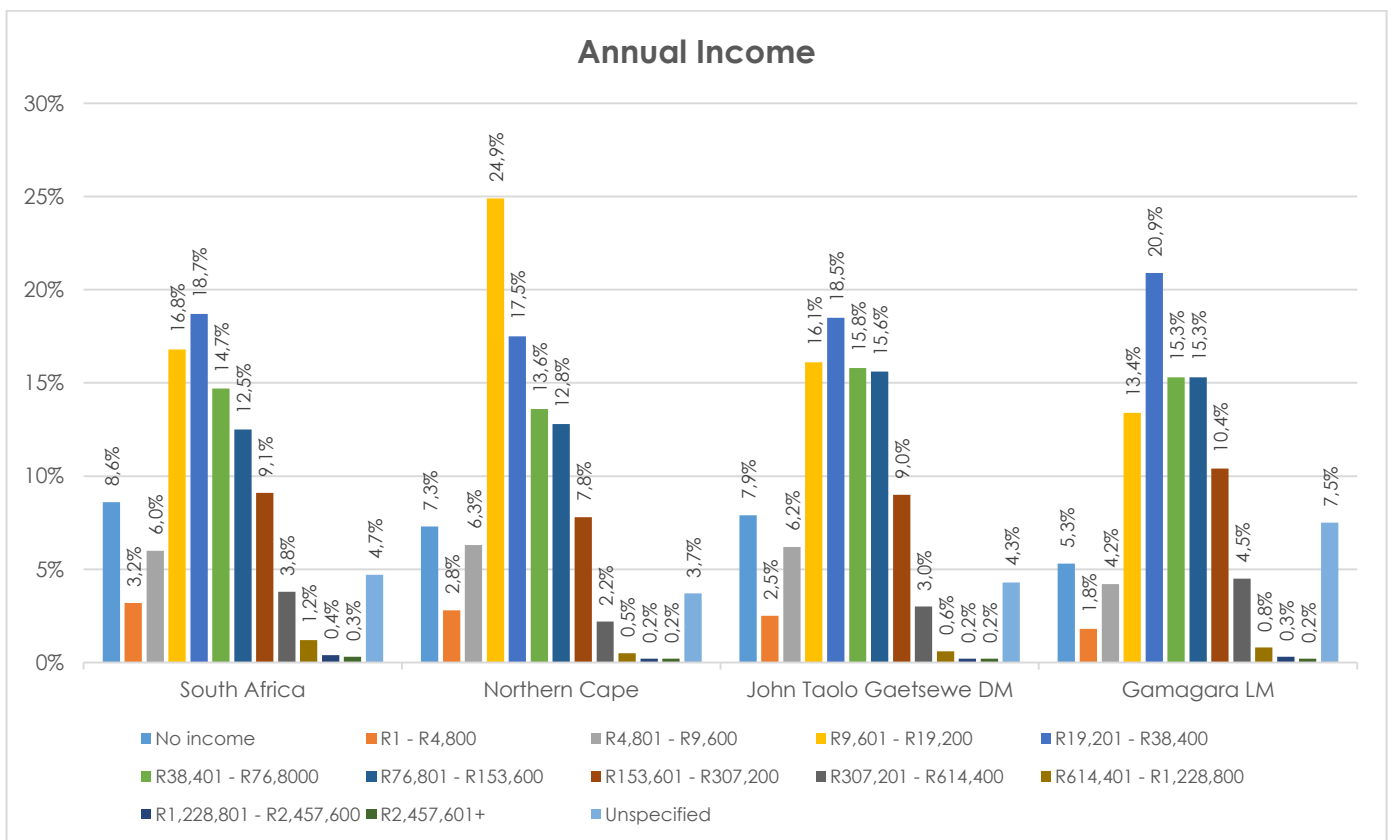
**Figure 4.9: Sector of employment in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

Of the employed population of the Gamagara LM approximately 79.2% are employed within the formal sector, followed by 9.9% of the employed population employed in the informal sector, and 8.8% employed in private households. These figures correlate closely with the John Taolo Gaetsewe DM, Northern Cape Province, and South Africa as a whole.

The creation of employment opportunities within the formal sector as a result of the development of Hyperion Solar Development 2 could therefore contribute towards growing employment within the formal sector in both the LM and DM, which could lead to greater levels of job security than may typically be associated with employment in the informal sector.

**4.5.8. Annual Household Income levels**

In order to determine the population's standard of living, as well as their ability to pay for basic services, the income levels of the employed population are analysed. Household income levels are one avenue for determining poverty levels in a community. Households that have either no income or low income fall within the poverty level (R0 – R38 400 per annum), indicating the difficulty to meet basic need requirements. Middle-income is classified as earning R38 401 – R307 200, and high income is classified as earning R307 201 or more per annum.

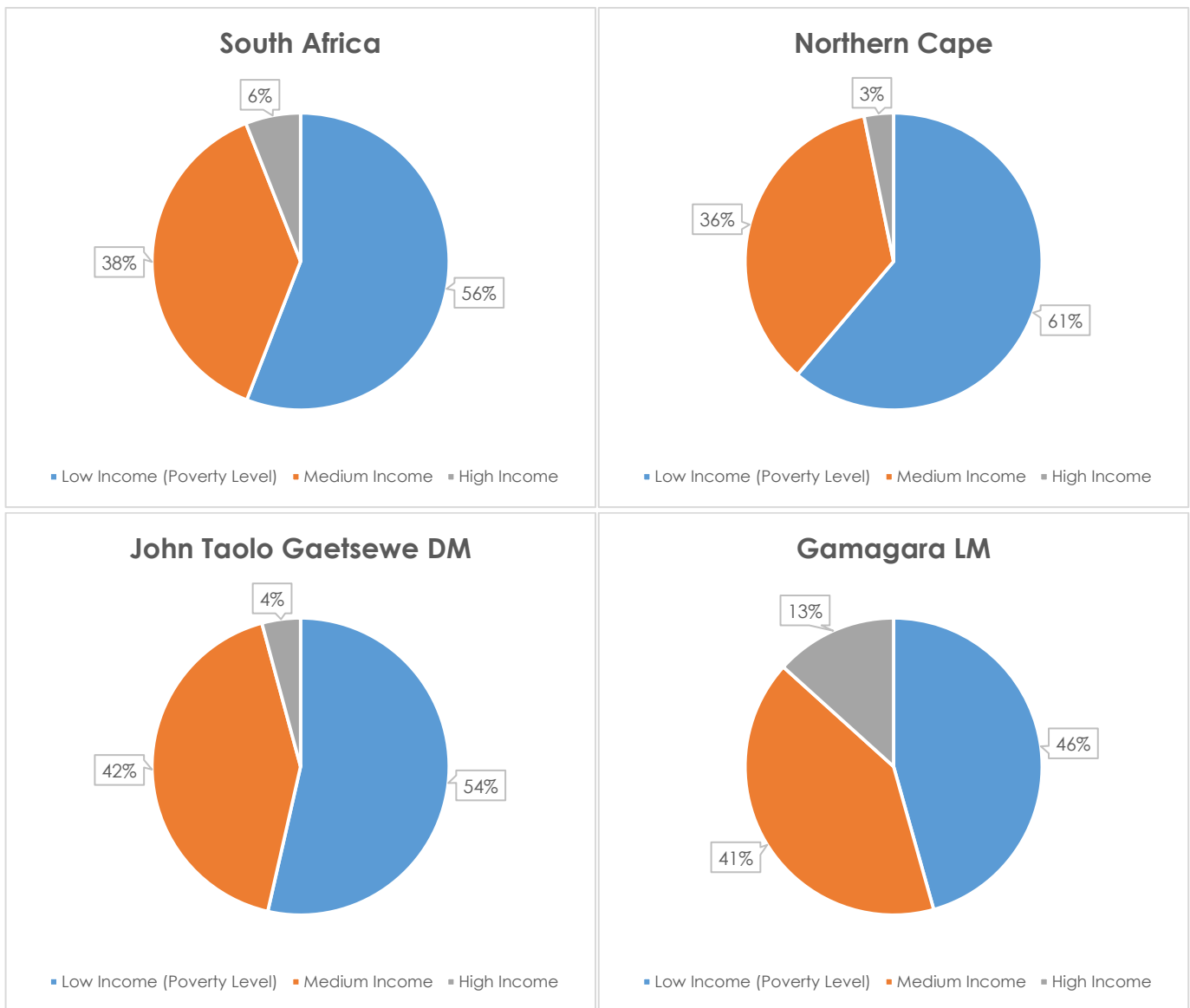


**Figure 4.10: Average Annual Income in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

Poverty levels prevalent within a particular area can be attributed with social consequences such as an inability to pay for basic needs and services, which in turn has influence on an individuals' standard of living. Approximately 46% of households within the Gamagara LM fall within the low income (poverty level) bracket, 41% within the medium income bracket, and 13% in the high income bracket. This split differs from



that of the Northern Cape, John Taolo Gaetsewe DM and South Africa as a whole, which are all characterised by higher proportions of households falling within the low income bracket, and fewer households within the high income bracket.



**Figure 4.11: Average Income Levels in South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

**4.5.9. Economic Activities**

According to the Gamagara LM IDP 2017 – 2022, the LM has become a significant player in the Northern Cape Province, and an important contributor to South Africa's mining sector, and international mining value chain. As a result, the LM has become a centre for the development of infrastructure required to accommodate such development within the mining sector. The Gamagara LM has identified economic push and pull factors, such as education and training, research, entrepreneurship, community image and the arts. Gamagara has planned to develop into a commercial and industrial municipality over and above the mining economic spin-offs. It has potential to develop into an industrial city by 2030 and a manufacturing city by 2060. The Northern Cape – Saldanah Bay railway line also present the LM with the

opportunity to grow economically, while exploiting the benefits and spin-offs that could be derived from the N14 road to Namibia could also contribute to the economic growth of the LM. The main economic sectors within the Gamagara LM include mining, game farming and business services.

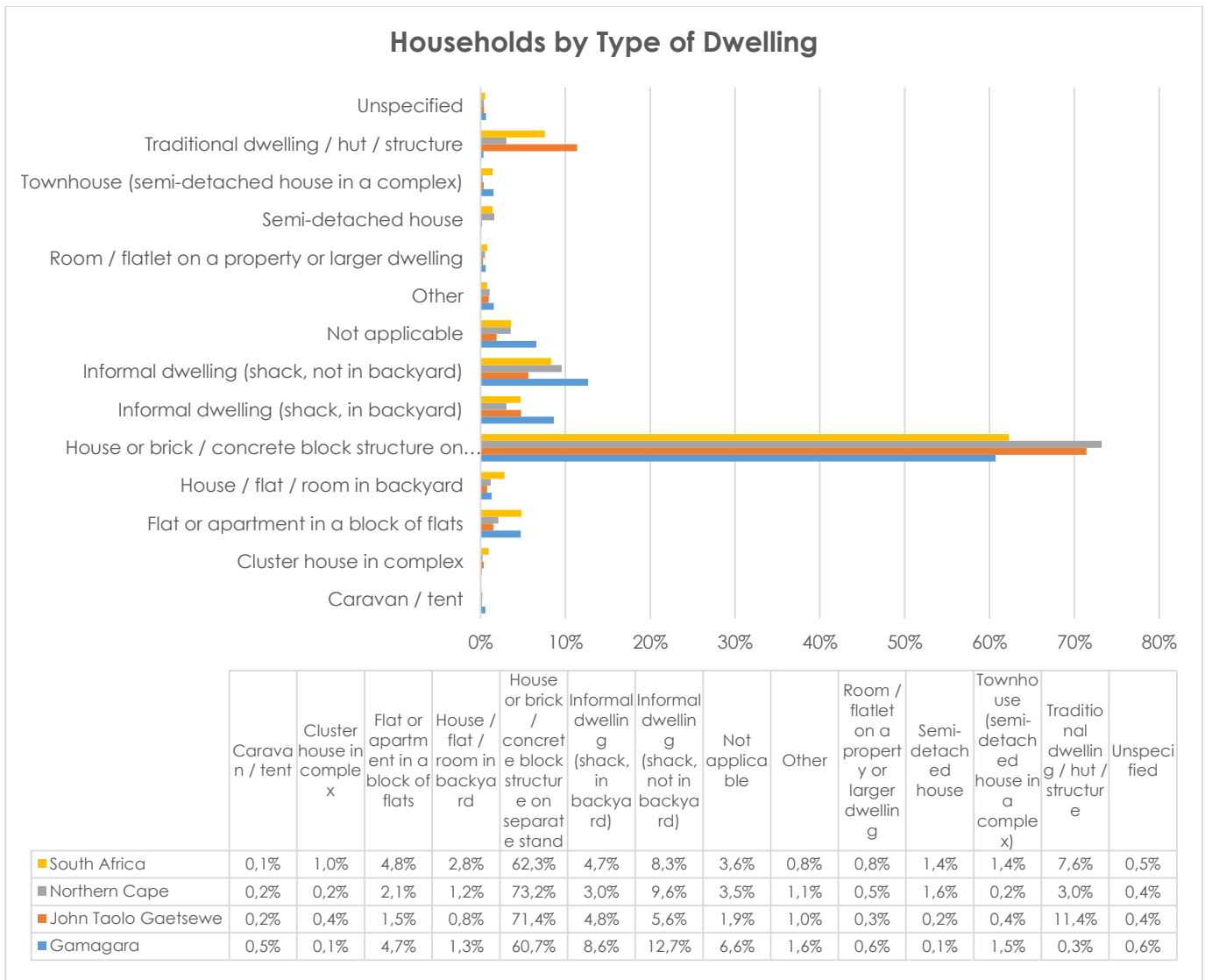
#### **4.5.10. Health**

South Africa's health sector is most concerned with communicable, non-communicable, pre-natal and maternal, and injury-related conditions. The Northern Cape Department of Health has identified preventative health as a key priority in combating disease through community participation, public advocacy, and health screening in order to prevent morbidity and mortality. The John Taolo Gaetsewe DM lacks appropriate medical care, specifically eye and oral care. There are only 3 public sector dentists and no public sector optometrists within DM.

#### **4.5.11. Households**

As of 2011 there were a total of 11 646 households within the Gamagara LM. This is equivalent to 18.6% of the total number of households within the John Taolo Gaetsewe DM (62 751), 3.7% of the total number of households within Northern Cape Province (313 795), and 0.07% of the total number of households within South Africa (15 065 018). Of the total number of households within the Gamagara LM the majority of 60.7% comprise houses (i.e. house or brick / concrete block structure on a separate stand or yard or on a farm), followed by 12.7% which comprise informal dwellings (i.e. shacks, not in a backyard).

According to the Gamagara LM IDP 2017 – 2022 the growth in mining activities, has resulted in a growth in the need for accommodation in the town of Kathu and adjacent towns. Due to the high demand for accommodation, rental prices have gone up leading to unaffordability and mushrooming of illegal second dwellings (i.e. log homes in Kathu) and backyard shanties in these areas. As a result, there is a need to develop affordable rental houses in Kathu.



**Figure 4.12: Households by Type of Dwelling within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

**4.5.12. Access to Basic Services**

Basic services such as electricity, water and sanitation, and refuse and waste removal are considered critical for the improvement of people's quality of life, and adequate supplies of basic services are also necessary to ensure life, well-being, and human dignity (Stats SA, 2017). Individuals' rights to basic services is largely enshrined in Section 24 of the Constitution which states that everyone has the right to an environment that is not harmful to their health or well-being. The accessibility of basic services is closely related to social inclusion and social capital, and the failure of municipalities to deliver services can have a detrimental impact on social and economic development (IDASA, 2010 in Stats SA, 2017). In terms of Section 73 of the Local Government Municipal Systems Act (No. 32 of 2000), municipalities have a general duty to give effect to the provisions of the Constitution and give priority to the basic needs of the local community; promote the development of the local community; and ensure that all members of the local community have access to at least the minimum level of basic municipal services. In addition, municipal services must be equitable and accessible; be provided in a manner that is conducive to the prudent, economic, efficient and effective use of available resources, and the improvement of standards of quality over time; be financially

sustainable; be environmentally sustainable; and be regularly reviewed with a view to upgrading, extension and improvement. **Table 4.3** provides the classification of infrastructure quality and different levels of service provision developed by Statistics South Africa following World Bank studies (Stats SA, 2017).

**Table 4.3: Classification of infrastructure quality (Stats SA, 2017).**

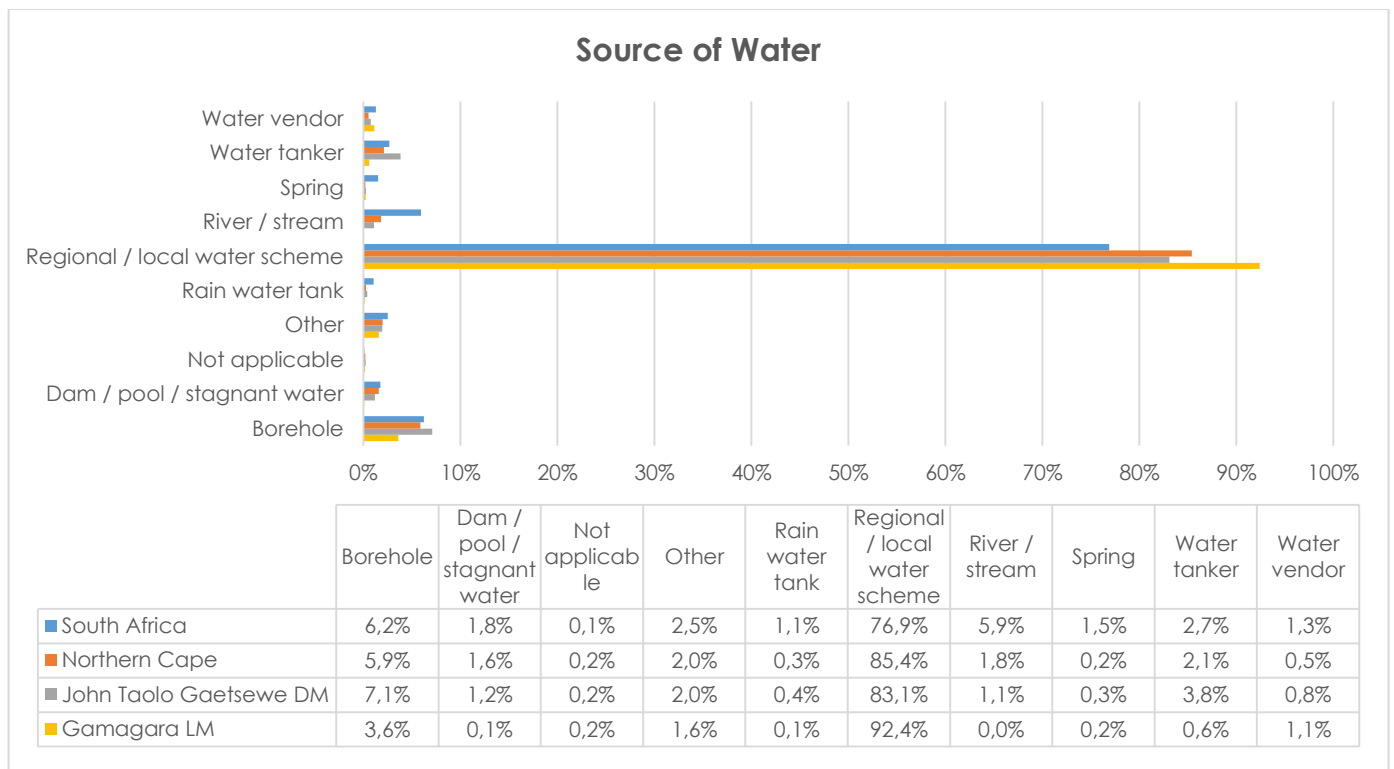
Service Level	Water	Sanitation	Solid Waste	Electricity
None	No access to piped water.	No sanitation.	No facilities / dump anywhere	No access to electricity
Minimal	Communal standpipe > 200m.	Bucket toilets.	Communal / own refuse dump	Generator / solar
Basic	Communal standpipe < 200m	Pit toilet without ventilation pipe.	Communal container / collection point	Access to electricity don't pay for
Intermediate	Piped water in the yard.	Ventilated Improved Pit (VIP) latrine toilet, Chemical, or ecological toilets.	Removed less than once per week	Connected to source and paid for
Full	Piped water in dwelling	Conventional waterborne	Removed once per week	In-house pre- and post-paid meters.

Access to basic services is assessed at a household level. An overview of households within the Gamagara LM's access to basic services is described in the following sub-sections.

#### 4.5.12.1. Access to Water

Due to the fact that Gamagara LM is located within an arid area, it has extremely limited water resources. Settlements in the area are therefore heavily dependent on the extraction of groundwater for various uses. Although water resources in the area are supplemented by Sedibeng Water, the exponential growth in the area, especially around Kathu, has necessitated the close monitoring and protection of underground water resources. Sedibeng Water is responsible for providing potable water to the residents of Gamagara LM.

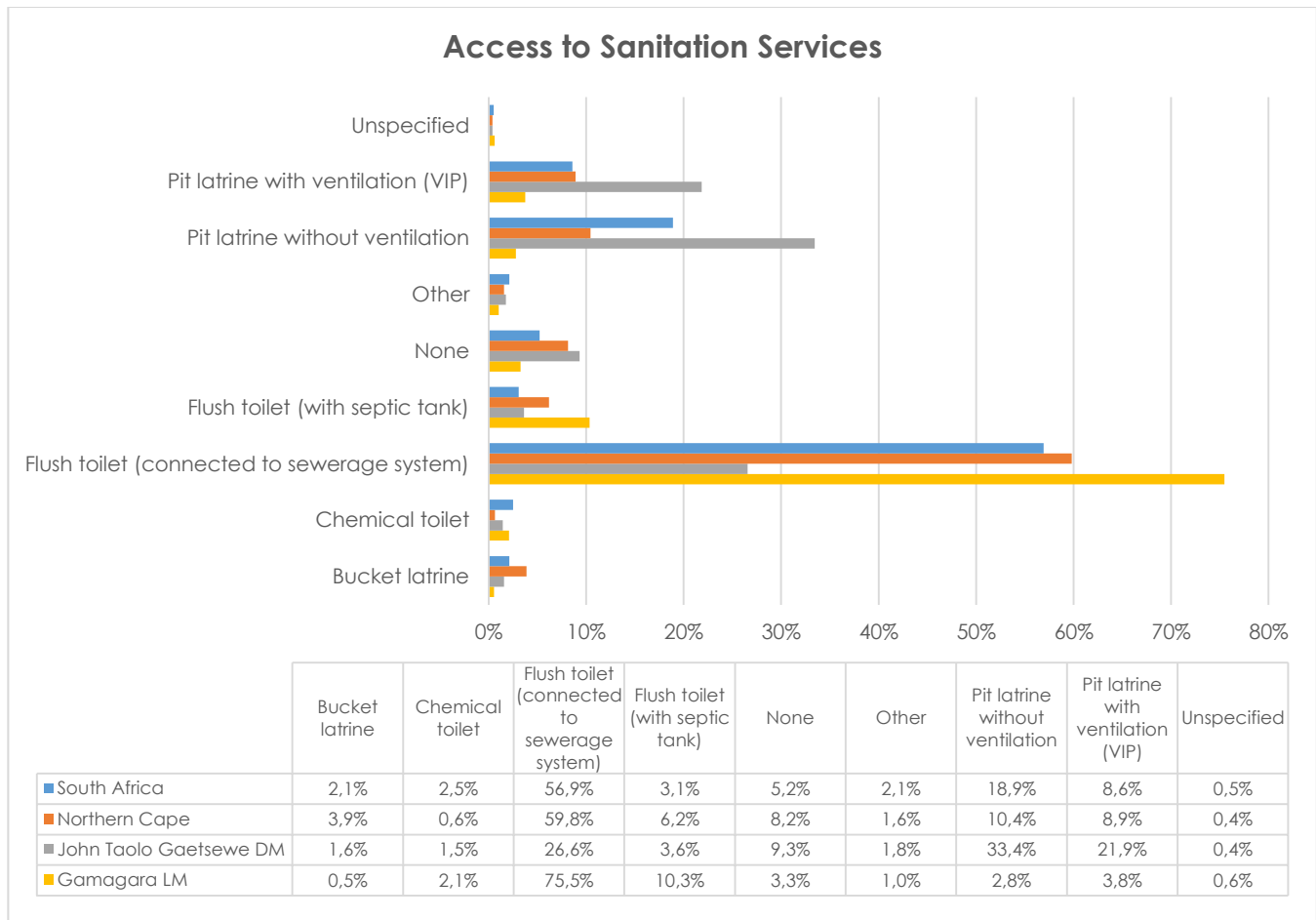
Approximately 92.4% of the households within the Gamagara LM receive their water from a regional / local water scheme (operated by the municipality or other water services provider), which is considered to be above basic level service provision. This figure correlates closely with the John Taolo Gaetsewe DM, Northern Cape Province, and South Africa.



**Figure 4.13: Access to water within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

#### 4.5.12.2. Access to Sanitation

The majority of three quarters (75.5%) of households within the Gamagara LM have access to and make use of flush toilets connected to a sewerage system, followed by 10.3% who have access to and make use of flush toilets connected to a septic tank. Households within the Gamagara LM are therefore characterised by a high level of access to sanitation services.



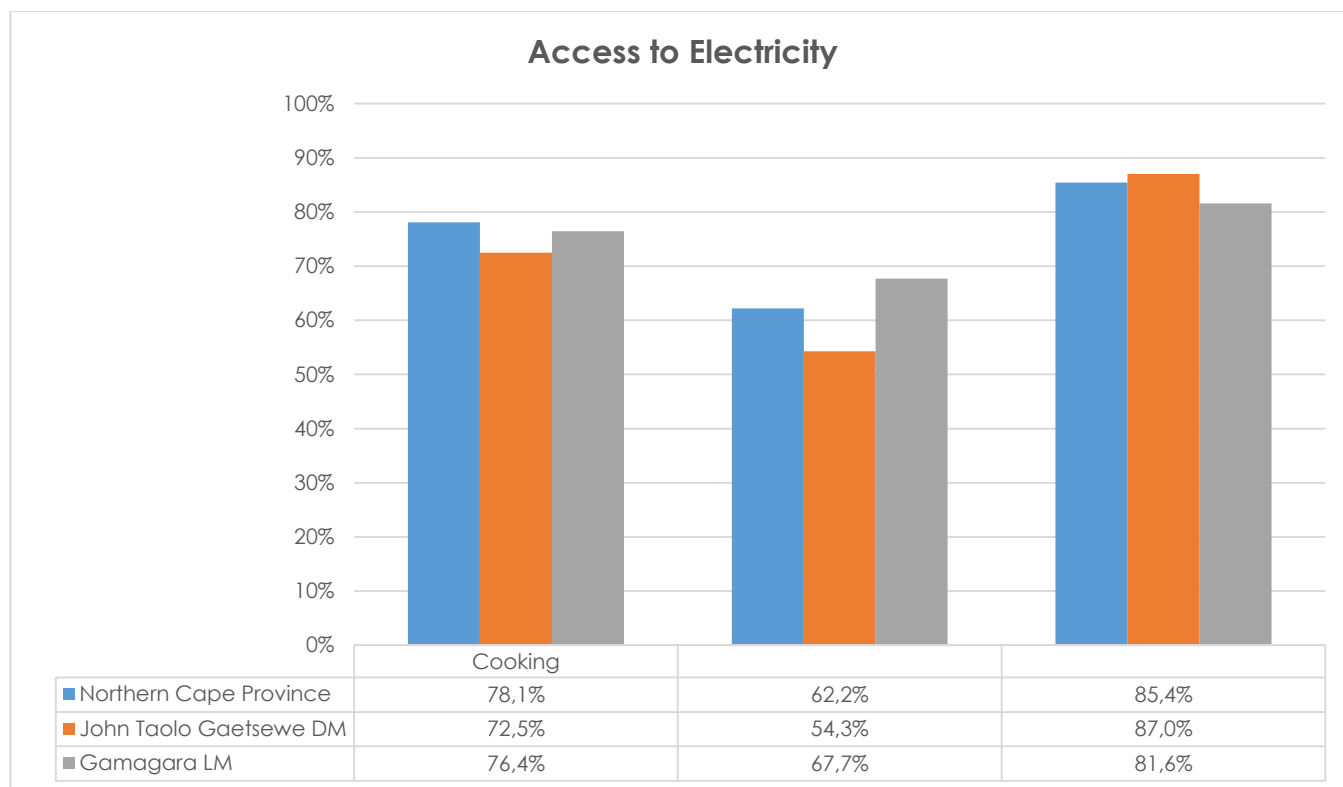
**Figure 4.14: Access to sanitation within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

4.5.12.3. Access to Electricity

Energy is required for cooking, heating, and lighting purposes. Individuals' access to different energy sources for cooking, heating, and lighting purposes is significant; as the burning of fuel sources such as wood, coal, and / or animal dung over extensive periods of time could result in negative health impacts for household members. Health impacts would be most significantly experienced by those vulnerable members of society, such as young children, pregnant women, and the elderly.

The significant majority of households within the Gamagara LM (81.6%) have access to electricity for lighting purposes. Similarly the majority of 76.4% of households within the LM make use of electricity for cooking, and 67.7% for heating purposes.

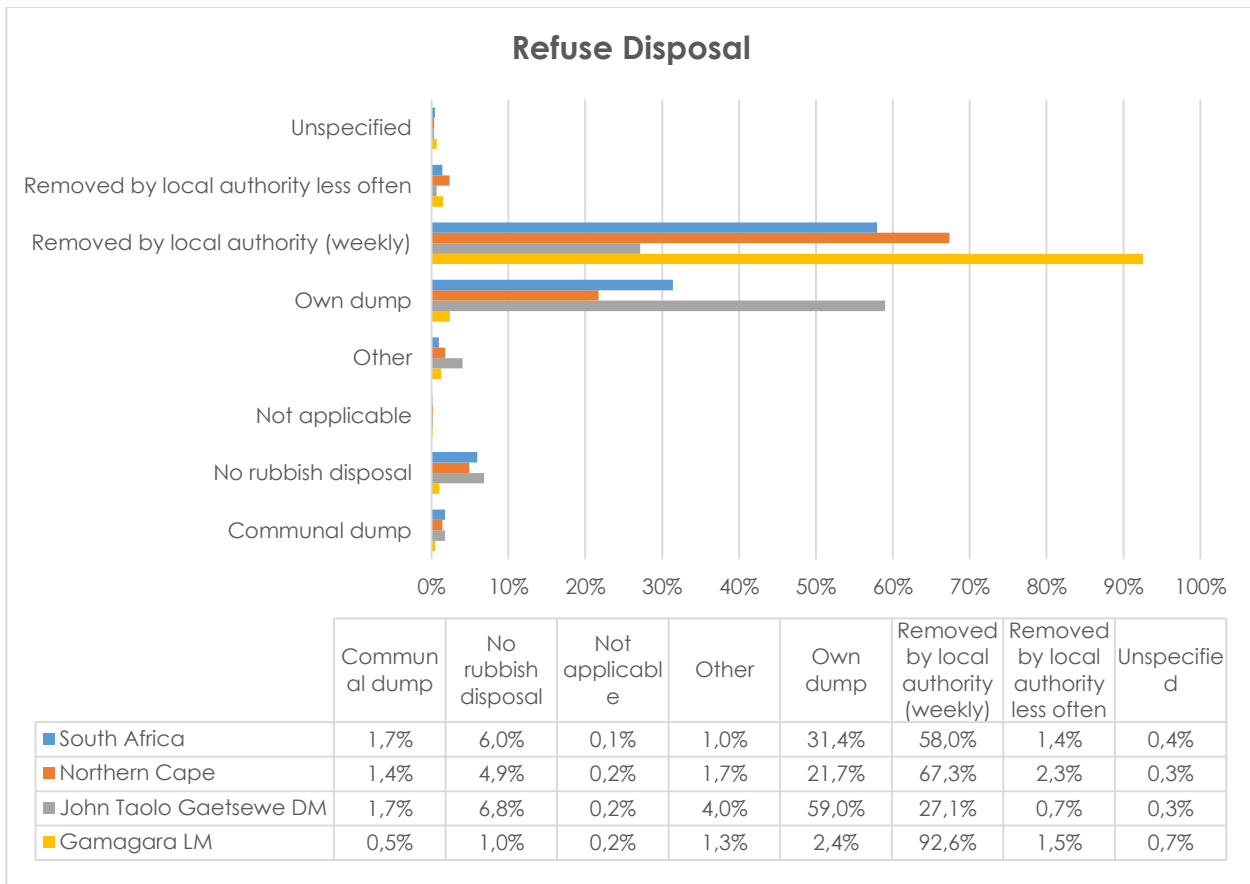
A significant proportion of 39.3% of households within the LM make use of wood for cooking purposes, and 16.1% make use of candles for their lighting purposes. Households within the Gamagara LM, John Taolo Gaetsewe DM and Northern Cape Province are all characterised by high levels of access to electricity for cooking, heating, and lighting purposes.



**Figure 4.15: Access to Electricity within the Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

4.5.12.4. Access to Refuse Removal

Approximately 92.6% of households within the Gamagara LM have their refuse removed by a local authority at least once a week. This figure is significantly higher than the DM (27.1%), Provincial (67.3%), and National (58.0%) averages, indicating high levels of access to refuse removal services within the Gamagara LM.



**Figure 4.16: Access to Refuse Removal Services within South Africa, Northern Cape, John Taolo Gaetsewe DM, and Gamagara LM (Source: Census 2011).**

**4.5.13. Baseline summary**

In summary, the area was found to have the following socio-economic characteristics:

- » The project is proposed within the Northern Cape Province, which is South Africa's largest, but least populated Province.
- » The project is proposed within the Gamagara LM of the John Taolo Gaetsewe DM.
- » The Gamagara LM covers an area of land approximately 2 619km<sup>2</sup> in extent, and comprises five towns, namely: Kathu, Shesheng, Dibeng, Dingleton, and Olifantshoek. The town of Kathu is the largest within the LM and the administrative centre of the LM.
- » Between 2001 and 2011 the Gamagara LM experienced a positive population growth rate of 5.8% per year, almost doubling in size from 23 202 people in 2001 to 41 617 people in 2011.
- » The Gamagara LM is male dominated, with males comprising approximately 54.6% of the LM population.
- » Black Africans comprise the predominant population group within the Gamagara LM, John Taolo Gaetsewe DM, and Northern Cape Province.
- » The Gamagara LM, John Taolo Gaetsewe DM, and Northern Cape Provincial population age structures are youth dominated. A considerable proportion of the respective populations therefore comprise individuals of the economically active population between the ages of 15 – 64.
- » The Gamagara LM has a dependency ratio of 28.1, which is considerably lower than the John Taolo Gaetsewe DM (38.8), Northern Cape Province (35.8), and South Africa (34.5) as a whole.



- » The majority of 31.2% of the Gamagara LM population aged 20 years and older have received some form of secondary schooling, while 29.5% have completed Matric, and 5.2% have received some form of higher education. Such figures imply that the LM population can be expected to have a relatively low-skill level and would either require employment in low-skill sectors, or skills development opportunities in order to improve the skills level of the area.
- » The unemployment rate of the Gamagara LM is lower than that of the John Taolo Gaetsewe DM, Northern Cape and South Africa as a whole. In addition the proportion of economically inactive individuals within the Gamagara LM is lower than in the John Taolo Gaetsewe DM.
- » Household income levels in the LM are higher than the DM, Province and South Africa as a whole, with a lower proportion of low income earners, and higher proportion of high income earners. The area can therefore be expected to have a lower poverty level with associated social consequences such as not being able to pay for basic needs and services, and poor living conditions than that of the DM and Northern Cape Province.
- » The primary economic activities within the Gamagara LM include mining, game farming, and business services.
- » The Gamagara LM and John Taolo Gaetsewe DM are poorly serviced in terms of public sector health facilities. There are only 3 public sector dentists within the John Taolo Gaetsewe DM, and no public sector optometrists.
- » The majority of households within the Gamagara LM comprise formal brick dwellings.
- » The majority of households within the Gamagara LM are well serviced with regards to electricity, water, sanitation, and refuse removal.

## 5. IDENTIFICATION OF POTENTIAL SOCIAL IMPACTS

This Chapter provides an overview of the potential social impacts that have been identified, which may be associated with the development of Hyperion Solar Development 2. Potential impacts have been identified based on the current understanding of the project, and the socio-economic environment within which it is proposed. The potential social impacts identified for the project will be investigated further during the EIA phase.

### 5.1. Detailed Design and Construction Phase Impacts

Potential impacts associated with the detailed design and construction phase of a project are usually of a short duration (i.e. approximately 12 months, equivalent to the length of the construction phase) and temporary in nature, but could have long-term effects on the social environment if not planned or managed appropriately. It is necessary, for example, that the detailed design phase be conducted in such a manner so as not to result in permanent impacts associated with the ill-placement of project components or associated infrastructure.

<b>Impact</b> Creation of direct and indirect employment opportunities and skills development.			
<b>Desktop Sensitivity Analysis of the Site:</b> No sensitivity identified.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Construction of the project will result in the creation of a number of direct and indirect employment opportunities, which will contribute towards lessening unemployment levels within the area and aid in skills development of communities in the area.	Positive – The creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area.	The impact will occur at a local, regional, and National level.	None identified.
<b>Description of expected significance of impact</b> At its peak, the construction is likely to result in the creation of approximately 500 employment opportunities. Of those employment opportunities likely to be generated during construction, approximately 60% will comprise opportunities for low skilled workers, 25% for semi-skilled workers, and 15% for skilled workers. Skills developed through experience in the construction of the facility will be retained by the community members involved. The impact is likely to be positive, local to National in extent, short-term, and of medium significance.			
<b>Gaps in knowledge and recommendations for further study</b> » Information on the exact direct and indirect employment opportunities and skills development opportunities likely to be created during construction.			

<b>Impact</b> Economic multiplier effects.			
<b>Desktop Sensitivity Analysis of the Site:</b> No sensitivity identified.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Economic multiplier effects from the use of local goods and services during the construction phase.	Positive – There are likely to be opportunities for local businesses to provide goods and services during the construction phase of development.	The impact will occur at a local, and regional level.	None identified.
<b>Description of expected significance of impact</b> Economic multiplier effects from the use of local goods and services opportunities include, but are not limited to, the provision of construction materials and equipment, provision of workforce essentials such as services, safety equipment, ablution, accommodation, transportation and other goods. The increase in demand for goods and services may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses. The impact is likely to be positive, local to regional in extent, short-term, and of medium significance.			
<b>Gaps in knowledge and recommendations for further study</b> » Information on capital expenditure to be spent on local goods and services.			

<b>Impact</b> In-migration of people (non-local workforce and jobseekers).			
<b>Desktop Sensitivity Analysis of the Site:</b> No sensitivity identified.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Increased pressure on infrastructure and basic services, and social conflicts during construction as a result of in-migration of people.	Negative – The in-migration of job seekers to the area could result in increased pressure being placed on infrastructure and basic services, and a rise in social conflicts.	The impact will occur at a local level.	None identified.
<b>Description of expected significance of impact</b> The in-migration of people to the area as either non-local workforce and / or jobseekers could result in increased pressure being placed on infrastructure and basic services on the local population (rise in social conflicts). An influx of people into the area, could lead to a temporary increase in crime levels, cause social disruption, and put pressure on basic services. An influx of people looking for economic opportunities could result in pressure on the local population such as rise in social conflicts and change in social dynamics, increase in HIV, pregnancies and drug abuse. Adverse impacts could occur if a large in-migrant workforce, which is culturally different from the local population, is brought in during			

construction. The impact is likely to be negative, local in extent, short-term<sup>4</sup>, and of medium significance due to the number of jobs expected to be created, and the proportion of which would accrue to the non-local workforce.

**Gaps in knowledge and recommendations for further study**

- » Information on the exact number of employment opportunities likely to accrue to the local labour force, versus the number of employment opportunities likely to accrue to the non-local workforce and jobseekers.
- » Mechanisms for employment of local labour and minimisation of in-migration.

**Impact**

Safety and security impacts.

**Desktop Sensitivity Analysis of the Site:**

No sensitivity identified.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Negative – The in-migration of job seekers to the area could be perceived to result in increased criminal activity.	The impact will occur at a local level.	None identified. No workers should be allowed to reside on-site during construction.

**Description of expected significance of impact**

The perception exists that an influx of jobseekers, and / or construction workers to an area is a contributor to increased criminal activities in an area, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, stock theft, and crime etc. The impact is likely to be negative, local in extent, short-term, and of medium significance due to the number of jobs expected to accrue to the non-local workforce.

**Gaps in knowledge and recommendations for further study**

- » Information on existing crime levels within the area.
- » Mechanisms for employment of local labour and minimisation of in-migration.

**Impact**

Impacts on daily living and movement patterns.

**Desktop Sensitivity Analysis of the Site:**

No sensitivity identified.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Temporary increase in traffic disruptions and movement patterns during construction.	Negative – An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety	The impact will occur at a local level.	None identified.

<sup>4</sup> While the extent of the impact may be short-term (i.e. people are only likely to move into the area in search of employment prior to and possibly during the construction period), the implications thereof may be long-term, as people are likely to have settled in the area, and are unlikely to leave immediately after the completion of construction.

	hazards for current road users.		
<b>Description of expected significance of impact</b>			
Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion. The impact is likely to be negative, local in extent, short-term, and of low significance given the proximity of the project to existing mining operations within the area.			
<b>Gaps in knowledge and recommendations for further study</b>			
» Number of vehicle trips anticipated during construction.			

<b>Impact</b>			
Nuisance impacts (noise and dust).			
<b>Desktop Sensitivity Analysis of the Site:</b>			
No sensitivity identified.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.	Negative – The impact will negatively impact sensitive receptors, and could cause disruptions for neighbouring properties.	The impact will occur at a local level.	None identified.
<b>Description of expected significance of impact</b>			
Impacts associated with construction related activities include noise, dust and disruption or damage to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The impact is likely to be negative, local in extent, short-term, and of low significance given the proximity of the project to existing mining operations within the area, which are also likely to be associated with nuisance impacts.			
<b>Gaps in knowledge and recommendations for further study</b>			
» Impact of the mining operations on surrounding landowners.			

<b>Impact</b>			
Visual and sense of place impacts.			
<b>Desktop Sensitivity Analysis of the Site:</b>			
No sensitivity identified.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Negative – The project could alter the area's sense of place which could negatively impact on sensitive receptors.	The impact will occur at a local level.	None identified.
<b>Description of expected significance of impact</b>			
Intrusion impacts such as aesthetic pollution (i.e. building materials, construction vehicles, etc.), noise and light pollution, and other impacts could impact the "sense of place" for the local community. The Visual Impact Assessment (VIA) undertaken as part of the Scoping Phase determined that the visibility of the			

proposed project is likely to be limited, and it is therefore unlikely to have a major influence on the character of the landscape as experienced by the majority of people. The impact is therefore likely to be negative, local in extent, short-term, and of low significance; given the proximity of the project to existing mining operations and waste rock dumps, and the already industrialised nature of the surrounding area.

**Gaps in knowledge and recommendations for further study**

- » Potential sensitive visual receptors need to be identified.
- » Visual impact assessment to inform impact on sense of place.

**5.2. Operation Phase Impacts**

Potential impacts associated with the operation phase are anticipated to be of a long-term duration (i.e. 20 years equivalent to the operational lifespan of the project).

<b>Impact</b> Direct and indirect employment opportunities and skills development.			
<b>Desktop Sensitivity Analysis of the Site:</b> No sensitivity identified.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Creation of direct and indirect employment, skills development opportunities and skills development as a result of the operation of the project.	Positive – The creation of employment opportunities and skills development will assist to an extent in alleviating unemployment levels within the area.	The impact will occur at local, regional, and National levels.	None identified.
<b>Description of expected significance of impact</b> During operation, a maximum of approximately 65 employment opportunities will be created. Of those employment opportunities created approximately 70% will comprise opportunities for semi-skilled workers, and approximately 30% will comprise opportunities for skilled workers. Employment opportunities include safety and security staff, operation and monitoring; and maintenance crew. Maintenance activities will be carried out throughout the lifespan of the project, and include washing of solar panels, vegetation control, and general maintenance around the solar energy facility. The impact is likely to be positive, local-to-National in extent, long-term, and of medium significance.			
<b>Gaps in knowledge and recommendations for further study</b> » Information on exact direct and indirect employment opportunities and skills development programmes likely to be created during operation.			

<b>Impact</b> Development of non-polluting, renewable energy infrastructure.
<b>Desktop Sensitivity Analysis of the Site:</b> No sensitivity identified.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Development of non-polluting, renewable energy infrastructure.	Positive – Increasing the contribution of the RE sector to the local economy would contribute to the diversification of the local economy and provide greater economic stability.	The impact will occur at local, regional, and National levels.	None identified.
<p><b>Description of expected significance of impact</b></p> <p>The generation of renewable energy will contribute to South Africa's electricity market, and may contribute to the diversification of the local economy. The growth in the RE sector as a whole could introduce new skills and development into the area. The impact is likely to be positive, local-to-National in extent, long-term, and of medium significance.</p>			
<p><b>Gaps in knowledge and recommendations for further study</b></p> <p>» Information on the proposed project's contribution towards diversifying the local economy.</p>			

<p><b>Impact</b></p> <p>Contribution to local economic development and social upliftment.</p>			
<p><b>Desktop Sensitivity Analysis of the Site:</b></p> <p>No sensitivity identified.</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Benefits to the local area from Socio-Economic Development (SED) / Enterprise Development (ED) programmes and community trusts from REIPPP Programme social responsibilities.	Positive – The creation of employment opportunities, skills development, and the proposed projects contributions to local economic development will assist to an extent in both alleviating unemployment levels within the area, and improving the quality of life.	The impact will occur at local, regional, and National levels.	None identified.
<p><b>Description of expected significance of impact</b></p> <p>Under the REIPPP Programme, renewable energy projects are required to contribute to local economic development in the area. Awarded projects are required to spend a certain amount of their generated revenue (as defined in the agreement with DoE) on Socio-Economic Development (SED) and Enterprise Development (ED) and share ownership in the project company with local communities. The impact is likely to be positive, local-to-National in extent, long-term, and of high significance.</p>			
<p><b>Gaps in knowledge and recommendations for further study</b></p> <p>» Information on the project's proposed contributions.</p>			

<b>Impact</b>			
Visual and sense of place impacts.			
<b>Desktop Sensitivity Analysis of the Site:</b>			
No sensitivity identified.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Sense of place impacts from a social perspective associated with the operation phase of the solar energy facility and associated infrastructure.	Negative – The project could alter the areas sense of place which could negatively impact on sensitive receptors.	The impact will occur at a local level.	None identified.
<b>Description of expected significance of impact</b>			
The presence of the solar energy facility could impact the “sense of place” for the local community. The Visual Impact Assessment (VIA) undertaken as part of the Scoping Phase determined that the visibility of the proposed project is likely to be limited, and it is therefore unlikely to have a major influence on the character of the landscape as experienced by the majority of people. The impact is therefore likely to be negative, local in extent, short-term, and of low significance; given the proximity of the project to existing mining operations and waste rock dumps, and the already industrialised nature of the surrounding area.			
<b>Gaps in knowledge and recommendations for further study</b>			
<ul style="list-style-type: none"> <li>» Potential sensitive visual receptors need to be identified.</li> <li>» Visual impact assessment to inform impact on sense of place.</li> </ul>			

<b>Impact</b>			
Impacts associated with the loss of agricultural land.			
<b>Desktop Sensitivity Analysis of the Site:</b>			
No sensitivity identified.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
The development footprint on which the solar energy facility will be developed will be removed from agricultural production.	Negative – Impacts associated with loss of agricultural land due to occupation of land by the solar energy facility.	The impact will occur at a local level.	None identified.
<b>Description of expected significance of impact</b>			
The development of the proposed project on an agricultural property (which is currently being utilised for grazing purposes) would result in an area of land required to support the development footprint being removed from potential agricultural production and could impact on grazing potential. In the event that the land on which the project is proposed is being productively utilised for agricultural purposes this could have a negative impact on agricultural jobs, and implications in terms of food production and security. The impact is likely to be negative, local in extent, long-term, and of low significance. The applicability of this impact would need to be determined following the completion of a soils, land use, land capability, and agricultural potential impact assessment.			



**Gaps in knowledge and recommendations for further study**

- » The current land use and agricultural potential of the area likely to be removed from agricultural production needs to be determined.

**5.3. Decommissioning Phase Impacts**

Potential impacts associated with the decommissioning phase of a project can be expected to be the same as potential impacts associated with the construction phase of a project, but to a lesser extent. This is due to the fact that the project site would have previously undergone transformation and disturbance, and experienced impacts of a social nature such as the creation of employment opportunities, economic multiplier effects, in-migration of people, safety and security impacts, impacts on daily living and movement patterns, nuisance impacts, and visual and sense of place impacts during construction. Potential impacts associated with the decommissioning phase of a project will also usually be of a short duration (i.e. equivalent to the length of the decommissioning phase) and temporary in nature, but could have long-term effects on the social environment if not managed appropriately.

## 6. CONCLUSION AND RECOMMENDATIONS

This SIA Scoping Report focused on the collection of available secondary information in order to provide a social baseline against which potential social impacts that may be associated with the proposed development of Hyperion Solar Development 2 (including associated infrastructure) could be identified. A summary of the potential positive and negative impacts identified for the detailed design and construction, and operation phase are presented in **Table 6.1** and **Table 6.2**.

**Table 6.1: Summary of potential social impacts identified for the detailed design and construction phase.**

Impact	Status	Significance
Creation of direct and indirect employment and skills development opportunities.	Positive	Medium
Economic multiplier effects	Positive	Medium
In-migration of people (non-local workforce and jobseekers).	Negative	Medium
Safety and security impacts	Negative	Medium
Impacts on daily living and movement patterns	Negative	Low
Nuisance impact (noise and dust)	Negative	Low
Visual and sense of place impacts	Negative	Low

**Table 6.2: Summary of potential social impacts identified for the operation phase.**

Impact	Status	Significance
Direct and indirect employment and skills development opportunities	Positive	Medium
Development of non-polluting, renewable energy infrastructure	Positive	Medium
Contribution to Local Economic Development and Social Upliftment	Positive	High
Visual and sense of place impacts	Negative	Low
Impacts associated with the loss of agricultural land.	Negative	Low

The potential social impacts identified for the project, and listed within **Table 6.1** and **Table 6.2**, have been identified based on an assessment of available information and the current understanding of the proposed project; and are not exhaustive. The possibility therefore exists that additional impacts may be identified as part of the public review period, or during the collection of primary data as part of the EIA level SIA. All potential social impacts identified as part of the SIA process will be assessed in detail during the EIA Phase.

### 6.1. Conclusion

A number of potential positive and negative social impacts have been identified for the project, which require further investigation as part of the EIA phase. Based on the findings of this SIA Scoping Report, no red flags or fatal flaws have been identified from a social perspective which could preclude the development of Hyperion Solar Development 2 on the Remaining Extent of the Farm Lyndoch 432, in the Gamagara LM, of John Taolo Gaetsewe DM, Northern Cape Province, pending the successful completion

of the EIA and the receipt of Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA).

#### **6.1.1. Recommendations for Further Study (Plan of Study for EIA)**

It is recommended that a full EIA level SIA be conducted as part of the EIA phase. The following activities should be undertaken as part of this process:

- » Review comments pertaining to social impacts received from members of the public, key stakeholders, and any organ of state during the public review of the Scoping Report. Where applicable, comments received from the DEA on the Final Scoping Report (FSR), which may pertain to social impacts or have relevance to the SIA, will also be reviewed.
- » Collect primary data during a site visit. Interview directly affected and adjacent landowners, and key stakeholders to obtain primary information related to the project site, social environment, and to gain their inputs on the proposed project and its perceived social impact (positive and /or negative).
- » Update the baseline information with information received during the site visit, as well as any additional information received from the client, or updates to the project description.
- » Assess impacts identified for the project in terms of their nature, extent, duration, magnitude, probability, status, and significance; as well as the degree to which the impact can be reversed, may cause irreplaceable loss of resources, and can be mitigated.
- » Identify mitigation measures with which to reduce negative impacts, and enhance positive impacts for inclusion in the Environmental Management Programme (EMPr). As far as possible the mitigation hierarchy of "avoid, minimise, and reduce" will be followed in the mitigation of potential negative impacts.
- » Identify any conditions for inclusion in the Environmental Authorisation (EA).
- » Identify any monitoring requirements for inclusion in the EMPr or EA.
- » Provide a reasoned opinion regarding the acceptability of the project, and whether the proposed project should be authorised.
- » Prepare a SIA Report for inclusion in the EIA Report to be prepared for the project.
- » Subject the SIA Report prepared for the project for inclusion in the EIA Report to external peer review.

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