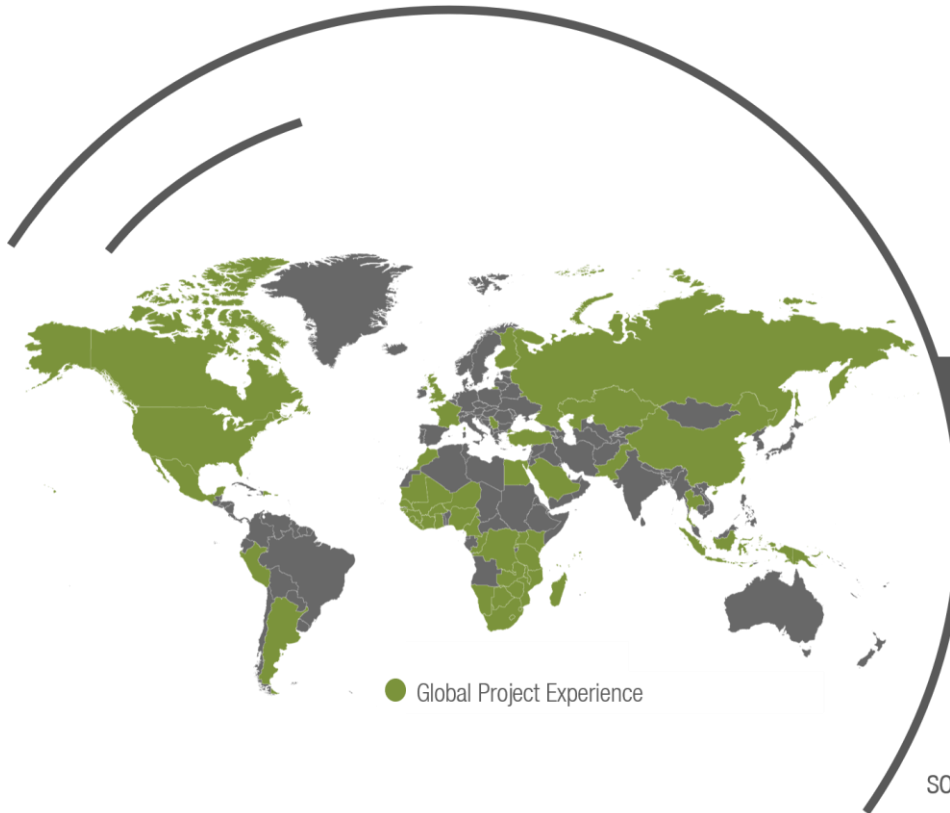


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solutions throughout the resources sector

Arnot South Environmental Authorisation and Water Use License Application

Social Impact Assessment (SIA)

Prepared for:

Universal Coal PLC

Project Number:

UCD6802



July 2021



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This document has been prepared by Digby Wells Environmental.

Report Type:	Social Impact Assessment (SIA)
Project Name:	Arnot South Environmental Authorisation and Water Use License Application
Project Code:	UCD6802

Name	Responsibility	Signature	Date
Shantal Beharie	Report compiler		June 2021
Janet Mkhabela	Report reviewer		July 2021

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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; and

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.



Signature of the Specialist

22 July 2021

Date

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EXECUTIVE SUMMARY

Digby Wells Environmental (hereafter Digby Wells) has been requested by Universal Coal PLC undertake the environmental-legal application processes to authorise the proposed underground Arnot South operation. The Prospecting Right, MP 30/5/1/1/2360 PR was issued to Exxaro Resources, and the Applicant for this process will be Exxaro Coal Mpumalanga (Pty) Ltd. As part of the Environmental Impact Assessment (EIA) process, the Social Impact Assessment (SIA) assesses the social consequences that may follow a development and avoid or lessen the effects of negative impacts while understanding and enhancing the potential benefits that may arise from the Project.

Project Description

The proposed Arnot South Project is located within the Witbank Coalfield of Mpumalanga Province. The Project area lies on the eastern margin of the Witbank Coalfield and comprises sediments of the coal-bearing Ecca Group of the Karoo Basin. The Witbank Coalfield falls within the Vryheid Formation of the Ecca Group. Exxaro proposes to extract coal through underground mining methods with a confirmed Life of Mine (LoM) of 17 years. The mineral reserve consists of one economically mineable underground block (No. 2 coal seam), producing approximately 2.4 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal for approximately 17 years. Further drilling will be required to confirm a resource to the south of the Mining Right area. The potential future resource of the remaining ROM coal is approximately 32,912,300 tonnes, allowing an additional mining period of approximately 13 years.

Areas of that are likely to experience Project impacts were identified and categorised as follows:

Regional study area - This comprises of an area of induced impacts mostly associated with economic benefits and include the entire Mpumalanga province.

Secondary study area - the area likely to experience impacts related to the economic pull exerted by the Project. These areas are comprised of Gert Sibande District Municipality (GSDM), Nkangala District Municipality (NDM), Chief Albert Luthuli Local Municipality (CALLM), and Steve Tshwete Local Municipality (STLM).

Primary study area - these are areas of direct impact and are likely to experience the most project related effects due to their proximity in relation to the project site. These include:

- Wards 3, 7 (in STLM), and 21 (in CALLM)
- The entire farm Groblersrecht 175IS
- Schoonoord164S
- Mooiplaats165IS
- Helpmakaar 168 IS
- Weltevreden 174 IS
- Op Goeden Hoop 205 I
- Nooitgedacht 493 JS
- Klipfontein 495 JS

- Vlakfontein 166IS
- Tweefontein 203 IS
- Vryplaats 16
- Vaalwater 173 IS
- Leeuwan 494 JS

Summary of the Baseline Findings

Mpumalanga Province is one of the nine provinces that form the Republic of South Africa. The province is the second smallest province in country (76,495 km²) after Gauteng (18 176 km²). Even though the province is small in terms of geographical land size, it has the fourth largest economy in the country. The province is subdivided into three (3) district municipalities which are Nkangala District Municipality (NDM), Gert Sibande District Municipality (GSDM) and Ehlanzeni District Municipality (EDM).

The two project affected districts (i.e., GSDM and NDM) are both the largest in terms of population size and the smallest and largest, in terms of their land sizes, respectively. GSDM is divided into seven local municipalities; of which Chief Albert Luthuli Local Municipality (CALLM) is the second smallest in terms of population size, with 187, 830 residents. In turn, NDM is divided into six local municipalities of which Steve Tshwete Local Municipality (STLM) is the third largest in terms of population size with 278,749 residents. The STLM is further divided into 29 wards.

Most of the population (94%) within the province are Black African, and the predominantly spoken languages are IsiZulu, which is followed by siSwati. A similar pattern in terms of ethnicity and languages as at a provincial level are observed within districts and local municipalities. Within the primary study area, notable characteristics of Ward 21 are as follows:

- The ward has the largest proportion of the population compared to Wards 3 and 7;
- The largest land area (1995.7 km²) compared to Wards 3 and 7; and
- The highest number of child-headed households amongst the three Wards.

The average household size across the primary study area is 3.7 persons per household. Furthermore, the predominant ethnic groups are Black Africans and Whites.

Approximately 36% have completed high school (i.e., matric or Grade 12), whilst 32% of the population within the Mpumalanga Province have completed some secondary education. Education trends within the NDM depicted an increase in the number of people who completed matric or Grade 12 (about 68%). According to the interviewees, most of the commercial farmers in the primary study area the majority (40%) have only completed Grade 12 level education except for two farmers who have attained a bachelor's degree. Most stated that they do not need higher education to operate a farm as this is a skill passed onto them from multiple generations of farmers in the family.

The provincial economy is dominated by the mining sector specifically coal mining, followed by community services, trade sector and heavy industries which support the mining sector as well as the power generation sectors (mostly Eskom power plants). The heavy industry sector does not only support mining but the commercial agricultural sector as well.

Within the primary study areas, agriculture is the most predominant economic, livelihood and income source for the households. For most of the interviewees (63%), agricultural activities serve as the primary source of their income, whilst for 31% it serves as both a source of income and subsistence. Finally, for six percent (6%) of the interviews agricultural activities are solely for subsistence purposes.

The sector is characterised by both crop farming and livestock production (specifically sheep and cattle). Most of the farms in the area are on privately owned land that has been owned by multiple generations of farmers; whilst others are being leased to farmers by mining companies.

Access to basic services such as water, electricity, sanitation, and waste disposal services are described as follows:

- On average 87% of the households have access to **water** from a regional or local service provider;
- An average 69% of households have access to prepaid **electricity**;
- An average of 51% have access to flush / chemical **toilets**, with CALLM households have access to flush or chemical toilets while 43% uses ventilated pit latrines; and
- An average of 58% of households have access to formal **waste disposal** by local municipality except for households in CALLM whereby 70% have no access to formal waste disposal system.

Summary of Social Impacts

The assessment of the socio-economic impacts identified for the proposed Project is based on an impact rating process designed to provide a numerical rating of the significance of each impact. The significance rating process follows the established impact / risk assessment formula where significance is a function of the consequence of an event multiplied by the probability of its occurrence.

Table 1-1: Summary of Potential Social Impacts

Phase	Potential Impacts	Pre-Mitigation	Post-Mitigation
Construction	Creation of Temporary Employment Opportunities	Minor (Positive)	(Minor Positive)
	Creation of Opportunities within the Supply Chain	Minor (Positive)	Moderate (Positive)



Phase	Potential Impacts	Pre-Mitigation	Post-Mitigation
	Increased incidences of Livestock Theft	Moderate (Negative)	Minor (Negative)
	Impacts Associated with Community Health, Safety and Security	Moderate (Negative)	Minor (Negative)
	Loss of Agricultural Land	Moderate (Negative)	Minor (Positive)
	Potential Physical Displacement of Farm Dweller Households	Moderate (Negative)	Minor (Negative)
	Change Sense of Place	Moderate (Negative)	Minor (Negative)
Operational	Creation of long-Term Employment Opportunities, Skills Development and Work Experience	Minor (Positive)	Minor (Positive)
	Opportunities and Capabilities within the Supply Chain	Minor (Positive)	Moderate (Positive)
	Changes to the Water Quality	Minor (Negative)	Minor (Negative)
	Impacts Associated with Surface Subsidence	Moderate (Negative)	Minor (Negative)
	Occupational Health Risks to Mine Workers	Moderate (Negative)	Minor (Negative)
	Economic Multiplier	Minor (Positive)	Moderate (Positive)
	Social Development as Part of Social and Labour Plan (SLP)	Minor (Positive)	Moderate (Positive)
Decommissioning	Economic Boom- Bust After the Operation Phase	Moderate (Negative)	Minor (Negative)

Recommendations

From a socio-economic perspective, it is recommended that the proposed Project should proceed. This recommendation is however subject to the following conditions:

- The mitigation and enhancement measures listed for each impact, negative and positive, must be implemented; especially those relating to:
 - Potential loss of agricultural land;
 - Potential physical displacement of Farm Dweller Households;
 - Impacts associated with surface subsidence;
 - Changes to water quality; and
 - Impacts associated community health, safety, and security.
- A social management plan and social monitoring plan must be developed to manage and monitor the implementation of these measures and recommend corrective measures, where necessary; and
- Implement mitigation measures recommended in other specialist studies, including traffic, dust, blasting, air quality, noise, ground - and surface water, that are likely to have socio-economic impacts.

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ACRONYMS, ABBREVIATIONS AND DEFINITION

BBBEE	Broad-based Black Economic Empowerment
CALLM	Chief Albert Luthuli Local Municipality
COVID-19	Coronavirus
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan
IDP	Integrated Development Plan
IFC	International Finance Corporation
MP	Mpumalanga Province
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MRA	Mining Rights Area

MWP	Mining Works Programme
NDM	Nkangala District Municipality
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NIHL	Noise induced hearing loss
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RoM	Run of Mine
SAPs	South African Police Services
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SMMEs	Small, Medium and Micro Enterprises
SMP	Subsidence Management Plan
StatsSA	Statistics South Africa
STLM	Steve Tshwete Local Municipality
TB	Tuberculosis

Legal Requirement		Section in Report
(1)	A specialist report prepared in terms of these Regulations must contain-	
	details of-	Page (ii)
(a)	(i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page (ii)
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 3
cA	And indication of the quality and age of the base data used for the specialist report;	Section 7
cB	A description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	Section 9
(d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	-

Legal Requirement		Section in Report
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of the equipment and modelling used;	Section 6
(f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure inclusive of a site plan identifying site alternative,	Section 9
(g)	an identification of any areas to be avoided, including buffers;	-
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	-
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 5
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 8 to Section 9.4
(k)	any mitigation measures for inclusion in the EMPr;	Section 10
(l)	any conditions/aspects for inclusion in the environmental authorisation;	
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 11
(n)	a reasoned opinion (Environmental Impact Statement) -	
	whether the proposed activity, activities or portions thereof should be authorised; and	Section 14
	if the opinion is that the proposed activity, activities, or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 11
(o)	a description of any consultation process that was undertaken during preparing the specialist report;	Section 7.2
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Section 0
(q)	any other information requested by the competent authority.	-

1. Introduction

Digby Wells Environmental (hereafter Digby Wells) has been appointed to undertake the environmental-legal application processes to authorise the proposed underground Arnot South operation. The Prospecting Right, MP 30/5/1/1/2360 PR was issued to Exxaro Resources, and the Applicant for this process will be Exxaro Coal Mpumalanga (Pty) Ltd. As part of the Environmental Impact Assessment (EIA) process, the Social Impact Assessment (SIA) assesses the social consequences that may follow a development and avoid or lessen the effects of negative impacts while understanding and enhancing the potential benefits that may arise from the Project.

2. Project Description

The proposed Arnot South Project is located within the Witbank Coalfield of Mpumalanga Province. The Project area lies on the eastern margin of the Witbank Coalfield and comprises sediments of the coal-bearing Ecca Group of the Karoo Basin. The Witbank Coalfield falls within the Vryheid Formation of the Ecca Group. Exxaro proposes to extract coal through underground mining methods with a confirmed Life of Mine (LoM) of 17 years. The mineral reserve consists of one economically mineable underground block (No. 2 coal seam), producing approximately 2.4 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal for approximately 17 years. Further drilling will be required to confirm a resource to the south of the Mining Right area. The potential future resource of the remaining ROM coal is approximately 32,912,300 tonnes, allowing an additional mining period of approximately 13 years.

The Arnot South Prospecting Area is approximately ten kilometres (km) east of Hendrina, 25 km west of Carolina, and 50 km southeast of Middelburg. The Project is near two of Eskom's power stations, namely Hendrina and Arnot. There are five farm homesteads situated within the planned underground mining area, and a small watercourse runs in a northeast direction across the northern half of the mining area. The land is currently mainly used for game farming. The target area for mining lies mainly on the farms Weltevreden 174 IS, Mooiplaats 165 IS, Vlakfontein 166 IS, and Schoonoord 164 IS.

The Prospecting Right was renewed in September 2017 and lapsed on 10 September 2020. However, a Mining Right Application (MRA) and Mine Works programme (MWP) for underground mining were submitted to the Department of Mineral Resources and Energy (DMRE) prior to the lapsing date (on 8 September 2020). The Applicant was issued reference number MP 30/5/1/2/2/10292 MR.

The Mining Right boundary includes the following farms:

- Groblersrecht 175 IS
- Schoonoord 164 IS
- Mooiplaats 165 IS
- Vlakfontein 166 IS

- Tweefontein 203 IS
- Vaalwater 173 IS
- Weltevreden 174 IS
- Nooitgedacht 493 JS
- Leeuwpan 494 JS
- Vryplaats 163 LQ
- Helpmakaar 168 IS
- Op Goeden Hoop 205 IS
- Klipfontein 495 JS

The target area for mining and mining-related infrastructure lies mainly on the farms Weltevreden 174 IS, Mooiplaats 165 IS, Vlakfontein 166 IS, and Schoonoord 164 IS. The farms are located within the jurisdictions of Steve Tshwete Local Municipality (STLM) and Chief Albert Luthuli Local Municipality (CALLM), situated in the Nkangala District Municipality (NDM) and Gert Sibanda District Municipality (GSDM), respectively, in the Mpumalanga Province.

2.1. Alternatives Considered

2.1.1. Technology Alternatives

The proposed mine will be an underground mine and bord and pillar mining with continuous miners and shuttle cars will be used. There are two main types of washing processing technology which could be used for coal beneficiation, namely: dry processing and wet washing. The preferred technology for the Arnot South Project is wet washing. The coal shall be beneficiated through a double-stage dense medium washing plant to produce export and Eskom products. The washing plant feed conveyor shall feed a 3.0 m by 6.0 m single deck horizontal desliming screen where the 50 mm by zero mm shall be wet screened on a 1.0 mm deck.

2.1.2. The “No-Go Alternative”

The No-go alternative is the option of not mining coal in the area. This option also means that all potential negative impacts associated with the proposed mine and its associated infrastructure would not occur. However, the potential benefits associated with the Project would also not occur. According to the Nkangala District Environmental Management Framework, the area within which the proposed Project falls has been earmarked for mining and power generation development as these two sectors currently drive the economic value of production in the Project area. If the Project were not to proceed, the additional economic activity, skills development and available jobs would not be created, the coal reserve would remain unutilised and the economic activities would continue as at present, with little economic growth developing in the region. With the proven coal reserve in the Witbank Coalfield, prohibiting the Project from proceeding will not only impede valuable socio-economic opportunities in the Arnot South Project area but South Africa as a whole.

2.2. Proposed Infrastructure and Activities

The construction, operation and decommissioning phases of the Project shall comprise of the activities in Table 2-1. These Project activities will be used for the impact assessment.

Table 2-1: Project Phases and Associated Activities

Project Phase	Activity
Construction Phase	Removal of vegetation / topsoil for establishment of mining and linear infrastructure
	Diesel storage and explosives magazine
	Construction of additional infrastructure, and ventilation fans (Noise generation/ increased noise level)
	Construction of access road and haul roads
	Stockpiling of soils, rock dump and discard dump establishment.
Operational Phase	Ventilation fans and infrastructure area containing stockpile areas
	Underground blasting
	Maintenance of haul roads, pipelines, machinery, water, effluent and stormwater management infrastructure and stockpile areas.
	Removal of rock(blasting)
	Concurrent rehabilitation as mining progresses
Decommissioning Phase	Demolition and removal of infrastructure
	Post-closure monitoring and rehabilitation
	Closure of the underground mine

3. Terms of Reference

The Terms of Reference (ToR) for the SIA are to:

- Describe the baseline socio-economic characteristics of the proposed Project site and surrounding area.
- Identify, describe, and assess the expected significance of potential socio-economic impacts that may arise due to the implementation of the project.
- Recommend appropriate mitigation measures and management actions to avoid or minimise potential negative impacts, and to enhance the positive impacts associated with the proposed Project.

4. Relevant Legislation, Standards and Guidelines

The Social Impact Assessment has been completed in terms of NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) Appendix 6: Specialist Reports. Where applicable, the Report uses references from the International Finance Corporation's (IFC) Performance Standards.

5. Assumptions, Limitations and Exclusions

The constraints and limitations to the impact assessment are presented in Table 5-1 below.

Table 5-1: Applicable Constraints and Limitations and their Consequences

Constraint or Limitation	Consequence
The socio-economic baseline relies on publicly available information sourced from Statistics South Africa website, district, and local municipalities' Integrated Development Plans. Therefore, most of the data is dated especially the population and household data sets.	Some of the data used on this report may be outdated owing to the last official census conducted in 2011 and 2016.
Primary data sourced from directly and indirectly affected landowners who were willing to participate in key informant interviews.	The information collected cannot be widely generalised as the individual landowners' situations may differ.
This SIA identifies impacts related to potential physical and economic displacement of households; however, it does not quantify the impacts as this was not part of the Scope of Work.	Although potential displacement impacts due to land acquisition have been identified, a detailed Resettlement Action Plan may be required prior to the commencement of the project based on the land access requirements.

6. Methodology

The International Finance Corporation (or IFC) defines the project area of influence as an area likely to be affected by the project, its associated infrastructure and may be impacted indirectly or by unplanned events associated with the project. In the context of this Project, these areas have been termed as follows: the regional, secondary, and primary study areas. These are defined in Table 6-1.

Table 6-1: Defining Social Study Area

Area of influence	Definition
Regional study area	This comprises of an area of induced impacts mostly associated with economic benefits and include: <ul style="list-style-type: none"> The entire Mpumalanga province.

Area of influence	Definition
Secondary study area	<ul style="list-style-type: none"> • The area likely to experience impacts related to the economic pull exerted by the Project. These include Gert Sibande District Municipality (GSDM); and • Nkangala District Municipality (NDM), Chief Albert Luthuli Local Municipality (CALLM), and Steve Tshwete Local Municipality (STLM).
Primary study area	<p>These are areas of direct impact and are likely to experience the most project related effects due to their proximity in relation to the project site. These areas are comprised of Wards 3, 7 (in STLM), and 21 (in CALLM). As well as the following farms:</p> <ul style="list-style-type: none"> • The entire farm Groblersrecht 175IS; • Schoonoord164S; • Mooiplaats165IS; • Vlakfontein 166IS; • Tweefontein 203 IS; • Vryplaats 16; • Vaalwater 173 IS; • Helpmakaar 168 IS; • Weltevreden 174 IS; • Op Goeden Hoop 205 I; • Nooitgedacht 493 JS; • Klipfontein 495 JS; and • Leeuwpan 494 JS).

The different study areas are also depicted in the



Figure 6-1 and Figure 6-2.

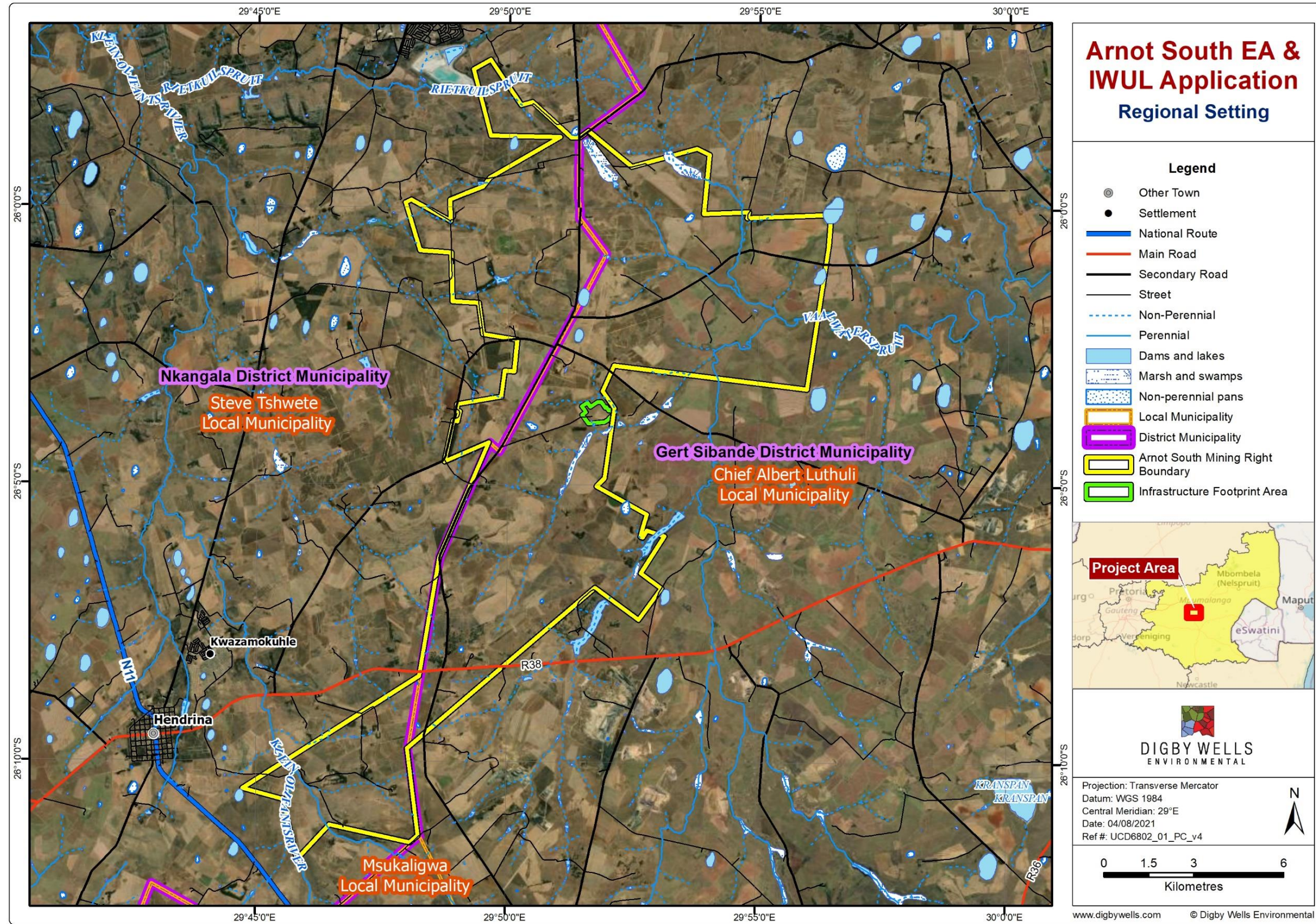


Figure 6-1: Regional Study Area

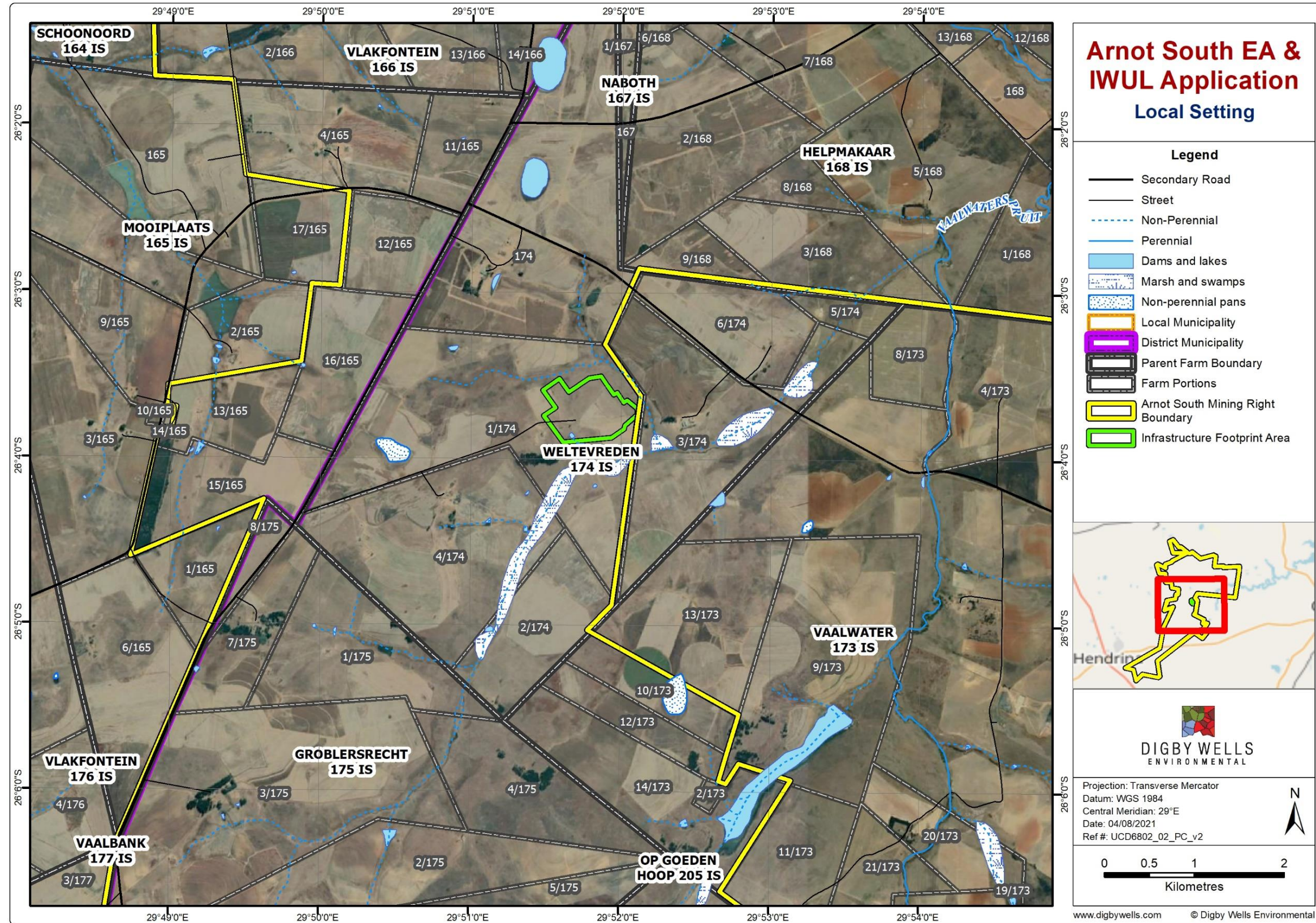


Figure 6-2: Primary Study Area

7. Data Collection

The information presented in this report was obtained through the following data collection activities:

7.1. Secondary Data Collection

A desktop review of available documents to obtain relevant socio-economic baseline information on the defined study areas. Documents reviewed include:

- Provincial reports, district and local municipal IDPs and LED Plans;
- StatsSA census and community survey data from Wazimap (2011 and 2016) as the primary source of desktop data to prepare the baseline socio-economic profiles of potentially affected areas; and
- Previous studies and reports concerning the proposed Project, specifically the Environmental and Socio-Economic Scoping report and SLP compiled for the proposed Project; and
- Available maps and satellite imagery.

7.2. Primary Data Collection

Primary data was collected in May 2021 through key informant interviews with the following stakeholders:

- Directly and indirectly affected landowners;
- Community members; and
- Ward Councillors from ward 3, 7 and 21.

Consideration of information from the EIA documentation produced as part of the EIA for the Project was reviewed to identify potential bio-physical impacts that might have significant, although indirect, socio-economic implications.

7.3. Compilation of a Socio-Economic Baseline Profile

Based on the information collected through the desktop review, engagement with and information from other specialist studies, a socio-economic baseline profile was compiled for the respective study areas defined in Section 3.1 Topics considered as part of this profile include (but are not limited to) the following:

- Demographic overview;
- Education;
- Economic and livelihoods overview; and
- Household access to basic services.

7.4. Analysis and Reporting

The assessment of the socio-economic impacts identified for the proposed Project is based on an impact rating process designed to provide a numerical rating of the significance of each impact. The significance rating process follows the established impact / risk assessment formula where significance is a function of the consequence of an event multiplied by the probability of its occurrence. A detailed description of the impact assessment methodology used is presented in Appendix A.

The following steps were undertaken as part of the impact assessment:

- Impact identification and assessment: Based on the anticipated interaction between specific and / or collective project activities and baseline socio-economic conditions, several potential impacts were identified for each phase of the Project; and
- Impact mitigation: realistic measures were developed aimed at mitigating, and if possible, avoiding the negative social impacts, and enhancing the benefits of positive social impacts.

8. Findings and Discussion

This Section presents the socio-economic characteristics of the regional, secondary, and primary study areas.

8.1. Demographic Overview

Mpumalanga Province is one of the nine provinces that form the Republic of South Africa. The province is the second smallest province in country (76,495 km²) after Gauteng (18 176 km²). Even though the province is small in terms of geographical land size, it has the fourth largest economy in the country. The province is subdivided into three (3) district municipalities which are Nkangala District Municipality (NDM), Gert Sibande District Municipality (GSDM) and Ehlanzeni District Municipality (EDM).

In terms of population size, the province is comprised of 4,335,963 people who reside in 1,238,861 households. The average household size in the province is 3.5 persons per households. Less than one percent of the households within the province were reportedly headed by children, displaying a total of 10,369 households headed by children in the province.

The two project affected districts (i.e., GSDM and NDM) are both the largest in terms of population size and the smallest and largest, in terms of their land sizes, respectively. GSDM is divided into seven local municipalities; of which Chief Albert Luthuli Local Municipality (CALLM) is the second smallest in terms of population size, with 187, 830 residents. In turn, NDM is divided into six local municipalities of which Steve Tshwete Local Municipality (STLM) is the third largest in terms of population size with 278,749 residents. The STLM is further divided into 29 wards.

Furthermore, NDM had the largest population density compared to the provincial level owing to the availability of minerals, natural resources, and the Maputo Corridor which has translated to the district's economic growth and strength¹. This was followed by STLM, having the second highest population density likely due coal mining activities within the broader local municipal area which attracts a sizeable number of job and business seekers.

Most of the population (94%) within the province are Black African, and the predominantly spoken languages are IsiZulu, which is followed by siSwati.

A similar pattern in terms of ethnicity and languages as at a provincial level are observed within districts and local municipalities. At a local municipal level, the most noticeable differences are with regards to the languages spoken in each namely: IsiZulu is most spoken within STLM, and siSwati is predominant within CALLM.

Within the primary study area, notable characteristics of Ward 21 are as follows:

- The ward has the largest proportion of the population compared to Wards 3 and 7;
- The largest land area (1995.7 km²) compared to Wards 3 and 7; and
- The highest number of child-headed households amongst the three Wards.

The average household size across the primary study area is 3.7 persons per household. Furthermore, the predominant ethnic groups are Black Africans and Whites.

Figure 8-2 provides an overview of the indicative population and household statistics for the primary and secondary study areas.

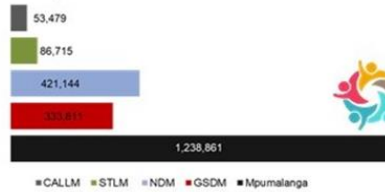
¹ Nkangala District Profile, 2020

Population size



No. of Households


Population size



Ethnicity – 92% average is Black African


	MP	GSDM	NDM	STLM	CALLM
	94%	92%	91%	82%	99%

Number of households




	MP	GSDM	NDM	STLM	CALLM
	1,238,861	333,811	421,144	86,715	53,479

Average household size



	MP	GSDM	NDM	STLM	CALLM
	3.5	3.4	3.4	3.8	3.2

Number of child-headed households

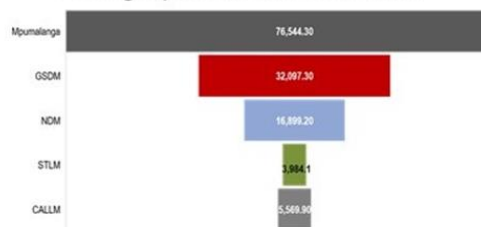


	MP	GSDM	NDM	STLM	CALLM
	0.94%	0.78%	0.65%	0.38%	1.29%

Mean Age



Geographical land size in m²



Population density

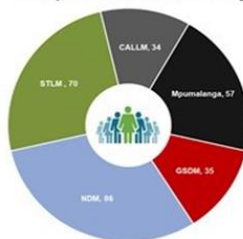


Figure 8-1: Summary of the Population and Household Indicators: Regional and Secondary Study Areas

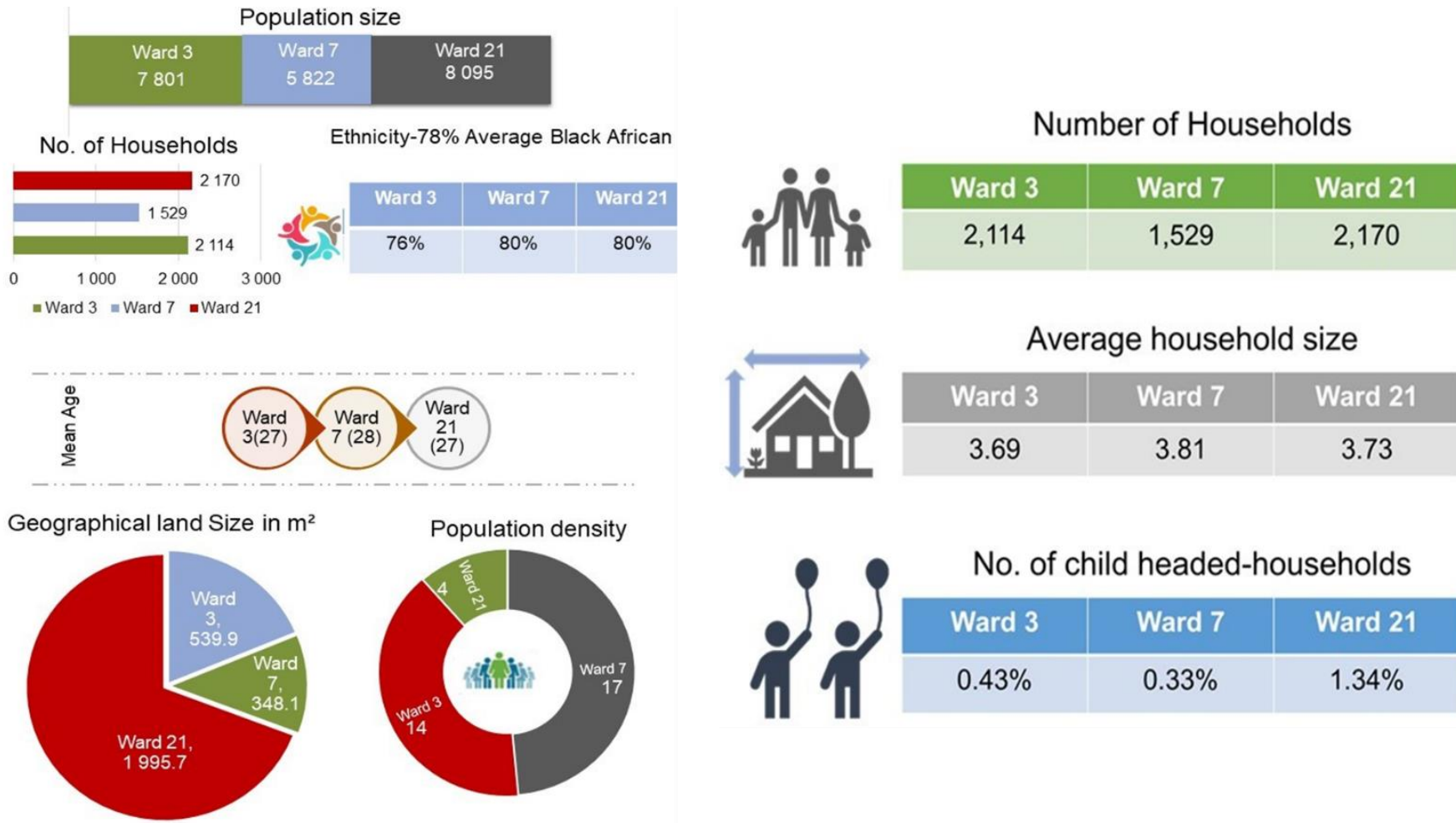


Figure 8-2: Summary of the Population and Household Indicators: Primary Study Area

8.1.1. Education

Figure 8-3 illustrates that 36% have completed high school (i.e., matric or Grade 12), whilst 32% of the population within the Mpumalanga Province have completed some secondary education. Education trends within the NDM depicted an increase in the number of people who completed matric or Grade 12 - from 161,000 in 2006 to 271,000 in 2016 (about 68%). Overall, data trends also indicate that a relatively low percentage of the population across the study areas completed higher education.

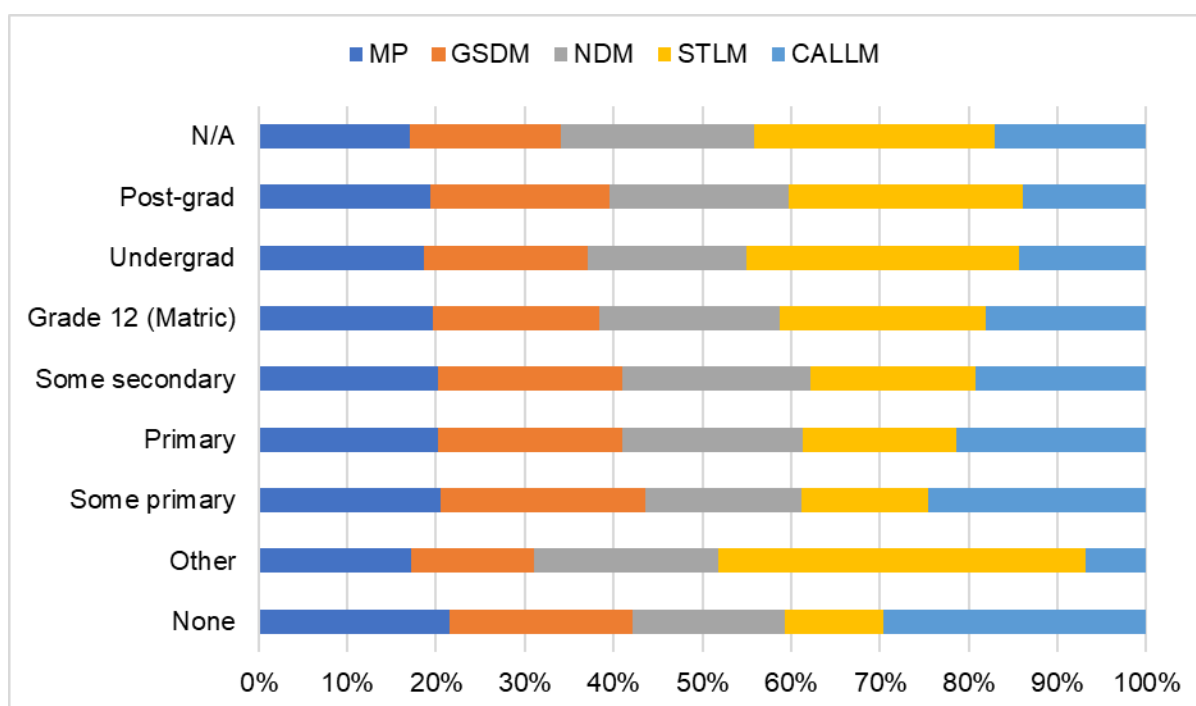


Figure 8-3: Levels of education Completed within the Regional Study Areas²

Figure 8-4 displays that (38%) of the population has attained Grade 12 (matric) within Ward 7 when compared to the population of Ward 3 (36%) and Ward 21 (27%). A relatively low percentage of the population across all three Wards have attained higher education. According to the interviewees, most of the commercial farmers in the primary study area the majority (40%) have only completed Grade 12 level education except for two farmers who have attained a bachelor’s degree. Most stated that they do not need higher education to operate a farm as this is a skill passed onto them from multiple generations of farmers in the family.

² Adapted from Wazimap, 2017

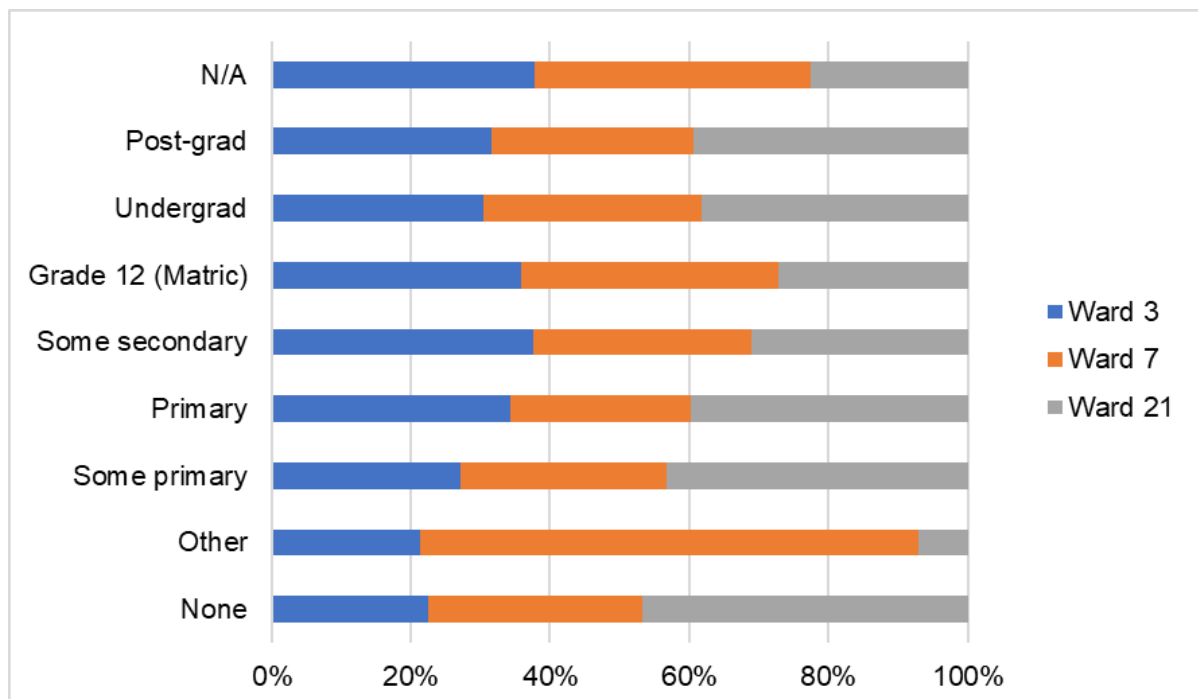


Figure 8-4: Levels of education completed within the Secondary Study Area³

8.2. Economy and Livelihoods Overview

The provincial economy is dominated by the mining sector specifically coal mining, followed by community services, trade sector and heavy industries which support the mining sector as well as the power generation sectors (mostly Eskom power plants)⁴. The heavy industry sector does not only support mining but the commercial agricultural sector as well.

It has been reported that the Mpumalanga province has the highest potential of arable land in South Africa due to highly fertile soil that are able to supports a range of farming operations. To this end, both the agricultural and mining sectors are the primary land users in the province; this is inclusive of land classified as moderate, to very high agricultural potential. Therefore, there is an increasing competition between the two sectors as most land where mineral resources are found often has high agricultural value in terms of the soil quality. Similar trends are also observed in GSDM and NDM. Other sectors of the economy are depicted in Figure 8-5 below.

³ Adapted from Wazimap, 2017

⁴ Provincial Review, 2016

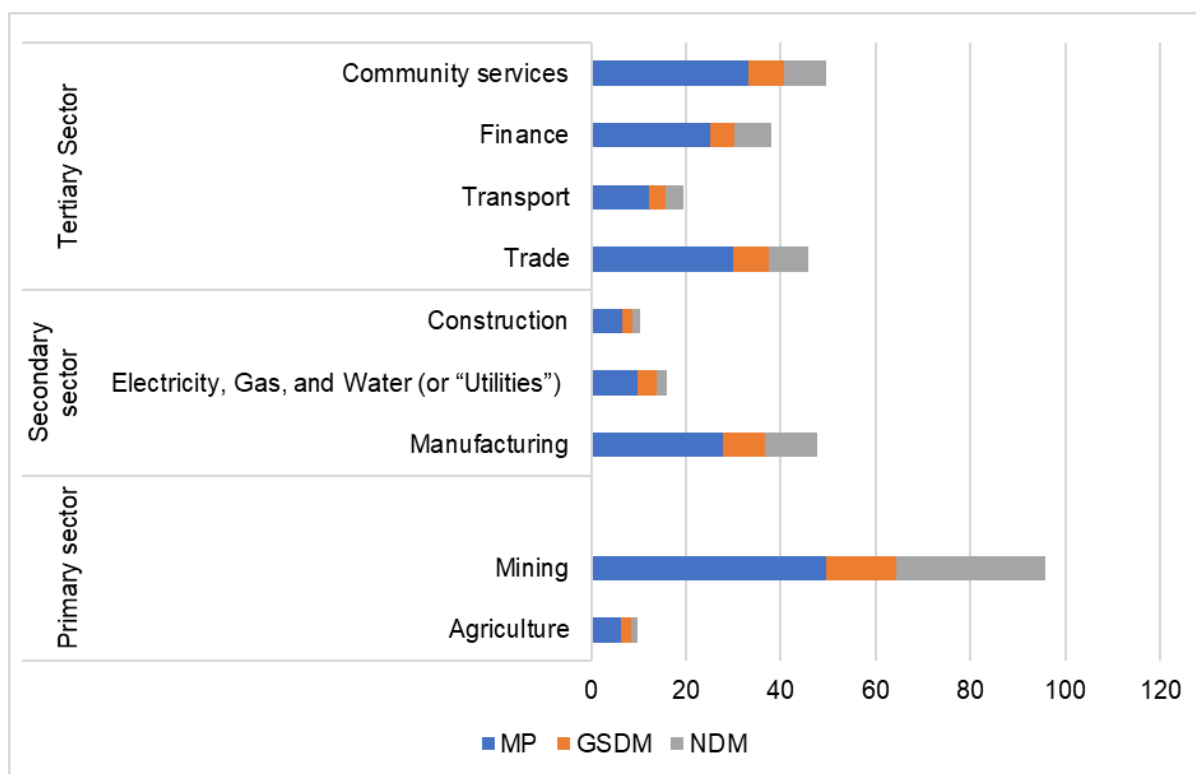


Figure 8-5: Economic sectors with the regional study area⁵

Within the primary study areas, agriculture is the most predominant economic, livelihood and income source for the households. For most of the interviewees (63%), agricultural activities serve as the primary source of their income, whilst for 31% it serves as both a source of income and subsistence. Finally, six percent (6%) of the interviews agricultural activities are solely for subsistence purposes.

The sector is characterised by both crop farming and livestock production (specifically sheep and cattle). Most of the farms in the area are on privately owned land that has been owned by multiple generations of farmers; whilst others are being leased to farmers by mining companies. Table 8-1 depicts farm portions which are being leased within the primary study area (specifically project site).

Table 8-1: Leased Agricultural Land within the Primary Study Area

Farm Name	Portion size	Details
Groblersrecht (Portion 4 leased from Exxaro)	undisclosed	Leased portion used for grazing and farming maize
Klipfontein 495 JS	192 hectares	Used for cattle, Farming crops (maize and soybeans)

⁵ Adapted from: Mpumalanga Spatial Development Framework, 2019

Farm Name	Portion size	Details
Boschmanspoort 159 IS (Portion leased from Son)	28 hectares	Livestock
Hendrina farm name not disclosed)	60 hectares	Farming crops (maize and soybeans)
Schoonoord 164 IS (Sarel van Der Merwe leases from father)	undisclosed	Farming crops (maize and soybeans)
Op Goeden Hoop 205 IS	undisclosed	
Rietkuil 491 JS (portion 14) Leased from Morne Ferrari	60 hectares	

8.2.1. Crop Production

Crop production within the primary study area is for subsistence and commercial purposes. The main crops sold commercially are maize and soybeans. The main buyers of maize include agro-processing and bulk-grain traders such as Ingrain⁶, Rand Agri⁷, African Products (Tongaat Hullett site), Lindwater Mills, and Carolina Mill. In turn, Soybeans are supplied to Rand Agri Kegel farmers, and local markets. A supplementary commercial crop grown is hay which is mostly sold to local farmers and other users. Produce such as fruit, vegetables, dairy, and eggs are mostly produced at a small scale and for household consumption only. Table 8-2 shows the various crops grown within the primary study area.

Table 8-2: Types of Crops Produced in the Primary Study Area by Type and Purpose

Commercial farming products				
Grains	Grazing pasture	Livestock	Poultry	
<ul style="list-style-type: none"> • Maize • Soybeans 	<ul style="list-style-type: none"> • Field hay/cattle feed 	<ul style="list-style-type: none"> • Sheep • Cattle 	<ul style="list-style-type: none"> • Chickens 	
Non-commercial products (Subsistence)				
Fruit	Vegetables	Meat	Dairy	Other
<ul style="list-style-type: none"> • Apples • Pears • Citrus • Peaches 	<ul style="list-style-type: none"> • Cabbage • Potatoes • Spinach • Pumpkin • Onions 	<ul style="list-style-type: none"> • Beef • Sheep 	<ul style="list-style-type: none"> • Milk 	<ul style="list-style-type: none"> • Eggs • Bee Harvesting

⁶ Ingrain is Africa's largest producer of modified starch, glucose and other related products. The maize supplied by the farmers are used by Ingrain to produce high quality products which is supplied to customers across the African continent (IngrainSA, 2020).

⁷ Rand Agri is a bulk grain trader, which means that farmers supply them directly and Rand Agri supplies this to consumers across southern Africa.

	<ul style="list-style-type: none"> • Green Chillies • Green Peppers 			
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The estimated market price of these crops vary throughout the season based on market supply and demand. The estimated prices for these crops are presented in Table 8-3.

Table 8-3: Est. Market Price of Crop Produce⁸

Type of crop	Prices
Maize	R 2, 700 to R3, 800/ ton
Soybeans	R 3, 000 to R4, 000/ ton
Hay	R 500 to R 600/ bale

8.2.2. Livestock Production

Livestock keeping is undertaken mostly for subsistence purposes and comprise mainly of cattle and sheep. The cattle are mostly sold in auctions and abattoirs. The prominent auctions are mainly held in Witbank (BKB Van Wyk Auctions) and Belfast (Badenhorst Auctioneers). Livestock auctions reportedly play a dual role i.e., income generation and for farmers to benchmark themselves against others by producing high quality livestock that fetches the highest price at the market. Livestock prices are shown in Table 8-3.

Table 8-4: Livestock Market Price⁹

Livestock	Prices
Cattle (young)	R 9,000
Pregnant Cow	R 15 000
Sheep	R 1,300 to R 1,800
Pregnant sheep	R3, 400

Commercial farmers reported that their operations were not affected by Covid-19 related restriction in 2020 nor in 2021.

⁸ Information received from personal communication with the farmers

⁹ Information received from personal communication with the farmers

8.2.3. Community Challenges

Figure 8-6 depicts socio-economic challenges identified by interviewees which they believe will be exacerbated if the mine is established in the primary study area. These challenges relate mostly to community health, safety, and security risks.

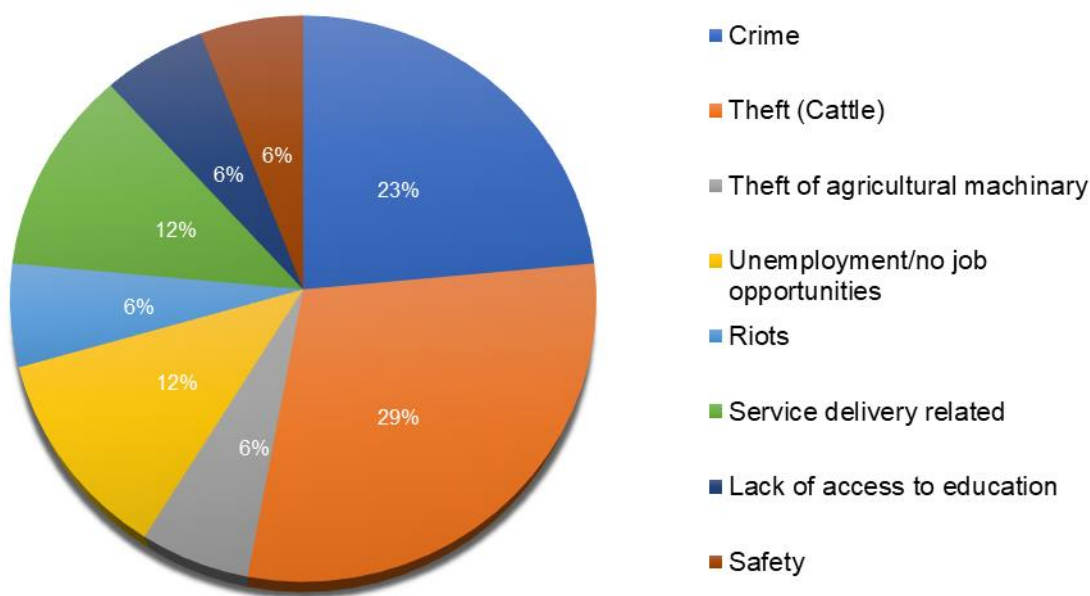


Figure 8-6: Predominant socio-economic challenges

8.2.4. Labour Force and Employment

Table 8-5 provides a summary of the employment indicators for the regional and secondary study areas. Notably, over half of the population within STLM were reportedly employed, which is higher than the provincial and the project affected districts as well as CALLM. CALLM also showed the lowest number of people who are employed compared to the other study areas as well as the percentage of economically inactive people due to age (ranges between zero- to 19-year-olds). On average, 69% of the population is employed within the formal sectors of the economy. This is attributed to the mining, agriculture, energy generation, and industrial sectors of the economy.

Table 8-5: Employment Indicators for the Regional and Secondary Study Areas¹⁰

Indicators	Mpumalanga	GSDM	NDM	STLM	CALLM
Employed	36%	39%	41%	53%	27%
Unemployed	17%	16%	18%	13%	15%
Discouraged job seekers	6%	5%	5%	3%	9%

¹⁰ Adapted from Wazimap, 2017

Indicators	Mpumalanga	GSDM	NDM	STLM	CALLM
Not economically active	39%	39%	37%	31%	50%
% Employed in the formal sector	69%	71%	69%	73%	65%

8.2.5. Annual Household Income

Within the regional and secondary study areas, most of the households earn between R10,000 and R 40,000 per annum. This is indicative of a monthly salary that ranges between R 833 to R 3,333. This means that most households are living in extreme food poverty line which is R 585 per person per household¹¹. Whilst an average of 14% of the households live within the lower-bound food poverty line as they earn an estimated R 75,000 per month and can afford food for R 840 per person per month.

Table 8-6: Annual Household Income: Regional Study Area¹²

Indicators	Mpumalanga	NDM	GSDM	STLM	CALLM
R0	15%	14%	15%	13%	15%
Under R4800	5%	4%	5%	3%	7%
R 5K - R 10K	9%	7%	8%	4%	12%
R10K - R20K	19%	16%	18%	11%	23%
R 20K - R40K	20%	20%	20%	16%	20%
R 40K - R 75K	13%	16%	14%	17%	10%
R 75K - R 150K	9%	11%	9%	14%	7%
R 150K - R 300K	6%	7%	7%	11%	4%
R 300K - R 600K	3%	4%	4%	7%	1%
R 600K - R 1.2 m	1%	1%	1%	2%	0%
R 1.2M - R 2.5 m	0%	0%	0%	1%	0%
Over R 2.5m	0%	0%	0%	0%	0%

Of the project affected Wards, households residing with Ward 7 reportedly earned slightly high income per annum (R 75, 000 to R 150,000). This means that most of the households

¹¹ Food poverty line – R585 (in April 2020 prices) per person per month. This refers to the amount of money that an individual will need to afford the minimum required daily energy intake. This is also commonly referred to as the “extreme” poverty line.

¹² Adapted from Wazimap, 2017

reside within the upper-bound food poverty line and have a budget of around R 1,268¹³ per person per month. However, the population of Ward 3 and 21 mimics the trends identified within the regional and secondary study areas and worse as shown in Table 8-7. **Table 8-7:**

Annual Household Income within the Secondary Study Area

Indicators	Ward 3	Ward 7	Ward 21
R0	12.1%	6.9%	7.8%
Under R 4800	2%	2.2%	3.7%
R5k-R10K	4.3%	3.5%	4.5%
R10k-R20K	10.6%	8.6%	22.9%
R20k-R40K	16.5%	12%	22.5%
R40-R75K	17.7%	19.5%	15.3%
R75k-R150K	16.3%	20.9%	9.8%
R150k-R300K	12.2%	17.5%	7%
R300k-R600K	5.8%	7.3%	4%
R600k-R1.2m	1.6%	1.2%	1.4%
R1.2m-R2.5m	0.7%	0.3%	0.6%
Over R2.5m	0.3%	0.3%	0.6%

8.3. Household Access to Basic Services

Figure 8-7 below shows the households access to basic services at the regional and secondary study areas. Notable findings include:

- On average 87% of the households have access to **water** from a regional or local service provider,
- An average 69% of households have access to prepaid **electricity**,
- An average of 51% have access to flush / chemical **toilets**, with CALLM households have access to flush or chemical toilets while 43% uses ventilated pit latrines,
- An average of 58% of households have access to formal **waste disposal** by local municipality except for households in CALLM whereby 70% have no access to formal waste disposal system.

¹³ Upper-bound poverty line – R1 268 (in April 2020 prices) per person per month. This refers to the food poverty line plus the average amount derived from non-food items of households whose food expenditure is equal to the food poverty line.

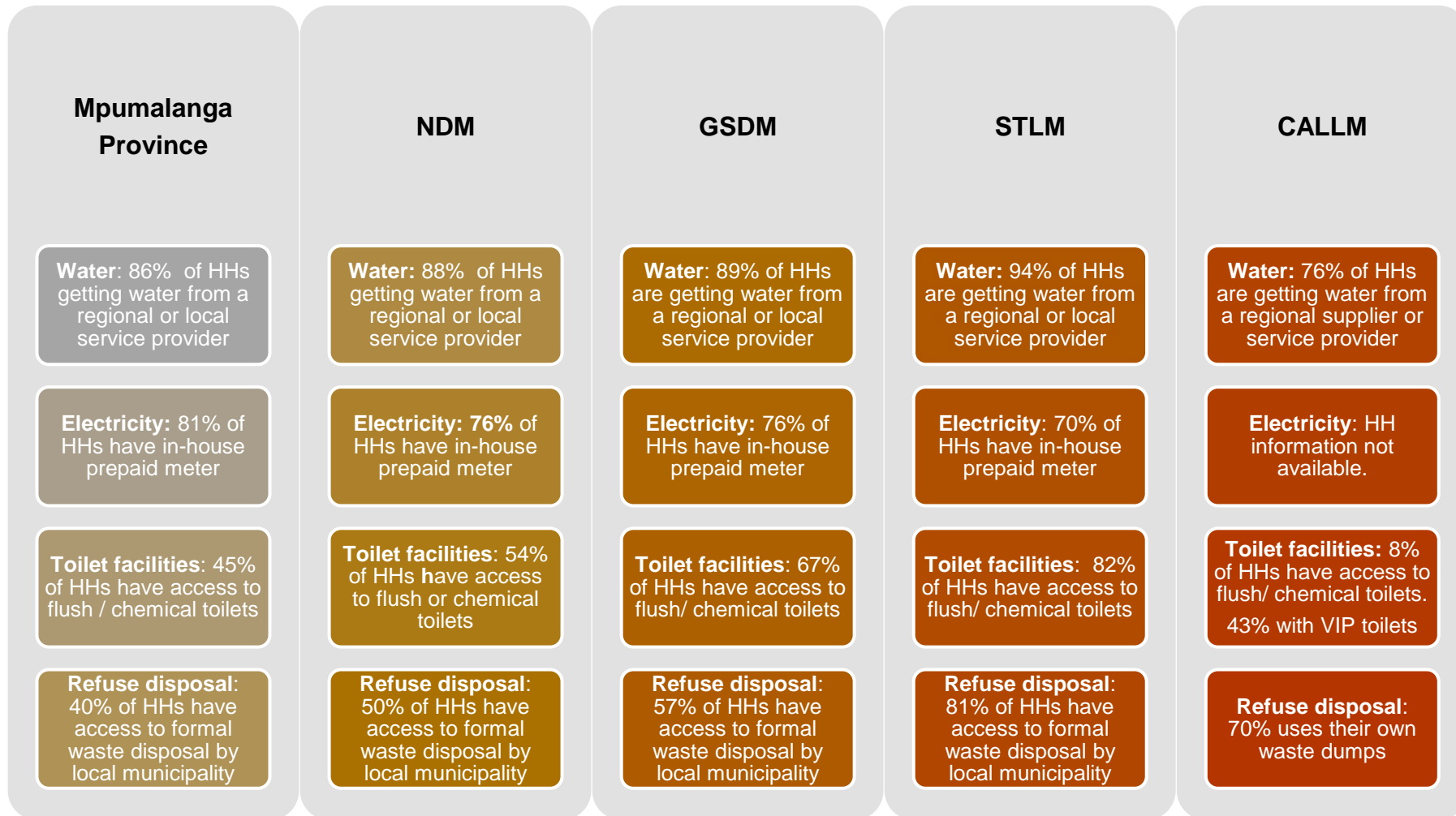


Figure 8-7: A Summary of Households' Access to Basic Services

9. Impact Assessment

This section presents the impacts identified, assessed, and rated as part of this Report. The impact assessment methodology has been appended in this Appendix A. Impacts are structured as follows:

- Impact description;
- Impact rating prior to mitigation or enhancement and again after consideration of the proposed mitigation or enhancement measures;
- Mitigation measures are formulated to avoid or mitigate negative impacts and enhancement measures to enhance positive impacts; and
- The post- mitigation or enhancement rating provides an indication of the significance of residual impacts, while the difference between pre- and post- mitigation / enhancement ratings represents the degree to which the recommended measures are expected to be effective in mitigating or enhancing an impact.

The impacts for each phase of the Project are considered.

9.1. Construction Phase

The subsections below provide details and the significance of potential socio-economic impacts associated with the construction phase of the Project and in some cases impacts that occur across all Project phases. Construction related impacts identified include:

- Creation of temporary employment opportunities;
- Creation of opportunities within the supply chain;
- Increase incidences of livestock theft;
- Impacts associated with community health; safety; and security;
- Loss of agricultural land;
- Potential physical displacement of farm dwellers; and
- Change in sense of place.

9.1.1. Creation of Temporary Employment Opportunities

The project is anticipated to create 168 direct jobs during its construction phase. The breakdown in terms of skills requirement was not available at the time of report compilation. However, it is assumed that the project will be requiring highly skilled, semi-skilled, and unskilled workers during construction. Additional details related to employment will be provided in the Social and Labour Plan (SLP) for the project which will be updated prior to the commencement of construction.

Within the primary study area most people have elementary skills associated with services required by the agricultural sector. As such, locals are likely to benefit from unskilled

opportunities associated with the project. Where possible the project will fill these positions with people from the primary study area, followed by those from the secondary and regional study areas.

Indirect and induced employment opportunities created through the project's supply chain and by increased spending in the economy by those who secure employment with the project. Those who can secure employment opportunities with the project will gain some skills, and work experience which will increase their employability in other projects of a similar nature in the future.

9.1.1.1. Management Objectives

- To enhance the positive impacts associated with project employment opportunities.

9.1.1.2. Management Actions

- As per the legal requirements update, disclose, and implement the Social and Labour Plan.
- Develop and implement the site-specific Employment Policy in compliance with the South African legal framework and company standards. As part of the Policy:
 - Set employment targets aimed at increasing local employment;
 - Set monitoring indicators for local employment;
 - Integrate local employment targets into all procurement contracts to which the appointed contractors must adhere to;
 - To accommodate those that do not have access to android phones or internet, widely advertise employment opportunities using community newspapers, notice boards, etc;
 - All employment opportunities must be advertised in predominantly spoken languages within the primary study area; and
 - Ensure that no employment take place at the entrance to the site (to avoid people congregating at the work site). Only formal channels for employment will be used.
- Develop and implement a grievance mechanism. The mechanism must be widely communication to stakeholders within the primary study area, and a grievance register must be kept up-to-date.

9.1.1.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-1.

Table 9-1: Creation of Employment Opportunities

Creation of employment opportunities				
Project phase			Construction	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Short term (2)	Employment opportunities will be short-term during the construction phase and will peak during the operational phase	Slightly beneficial (9)	Minor - positive (45)
Extent	Sub-regional (4)	Employment opportunities will be available to local people in the Project Area who meet the skills requirements of the Project.		
Intensity	Moderate - positive (3)	Mitigation will maximise job creation		
Likelihood	Likely (5)	If there are no enhancement measures, employment benefits will be lower		
Post-Mitigation				
Duration	Short term (2)	As for pre-mitigation	Moderately beneficial (11)	Minor - positive (55)
Extent	Sub-regional (4)	As for pre-mitigation		
Intensity	High - positive (5)	Mitigation will maximise job creation in the study area for local people.		
Probability	Likely (5)	As for pre-mitigation		

9.1.2. Creation of Opportunities Within the Supply Chain

As part of construction, the Project will require numerous goods and services, as such it will issue supply chain contracts which will be open to the public for those who have capacity to fulfil these can bid. Goods, consumables, and services likely to be procured during construction include equipment, tyres, explosives, bricks, sand and cement, personal protective equipment (PPE), cables and pipes, ventilation brattices, equipment spares and trailing cables¹⁴.

¹⁴ Exxaro Mine Works Program, 2020

The primary study area is characterised by agricultural activities and as such, it is unlikely that the goods and services required by the project will be readily available in the area. Therefore, it is anticipated that all mining goods and services required will be procured mostly within the secondary and regional study areas. This will further stimulate the economy within all study areas and possibly increase spending within the local economy and create induced employment opportunities.

9.1.2.1. Management Objectives

- Promote local economic development (LED) and stimulate local businesses within the project's supply chain process.

9.1.2.2. Management Actions

- Implement the SLP commitments as they relate to the local business development;
- Development a Local Procurement Strategy with local business development targets aligned to the commitments set-up in the SLP for the project;
- Effectively communicate the benefits of local procurement to external stakeholders;
- Considerations for local procurement should support groups, such as women, visible minorities, and youths;
- Strengthen the capacity of local businesses to ensure that they are in a better position to supply the services required by the project, through holding workshops and seminars geared towards explain the tender requirements;
- Consider unbundling of contracts into small work programs to ensure that small and locally based businesses can benefit;
- Propose and promote joint ventures between large and small Contractors to ensure equitable sharing of economic benefits and skills development;
- Establish a time-bound commitments to increase local procurement; Such commitments could include annual or mid-term targets for local procurement spending, supplier development programmes, local procurement plans, local procurement key performance indicators (KPIs) for procurement staff, and other local procurement objectives;
- All tender process must follow existing Exxaro's SMME development strategies and programs;
- Host workshops to provide training for current and potential suppliers to build up skills that were commonly identified as lacking in the supplier audits (e.g.;, business plan creation, tender preparation, etc.); and
- Implement the grievance mechanism.

9.1.2.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-2.

Table 9-2: Creation of opportunities within the supply chain

Creation of opportunities within the supply chain				
Project Phase			Construction	Operation
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Project Life (5)	Will peak during construction phase and continue throughout the remainder of the project	Highly beneficial (15)	Minor - positive (60)
Extent	Sub-regional (4)	Will include some local but mainly within the local and regional study area.		
Intensity	Very high - positive (6)	Will provide an increase in impact within the secondary and primary study area		
Likelihood	Probable (4)	Will primarily depend on proportion of local spending by employees as well as the capacity of local and regional enterprises to provide supply to the Project.		
Post-Mitigation				
Duration	Long term (4)	As for pre-mitigation	Moderately beneficial (13)	Moderate - positive (78)
Extent	Sub-regional (4)	As for pre-mitigation		
Intensity	High - positive (5)	As for pre-mitigation		
Probability	Highly probable (6)	Mitigation will maximise probability, through monitoring, that local procurement is maximised, and benefits optimised.		

9.1.3. Increased Incidences of Livestock Theft

Stock theft is described as failure to give satisfactory account of possession of stock or produce¹⁵. According to the South African Police Services (SAPS) 58% of stock theft cases

¹⁵ Section 1 of the Stock Theft Act (1959) (Act no. 57 of 1959).

occur in farms, while others (29%) occurred in grazing land. Of the cases, 599 (or 63%) were cattle theft and followed by theft of goats (152) or 16%¹⁶.

As indicated in Section 8.2.3, livestock theft is a prominent challenge within the primary study area. Livestock owners attribute this trend to high unemployment and poverty. To them, loss of livestock is equivalent to the loss of income earnings as they are dependent on cash generated from the sale of livestock. The presence of the project in the area will attract job seekers and those who are unable to secure employment with the mine may resort to livestock theft to get an income. In 2020, livestock theft in South Africa is said to have resulted in income losses of up to R1.4 billion¹⁷. The data also shows a 12% decrease in livestock theft cases in Mpumalanga for the same year. However, livestock owners who have experienced losses in the past remain fearful as the SAPS response time is said to be slow.

9.1.3.1. Management Objectives

- To minimise or avoid incidents of livestock theft within the primary study area.

9.1.3.2. Management Actions

- Ensure that no employment take place at the entrance to the site;
- Within the limits of the law, livestock owners should consider adopting an appropriate animal identification system in accordance with the Draft Document for Livestock Identification and Traceability System South Africa (LITS SA)¹⁸;
- Livestock owners are encouraged to regularly count their livestock to ensure that all are still accounted for. In case of missing livestock, the incident must be reported to the nearest police station;
- Where site access requires that Project personnel use farm parameter fences or gates – these must be closed immediately upon entry or exit;
- Livestock owners are encouraged to regularly monitor, and mend broken fences;
- Livestock should be kept away from fences or roads to reduce exposure to pedestrians;
- Once the relevant environmental and mine authorisations are in place, the applicant will commence with negotiations with affected landowners to discuss suitable compensation methods to address livestock theft.
- Implement the grievance mechanism.

¹⁶ SAPS annual crime report for 2019/2020.

¹⁷ <https://rpo.co.za/wp-content/uploads/2021/03/Stock-Theft-Dec-2020.pdf>

¹⁸ Draft Document for Livestock Identification and Traceability System South Africa (LITS SA) which allows an integrated platform for livestock keeping such as animal registration.

9.1.3.3. Impact Ratings

The impact significance is described, assessed, and rated in Table 9-3.

Table 9-3: Increased Incidences of Livestock Theft

Increased incidences of livestock theft				
Project Phase			Life of project	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond project life (6)	Will peak during construction and effects of livestock theft may continue through the life of the project.	Highly detrimental (-16)	Moderate - negative (-96)
Extent	Regional (5)	The impact is expected to be prominent within the primary study area due to the increase movement of people.		
Intensity	High - negative (-5)	The impact will result in economic losses for those affected by livestock theft.		
Likelihood	Highly probable (6)	The impact is likely to occur based on past experiences.		
Post-Mitigation				
Duration	Project Life (5)	As for pre-mitigation.	Moderately detrimental (-12)	Minor - negative (-60)
Extent	Local (3)	As for pre-mitigation.		
Intensity	Moderately high - negative (-4)	Mitigation measures will ensure that the severity of this impact is reduced within the primary study area.		
Probability	Likely (5)	As for pre-mitigation.		

9.1.4. Impacts Associated with Community Health, Safety and Security

The IFC Performance Standard 4 recognizes that project activities, equipment, and its related infrastructure can increase community exposure to risks and impacts. Mining is a high-risk industry, which can have serious health and safety consequences. Most of the impacts related to this will occur in all project phases. Those likely to experience health, safety and security impacts are neighbouring landowners, farm workers, and surrounding communities such as those that reside in Kwazamokuhle.

9.1.4.1. Health risks include

- Residents of the primary study area are reliant on underground water resources for portable, domestic, and drinking water for livestock. It is anticipated that blasting activities associated with the mine may result in contamination of underground water resources thus changing the quality of water. This may lead to water-borne illnesses such as diarrheal.
- Vibrations from blasting activities may cause affect structural integrity of residential structures within the primary study area, thus posing a danger of collapsing and injuring people.
- It is anticipated that the ambient air quality within the primary study area will decrease due to emissions from project site clearance, establishment of project infrastructure, vehicles, equipment, etc. This may result in poor health outcomes from those exposed to poor air quality.
- There are several activities that would be undertaken by the Project that would involve the use of hazardous materials such as hazardous chemicals; ammonium nitrate fuel oil (ANFO) or other blasting products; and hydrocarbons (e.g., diesel, oil etc). It is likely that some of the hazardous chemicals or hydrocarbons stored on-site or during transportation may pose a human health and safety risk if not managed appropriately. However, as the procurement, transportation, storage and use of such chemicals and hydrocarbons is a dynamic process. All hazardous chemicals and hydrocarbons need to be procured, transported, stored, and handled appropriately in line with international best practice for each individual chemical / hydrocarbon.
- The rate of spread of communicable diseases may increase within communities because of the project development throughout the life of the mine. This is largely due to potential interactions between the construction workforce and local communities; and in-migrants to the area bringing new diseases or varying disease profiles compared to the existing community.

9.1.4.2. Safety risks

- Increased in numbers of heavy motor vehicle traffic associated with the project, if not effectively mitigated, will likely pose a safety risk for existing road users as well as pedestrians, livestock, and other animals in the areas adjacent to the access and haul road. This impact may extend to regional or national roads.
- An increase in the number of heavy-duty vehicles on the local roads is likely to result in a formation of potholes and should these be left unfixed, will pose a danger to all road users including the mine vehicles and other private vehicles.
- Fly rock from blasting may cause injury and / or death of people and livestock.

9.1.4.3. Management Objectives

To reduce, manage or avoid project impacts associated with community health, safety, and security.

9.1.4.4. Management Actions

- Design and implement measures to minimise the risk of hazardous substances entering the environment, including development of an Emergency Prevention, Preparedness and Response Plan for accidents involving release of hazardous substances to the environment.
- Secure storage and labelling of hazardous substances in line with the manufacturer's recommendations and measures to prevent contact with untrained personnel, birds, and animals.
- Secondary containment using impervious, chemically resistant material and designed to prevent contact between incompatible materials in the event of a release.
- Develop information, education and communication campaigns around diseases and health practices including communicable diseases such as HIV/AIDS, TB, and Covid-19; etc. Regularly review and update as necessary its existing communicable diseases management strategy.
- During the project lifecycle, the risks and impacts to health and safety of affected landowners and communities should be evaluated and preventative measures should be taken early in the project.
- Integration of organisational policies, programs, and practices, including those relevant to the control of hazards and exposures, the organisation of work, compensation, and benefits, built environment supports, leadership, changing workforce demographics, policy issues, and community supports, that will contribute to safety, health, and wellbeing.
- Road safety interventions may need to range beyond their fleets of company vehicles and their workers' commutes and should consider the driving, walking, and riding practices of community members in the locality.

9.1.4.5. Impact Ratings

The impact significance is described, assessed, and rated in Table 9-4.

Table 9-4: Risks to community health, safety, and security

Risks to community health, safety, and security				
Project phase			Life of Project	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond project life (6)	Risks to community health, safety and security will commence during construction and these will be experienced throughout the remainder of the life of the Project	Highly detrimental (-16)	Moderate - negative (-80)
Extent	Sub-regional (4)	The impact will affect people residing with the surrounding of the project site.		
Intensity	Very high - negative (-6)	In case of injuries and communicable diseases, those affected will struggle with poor health outcomes for the long term.		
Likelihood	Likely (5)	All mining activities are dangerous, thus, the likelihood of the impact occurring is high.		
Post-Mitigation				
Duration	Beyond project life (6)	As for pre-mitigation	Highly detrimental (-15)	Minor - negative (-60)
Extent	Sub-regional (4)	As for pre-mitigation		
Intensity	High - negative (-5)	Proper mitigation measures will reduce some but not all impacts from occurring		
Probability	Probable (4)	Appropriate management and mitigation will reduce the risk of this impact		

9.1.5. Loss of Agricultural Land

At a province, coal mining has resulted in widespread damage to and loss of potential agricultural land¹⁹. A study undertaken by the Bureau for Food and Agricultural Policy (BFAP) found that at the current coal mining rate of 12%, the country's high potential arable land will be permanently lost or damaged by these activities. While another 14% is being subjected to coal prospecting applications may eventually be lost to mining too. The report further stated that if coal mining activities continues at the current rate could lead to a loss of 447,580²⁰ tons of maize per year.

Large areas within the project area are currently being used for commercial dryland cultivation, which is indicative of high agricultural potential soils. Agricultural activities within the primary study area and project area include the cultivation of maize and other commercial and subsistence crops. Furthermore, crop farming also serves as the primary source of income for farmers engaged in this activity.

The project's land acquisition area will be 16,000 ha. Of these, 28% (or 5,202 ha) will be mined, and 72% (or 13,284 ha) will be completely lost to the establishment of project support infrastructure. The land affected by the project is currently being used for agricultural activities and its loss will result in a further reduction of productive agricultural land within the province. Even though this is not significant as it relates to the project, the impact still exists and cannot be ignored.

The impact associated with the loss of productive agricultural land to mining, as it relates to this project, will not only result in the loss of productive agricultural land but also it may result in the reduction of income for the directly affected landowners and farmers leasing land from the mine. Research also shows that the loss of productive agricultural land could also lead to price inflation in the greater markets owing to demand remaining consistent while supply is being reduced.

9.1.5.1. Management Objectives

- To minimise the impact related to the loss of productive agricultural land to the project.

9.1.5.2. Management Actions

- Once the relevant environmental and mine authorisations are in place, the applicant will commence negotiations with directly affected landowners in terms of land acquisitions.
- The Project shall identify farm portions which will not be immediately mined or used and where possible, lease such to the directly affected farmers to enable them to continue with their crop production.

¹⁹ Grain SA, 2016.

²⁰ Combined figures for active mines (284,844) and prospecting at 162,736.

- All Project land purchase agreements with the landowners shall include special provisions for farmworkers and / or farm dwellers. Should the landowner plan to sell he / she must do the following:
 - Inform all farm workers and farm dwellers of the change in ownership of the land;
 - Explain in detail the consequences of the sale of land as it relates to the farmworkers and farm dwellers;
 - In case where the farmers will no longer continue with farming, once the relevant environmental and mine authorisations are in place, the Applicant will commence negotiations with the affected landowners and farmworkers to agree on suitable compensation and
 - In discussions with the municipality and the department of rural development and land reforms, ensure that all farm dwellers are accommodated elsewhere within eleven months after the sale of the farm.
- Implement the grievance mechanism.

9.1.5.3. Impact Ratings

The impact significance is described, assessed, and rated in Table 9-5.

Table 9-5: Loss of access to agricultural land

Loss of access to agricultural land				
Project Phase			Life of Project	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond project life (6)	Loss to agricultural land will extend beyond the lifespan of the project	Highly detrimental (-14)	Moderate - negative (-98)
Extent	Project footprint and immediate surrounds (2)	Impact will be within the project boundary and immediate areas		
Intensity	Very high - negative (-6)	The project will contribute to long term effects associated with loss of agricultural land such as livelihoods and food security issues.		
Likelihood	Certain (7)	Impacts to the loss of land will remain throughout the life of the project		
Post-Mitigation				

Loss of access to agricultural land				
Project Phase			Life of Project	
Dimension	Rating	Motivation	Consequence	Significance
Duration	Beyond project life (6)	As for pre-mitigation	Moderately beneficial (10)	Minor - positive (50)
Extent	Local (3)	As for pre-mitigation		
Intensity	Very low - positive (1)	As for pre-mitigation		
Probability	Likely (5)	With appropriate mitigation measures, impacts of this risk may be reduced.		

9.1.6. Potential Physical Displacement of Farm Dweller Households

The project mining rights area traverses through 13 farms as indicated in Section 2. Of these, four (4) farms are targeted for mining purposes; these are farms Weltevreden 174 IS, Mooiplaats 165 IS, Vlakfontein 166 IS, and Schoonoord 164 IS. It is anticipated that five homesteads on these farms may be physically displaced due to health, safety and security risks associated with mining activities. The displacement and subsequent relocation of households and persons, particularly low-income households with limited financial and social resources, carries significant adverse impacts for such households and persons, including loss of livelihoods, impoverishment, and food insecurity. Once the relevant environmental and mine authorisations are in place, the Applicant will commence negotiations with the affected landowners to agree on a suitable way forward, and to commence with the process in accordance with best practice guidelines as well as national legislation, specifically, the Extension of Security of Tenure Act (ESTA).

The development of a Resettlement Action Plan (RAP) which includes provision for improved housing with security of tenure at an appropriate resettlement site, compensation for loss of assets at full replacement cost, informed participation and consultation, and livelihood restoration measures is essential to minimising these risks.

9.1.6.1. Management Objectives

- In accordance with the IFC performance standard 5 on Land Acquisition and Involuntary Resettlement- where resettlement is unavoidable, it should be minimised, and mitigation measures should be carefully planned and implemented;
- Ensure appropriate livelihood restoration measures are in place to compensate those affected by resettlement; and
- To improve the living conditions of those who may become physically displaced.

9.1.6.2. Management Actions

- Develop and implement a RAP to best practice guidelines;

- Provide transitional support to displaced farm dweller households to support livelihoods during the transitional period;
- Establish a consultative structure to comply with the RAP’s requirements for informed participation and consultation of affected households and relevant government representatives and departments; and
- Ensure that RAP implantation is monitored across time to ensure that displaced households’ livelihoods are restored or improved and that they have obtained security of tenure at resettlement site.

9.1.6.3. Impact Ratings

The impact significance is described, assessed, and rated in Table 9-6.

Table 9-6: Physical Displacement of farm dweller households

Physical displacement of farm dweller households				
Project Phase			Construction	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Permanent (7)	Affected households will be permanently displaced.	Highly detrimental (-14)	Moderate negative (-105)
Extent	Very limited (1)	Will impact the farm dweller households residing in the primary study area.		
Intensity	Extremely high - negative (-7)	Without proper mitigation, displacement could have significantly adverse impacts on the livelihoods and standard of living of farm dweller households.		
Likelihood	Highly probable (6)	Nature and location of the Project will inevitably result in the economic displacement of several households		
Post-Mitigation				
Duration	Permanent (7)	Affected farm dweller households will be permanently displaced.	Slightly detrimental (-7)	Minor - negative (-70)
Extent	Very limited (1)	Will impact the farm dweller households residing in the primary study area.		

Physical displacement of farm dweller households				
Project Phase			Construction	
Dimension	Rating	Motivation	Consequence	Significance
Intensity	Low negative(-2)	Adequate restoration will significantly reduce adverse effects of displacement		
Probability	Certain (7)	As for pre-mitigation		

9.1.7. Change Sense of Place

Sense of place describes people’s relationship with places, expressed in different dimensions of human life: emotions, ecology, social, economic, cultural, aesthetic, historical, or other aspects (Basso, 1996) and reflects people’s place attachment. The Project area is rural in nature, sparsely populated, with agricultural production and eco-tourism as the key livelihood economic activities. Therefore, it is expected that the Project impacts such as increased noise levels, changes to air quality, increased road traffic, visual impact of surface infrastructure, and water quality and quantity impacts, and will alter communities’ sense of place. Moreover, the Project may negatively impact the property and land values in these areas especially those owned by eco-tourism operators.

These impacts, combined with actual or perceived changes in safety and security, are likely to be viewed negatively, change the quality of life and sense of well-being of the population living in the primary study areas. Not everyone will view the changes to the area in a positive manner especially business and landowners whose livelihoods will be threatened by the presence of the mining activities in the area. However, some people such as the youths may view the changes in the primary study area as being positive due increased employment or business opportunities or social benefits with the Project will view the changes as being positive.

9.1.7.1. Management Objectives

- To limit or minimise negative changes in sense of place, whilst enhancing the positive impacts of the changes, where possible; and
- To minimise the visual, noise and dust impacts during implementation of the Project.

9.1.7.2. Management Actions

- Implement mitigation measures proposed in the Visual Impact Assessment Study. Implement induction programmes for all employees and contractors to increase sensitivity to local norms and customs;
- Project Contractors shall implement a ‘no fraternization’ policy at the worker’s camp to minimise relations with prostitutes and unsafe sexual interaction with residents;

- Implement traffic safety measures, particularly speed control and driver awareness training for all drivers;
- Minimise the construction footprint in forested areas and ensure that disturbed areas are rehabilitated with indigenous trees and other plants;
- Implement mitigation measures suggested in Section 9.1.1 and 9.1.2 along with the mitigation measures and recommendations of other relevant specialist reports;
- Adequate plan for rehabilitation;
- Offset negative experience of altered sense of place by maximising local employment/ economic benefits; and
- Implementation of the grievance procedure.

9.1.7.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-7.

Table 9-7: Change Sense of Place

Change in area's Sense of Place				
Project phase		Construction	Operation	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond Project life (6)	Changes in the visual character of the landscape will be permanent	Moderately detrimental (-13)	Moderate - negative (-78)
Extent	Project footprint and immediate surrounds (2)	Will affect most communities in the primary study area particularly neighbouring landowners to the Project area		
Intensity	High - negative (-5)	May negatively affect quality of life of local communities especially with impacts related to changes in air quality, noise, etc.		
Likelihood	Highly probable (6)	Some changes in the social environment and the visual character of the landscape will be unavoidable		
Post-Mitigation				
Duration	Long term (4)	As for pre-mitigation		Minor - negative

Change in area's Sense of Place				
Project phase		Construction	Operation	
Dimension	Rating	Motivation	Consequence	Significance
Extent	Local (3)	Mitigation may reduce the area over which changes are discernible.	Moderately detrimental (-10)	(-50)
Intensity	Moderate - negative (-3)	Mitigation will reduce impacts and/or reduce negative connotations attached to experienced changes		
Probability	Likely (5)	Mitigation will reduce the probability of impact to some extent		

9.2. Operational Phase

Impacts related to the operational phase identified are:

- Creation of long-term employment opportunities, skills development, and work experience;
- Opportunities and capabilities within the supply chain;
- Changes to the water quality;
- Impacts associated with surface subsidence;
- Occupational health risks to mine workers;
- Economic multiplier; and
- Community development associated with the SLP.

9.2.1. Creation of Long-term Employment Opportunities, Skills Development and Work Experience

Operational employment opportunities, skills development and work experience will be created by the project. The current estimated life of mine is 13 years. During this period, it is expected that some of this workforce will be drawn from the local and district municipalities as well as Mpumalanga province, given the region's well-developed coal mining industry. Members of the communities within the primary study area are primarily engaged in agricultural livelihood activities and are unlikely to have the requisite skills to qualify them for semi-skilled and skilled employment. Nonetheless, the skills training provided to selected community members during the construction phase may qualify them for employment during the operational phase. This will allow some of the benefits of employment, such as wages, skills development, and income security, to accrue to local communities.

Those able to secure employment with the project will also gain work experience which will increase their chances to gain employment in other projects of a similar nature in the future. In addition, permanent employees of the project will receive on-going training and capacity development related to the implementation of the SLP associated with the project.

9.2.1.1. Management Objectives

- To enhancement of positive impacts associated with the creation of employment opportunities, skills development, and work experience.

9.2.1.2. Management Actions

Implement mitigation measures described in Section 9.1.1

9.2.1.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-8.

Table 9-8: Creation of Employment Opportunities, Skills Development and Work Experience

Creation of employment opportunities, skills development, and work experience				
Project phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Long term (4)	Employment opportunities will be long-term(13 years) for the duration of the project.	Moderately beneficial (13)	Minor - positive (65)
Extent	Regional (5)	Employment opportunities will extend to communities within the regional, secondary, and primary study areas.		
Intensity	Moderately high - positive (4)	Will provide opportunities within the secondary and primary study areas		
Likelihood	Likely (5)	The impact will occur as the project will create employment opportunities which will induce additional benefits to those who are able to secure long term employment with the project.		
Post-Mitigation				
Duration	Medium term (3)	As for pre-mitigation.	Moderately beneficial (11)	Minor - positive (44)
Extent	Sub-regional (4)	As for pre-mitigation.		

Creation of employment opportunities, skills development, and work experience				
Project phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Intensity	Moderately high - positive (4)	Enhancement measures will maximise local job creation.		
Probability	Probable (4)	Enhancement will maximise probability that local recruitment targets are achieved, and local benefits optimised.		

9.2.2. Opportunities and Capabilities within the Supply Chain

During operations, the project will require on-going supply chain services, this may include spending on specialists, consultants, and mining service providers, amongst others. It also expected that suppliers within the secondary and regional study areas who will have been involved in construction will have experience with the Project's procurement requirements and be better able to meet its needs during operation. The Project operations are expected to bring increased opportunities and capabilities within the local supply chain, both through direct contracts with the project as well as indirect procurement opportunities to meet growing local demand for goods and services.

Supply chain opportunities are considered to have an effect of a medium magnitude, given limited numbers of non-technical contracts accessible to local suppliers but also increased general demand from the Project. In the primary study area, access to Project training services through the SLP targets and other Project initiatives are likely to help businesses better meet the Project's demand for goods and services.

9.2.2.1. Management Objectives

- To enhance the participation of locally based businesses in the Projects supply chain; and
- Ensure the implementation of the SLP to support the promotion of education and skills uplift among local communities within the study areas, including the implementation of on-the-job training and scholarship programme.

9.2.2.2. Management Actions

- Implement measures provided in Section 9.1.2.

9.2.2.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-9.

Table 9-9: Opportunities and Capabilities within the Supply Chain

Opportunities and Capabilities within the Supply Chain				
Project Phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Long term (5)	Will peak during construction phase and continue throughout the remainder of the life of the Project	Moderately beneficial (11)	Minor - positive (44)
Extent	Sub-regional (4)	Will include some local, but mostly impacts within the local and regional study areas		
Intensity	Low - positive (2)	Will derive from increase in disposable income community development programmes, stimulation of economic sectors, procurement, economic growth, and increased local markets		
Likelihood	Probable (4)	Will primarily depend on proportion of local spending by employees as well as the capacity of local and regional enterprises to provide supply.		
Post-Mitigation				
Duration	Long term(5)	As for pre-mitigation	Highly beneficial (16)	Moderate - positive (96)
Extent	Regional (5)	Enterprise capacity building together with monitoring could concentrate procurement from the regional study area, but also increase involvement of business within the local study area		
Intensity	Very high - positive (6)	Mitigation will increase and intensity of multiplier effects as it will concentrate impact within the secondary and primary study area		
Probability	Highly probable (6)	Increased local employment and procurement as well as upskilling of local enterprises will enhance likelihood of benefits to local economy		

9.2.3. Changes to the Water Quality

A prerequisite of sustainable development is to ensure uncontaminated streams, rivers, lakes, and oceans²¹. In the context of coal mining, water is an integral to the mining process including extraction of coal from surface and underground mines. Mines usually depend on ground water to meet their demands and in the absence of ground water, water from nearby water resources are used. Some of the main sources of water pollution identified include:

- The mining process is associated with generation of large amount of dust and, the mineral and overburden excavated are converted to loose material. Dust particles are transported through wind, and this gets deposited onto water bodies which impacts on water quality;
- Overburden dump is the waste material which must be removed before the mineral resources can be salvaged. The waste materials can contain pollutants in the form of heavy metals and other chemicals which leach out during the rains and pollute the surrounding areas; and
- The water used in mining is sometimes left untreated within the mine area. The untreated water can penetrate through the soils and contaminate nearby water bodies. Even if the water has undergone treatment and the treatment plant has not been built to standards, it can lead to the water contamination when the water is being released in the existing water bodies to restore natural flow.

The consumption of contaminated water can result in poor health outcomes which can either be short-term or have long term implication for both humans and livestock.

9.2.3.1. Management Objectives

- To ensure the safety and maintenance of the quality of water for humans and livestock consumption.

9.2.3.2. Management Actions

- Implement mitigation measures outline in the Surface and Ground Water Specialist Studies associated with this project; and
- Implement a grievance mechanism.

9.2.3.3. Impact Ratings

The impact significance is described, assessed, and rated in Table 9-10.

²¹ Sustainable Millennium Goal 16: clean water and sanitation.

Table 9-10: Changes to the Water Quality

Changes to the water quality				
Project phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Long term (4)	Impact will last for the duration of the project and beyond if not managed effectively.	Moderately detrimental (-13)	Minor - negative (-65)
Extent	Sub-regional (4)	Will impact on the primary study area		
Intensity	High - negative (-5)	The impact may result in poor health outcomes to humans and livestock that consumes contaminated water and can lead to long term illness or fatalities.		
Likelihood	Likely (5)	The impact is likely to occur if mitigation measures are not implemented or water quality is not regularly monitored.		
Post-Mitigation				
Duration	Medium term (3)	As for pre-mitigation	Slightly detrimental (-9)	Minor - negative (-36)
Extent	Local (3)	The impact will be long term but can be managed with the implementation of mitigation measures and monitoring.		
Intensity	Moderate - negative (-3)	As for pre-mitigation		
Probability	Probable (4)	As for pre-mitigation		

9.2.4. Impacts Associated with Surface Subsidence

Surface subsidence is a lateral or vertical ground movement caused by a failure initiated at the mine level, of man-made underground mines, including, but not limited to coal mines, clay mines, limestone mines, and fluorspar mines that directly damages residences or commercial buildings. It can be coincident with mining activities or delayed in response to the time-dependent deformation of the rock mass.

Certain mining and geologic factors, including the quantity and quality of the subsoil, rock components and superficial conditions, may influence the mode, magnitude, shape, and extent of subsidence. In coal mining, surface subsidence occurs if coal is extracted from the subsurface without backfilling the void that the extraction process leaves behind, or without reinforcing the overlying rock strata in some other manner (e.g., by roof bolts). Consequences of surface subsidence include:

- Damage to surface infrastructures near the subsidence area;
- Human (residents and workers) and livestock fatalities;
- The surface area can become inhabitable from massive cracking;
- Coal reserves can get blocked for further exploration; and
- Can lead to new pathways for oxygen to get into the subsurface, thus start new or reignite fires.

The project will be comprised of underground mining of coal, and as indicated above, it will run the risk of surface collapse should backfilling not be undertaken simultaneously to coal extraction. Thus, the aforementioned impacts may be experienced within the Project area and in the primary study area.

9.2.4.1. Management Objectives

- To ensure that subsidence produced by mining activity is kept within an acceptable range in terms of horizontal and vertical deformations.

9.2.4.2. Management Actions

- Develop a Subsidence Management Plan (SMP) prior to the establishment of the mine. The Plan should prioritise the adequate protection of important natural and built features within the Project area. Management could include avoidance of damage to particularly natural features, mitigation of damage or rehabilitation;
- Possible relocation of people away from all infrastructure areas while surface subsidence occurs could be implemented in accordance with best practice guidelines for resettlement. In all cases, adequate budget must be provided for repairs to water and electrical supply systems, walls of buildings, fencing, and roadways; and
- Implement a grievance mechanism.

9.2.4.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-11.

Table 9-11: Impacts associated with Surface Subsidence

Impacts associated with surface subsidence				
Project phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Permanent (7)	Will increase during construction and continue throughout the remainder of the project	Highly detrimental (-17)	Moderate - negative (-85)
Extent	Sub-regional (4)	Will have impacts for the local and regional area		
Intensity	Very high - negative (-6)	Subsidence will impact on the local communities, and it may threaten the safety of surface infrastructure such as roadways, powerlines and other damage related to buildings and houses		
Likelihood	Likely (5)	The impacts of subsidence are likely to occur and will remain if not effectively managed and mitigated through rehabilitation.		
Post-Mitigation				
Duration	Project Life (5)	Impacts of subsidence could last until project life.	Moderately detrimental (-13)	Minor - negative (-65)
Extent	Sub-regional (4)	As for pre-mitigation		
Intensity	Moderately high - negative (-4)	As for pre-mitigation		
Probability	Likely (5)	As for pre-mitigation		

9.2.5. Occupational Health Risks to Mine Workers

Mining is recognised as one of the most hazardous employment sectors, despite the efforts made in the industry around occupational health and safety. Coal mining is linked to several occupational health risks. Many of the health risks are associated with mining and the extractive industries are caused by the inhalation of airborne pollutants which are not controlled at source. Amongst the health-related impacts around pollutants are exposure to toxic chemicals, heavy work, noise, vibration, health, and cold-related stress, etc.

The Minerals Council of South Africa (2020) have released the Occupational Health factsheet for 2020, highlighting that the most common occupational diseases in the mining industry are Tuberculosis (TB), silicosis and noise induced hearing loss (NIHL). NIHL is a common occupational disease in all areas of mining, however silicosis is problematic in the gold and coal mining sectors.

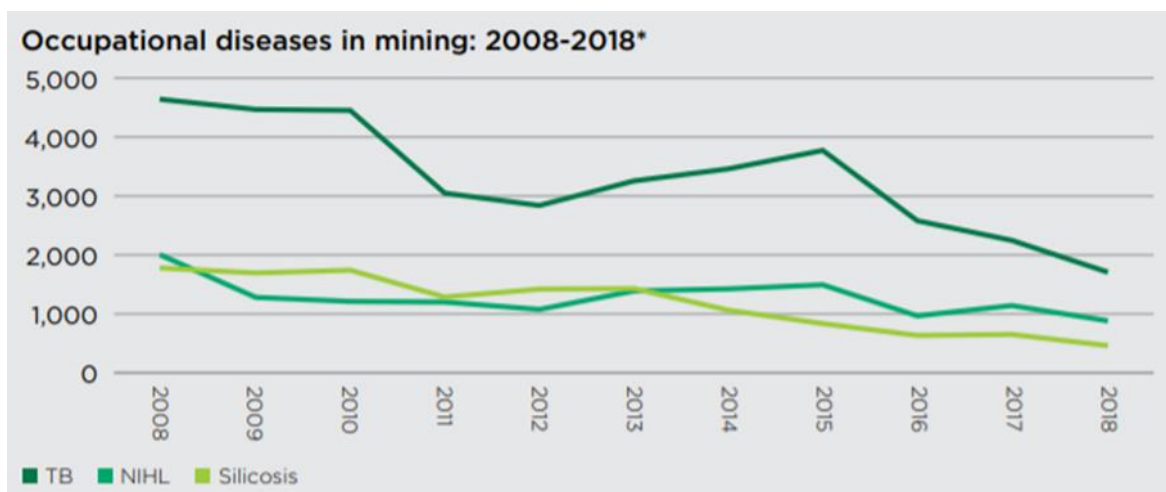


Figure 9-1: Diseases reported in the mining industry from 2008-2018²²

Other potential impacts related to occupational health and safety include:

9.2.5.1. Covid-19

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or Covid-19 infection rates among mineworkers have been on the rise as depicted in Figure 6 2. This has been attributed to unfavourable factors such as:

- Migrant workforce;
- Living in crowded hostels/ or lodgings;
- Working in poorly ventilated shafts which are situated underground that increases the transmission risk of Covid-19;
- Existing illnesses such as lung diseases; and
- High incidences of TB and HIV/AIDS which are associated with poorer health outcomes.

Such work-related factors have been associated with increased risk of Covid-19 and post infection respiratory sequelae (of Covid-19) faced by mineworkers could result in their job losses due to the physically demanding nature of underground minework.

²² Minerals Council of South Africa, 2020

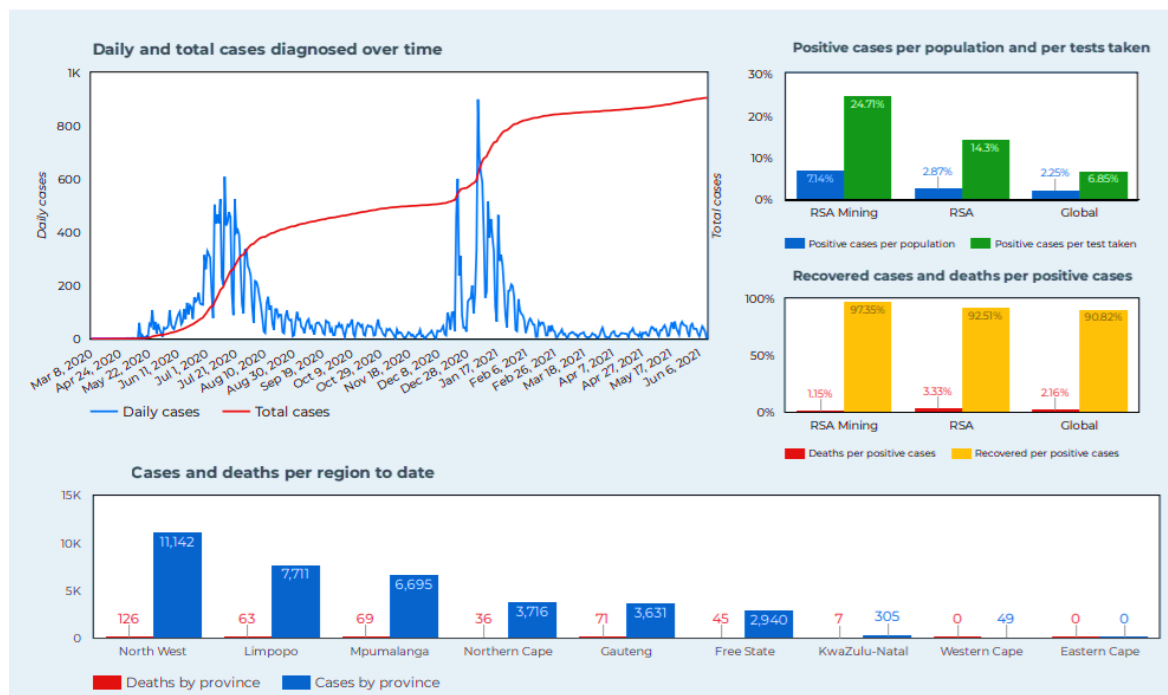


Figure 9-2: Daily Covid-19 cases reported in the RSA Mining Industry for June 2021²³

9.2.5.2. Dust Inhalation

Prolonged exposure to coal dust may result in dust-induced occupational lung diseases such as coal workers' pneumoconiosis (CWP), also known as black lung; chronic obstructive airways disease (COAD); and lung function deficiency. The symptoms include shortness of breath and scarring of tissue lung which results in respiratory issues.

9.2.5.3. Lifestyle choices

Often mine workers adopt an unhealthy lifestyle due to increased spending power which result in lifestyle diseases such as hypertension, diabetes, obesity and cardiovascular disorders and alcoholism.

9.2.5.4. Management Objectives

- To minimise occupational health and safety risks to mine workers.

9.2.5.5. Management Actions

- Develop and implement a detailed Occupational Health and Safety Management Plan and System. The Occupational Health and Safety (OHS) management plan should include, but not limited to:
 - Hazard identification and risk assessment procedure;

²³ Mining Review Africa, 2020

- A 'fitness for work' programme to ensure that all employees are physically able to undertake their work without impact to their health;
- Mandatory OHS training programmes provided to all employees, including contractors to ensure staff are aware of the health and safety guidelines;
- Specific OHS training programmes provided for workers assigned to tasks associated with H&S risks;
- All workers should be provided with Personal Protective Equipment (PPE) and be mandated to use it;
- Placement of visual warning signs in place, including those for the electrical and mechanical equipment safety warning, and chemical hazard warning;
- Toolbox talks or health and safety meeting daily to ensure that procedures are being adhered to, and to discuss any incidents that have occurred;
- Develop and implement a workforce grievance procedure where they can raise issues and concerns relating to OHS;
- Conduct information, education, and communication campaigns amongst Project Personnel on hygiene and sanitation; and
- Provide awareness, counselling, and testing (ACT) for all Project personnel, including voluntary testing for STIs and HIV/AIDS in pre-employment and on-going health screening. (Workers will not be denied employment or discriminated against in any way based on their HIV status).
- Project workers including third party Contractors to be subject to health and safety standards and policies; and
- Develop and implement a workforce grievance mechanism.

9.2.5.6. Impact Ratings

The impact significance is described, assessed and rated in Table 9-12.

Table 9-12: Occupational Health Risks to Mine Workers

Occupational Health Risks to Mine Workers				
Project phase		Construction		Operation
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond project life (6)	As indicated, most of the poor health outcomes experienced by coal mine workers are permanent and require management throughout the life of the affected person.	Highly detrimental (-15)	Moderate – negative (-75)
Extent	Regional (5)	Not all project employees will be from the local area, others will be coming from elsewhere in the municipal area, province, and country.		
Intensity	Moderately high - negative (-4)	Impact will not only affect employees but also family members tasked with caring for them once they are ill.		
Likelihood	Likely (5)	Health, safety ,and security risks will remain inherent due to the nature of the project.		
Post-Mitigation				
Duration	Beyond project life (6)	The poor health outcomes will either be long term or permanent in nature.	Highly detrimental (-14)	Minor – negative (-56)
Extent	Regional (5)	Project employees will be sourced from elsewhere in the country thus the impact will be of a local and regional scale.		
Intensity	Moderate - negative (-3)	As per pre-mitigation		
Probability	Probable (4)	Application of appropriate health, safety and security management measures will reduce the risk of the impact		

9.2.6. Economic Multiplier

The proposed Project could result in several socio-economic benefits through direct and multiplier effects stimulated by capital expenditure on construction and operational activities. This economic environment has the potential to generate opportunities for small, medium, and micro enterprises (SMMEs), provided they are formalised and able to meet the procurement requirements of the proposed mine. The Project and its contractors are committed to making maximum use of local SMMEs and BBBEE companies (as a requirement of the SLP) but may need to procure from businesses elsewhere in the province to meet highly technical needs.

Finally, the capital spent on Human Resource Development (HRD) for mine employees and community development initiatives could, if implemented effectively and sustainably, represent economic progress within the Project area, thereby also creating conditions conducive to economic growth.

9.2.6.1. Management objectives

- To enhance the economic benefits of the Project as it relates to social upliftment and prioritisation of local people through the provision employment and procurement opportunities.

9.2.6.2. Management Actions

- Implement enhancement measures linked to employment creation and opportunities associated with the supply chain;
- Implement the SLP related interventions;
- Compliance with SLP commitments to make maximum use of local SMMEs and BBBEE companies; and
- Implement the grievance mechanism.

9.2.6.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-13.

Table 9-13: Economic Multiplier

Economic Multiplier				
Project Phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Permanent (7)	Will increase during construction and continue throughout the remainder of the project.	Highly beneficial (14)	Minor - positive (70)

Economic Multiplier				
Project Phase			Operation	
Dimension	Rating	Motivation	Consequence	Significance
Extent	Regional (5)	Will have impacts for the local and regional area		
Intensity	Low - positive (2)	Will derive from increased cash flow, stimulation of economic sectors, procurement, economic growth, increased demand in local markets, and community development and HRD initiatives.		
Likelihood	Likely (5)	Enhancement will increase and intensify multiplier effects as it may concentrate impact within the primary and secondary study areas		
Post-Mitigation				
Duration	Project Life (5)	As for pre-mitigation	Moderately beneficial (13)	Moderate - positive (78)
Extent	Regional (5)	As for pre-mitigation		
Intensity	Moderate - positive (3)	As for pre-mitigation		
Probability	Highly probable (6)	Increased local employment and procurement as well as upskilling of local enterprises will enhance likelihood of benefits to local economy		

9.2.7. Social Development as part of Social and Labour Plan (SLP)

The Project will contribute to community development and social upliftment through the implementation of its SLP. If implemented successfully, the SLP has the potential to facilitate and catalyse socio-economic development within the study area. These initiatives, especially if implemented in consultation and collaboration with other development stakeholders (such as local government, non-governmental development organisations), can contribute towards socio-economic development, sustainable jobs, and income stability of households within local communities. Contributing toward community development and social upliftment is central to establishing a productive relationship between the Project and its surrounding communities and therefore to establishing and maintaining social licence to operate. It is, however, worth noting that the current SLP projects for the Project are focused on the broader area as the beneficiaries.

9.2.7.1. Management Objectives

- To enhance SLP related community development initiatives.

9.2.7.2. Management Actions

- Consultation with Project beneficiaries regarding proposed community development needs and associated initiatives;
- Early identification of community members for enrolment in ABET and portable skills training to improve likelihood of employment on the mine;
- Conduct baseline socio-economic survey of households located within primary study area prior to commencement of community development initiatives to enable accurate identification of eligible Local Economic Development (LED) project and skills training beneficiaries and measure impacts of development initiatives on households;
- Collaboration with other developmental role players during implementation;
- Establishing an external monitoring programme to monitor and evaluate community development initiatives as well as HRDP and procurement policy implemented by the mine and its contractors;
- Expanding skills development and capacity building programmes to non-employees; and
- Maintaining a record of training courses completed per individual and community. Where training is offered to non-employees, their contact information and qualifications can be shared with other industries.

9.2.7.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-14.

Table 9-14: Social Development as part of Social and Labour Plan

Social Development as part of Social and Labour Plan				
Project Phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Beyond project life (6)	SLP will be implemented during construction and operational phases.	Highly beneficial (14)	Minor - positive (70)
Extent	Local (3)	Will benefit mine workforce and communities in the primary and secondary study areas.		

Social Development as part of Social and Labour Plan				
Project Phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
Intensity	High - positive (5)	The intensity of the benefits is determined by the scale and reach of the development initiatives.		
Likelihood	Likely (5)	Without adequate stakeholder involvement, development initiatives are unlikely to be sustainable		
Post-Mitigation				
Duration	Permanent (7)	If sustainably managed, benefits could extend beyond the life of the mine	Highly beneficial (16)	Moderate - positive (96)
Extent	Local (3)	As for pre-mitigation		
Intensity	Very high - positive (6)	Recommended measures will enhance stakeholder buy-in and positive impact on beneficiaries		
Probability	Highly probable (6)	Recommended measures will enhance stakeholder buy-in and positive impact on beneficiaries		

9.3. Decommissioning Phase

This section describes and assess potential impact associated with the decommissioning, closure, and rehabilitation of the mine. The impacts are broadly discussed as it is still too early to fully describe and predict the decommissioning impact at present.

9.3.1. Economic Boom-Bust after the Operation Phase

The boom-and-bust economic cycle are a key characteristic of capitalist economies and is sometimes synonymous with the business cycle. During the boom, the economy grows, jobs are plentiful, and the market brings high returns to investors. In the subsequent bust the economy shrinks, people lose their jobs and investors lose money. Mine closure involves large scale downscaling and retrenchment of the workforce over several years or months as well as reduction in the procurement of goods and services. This usually result in:

- Reduced cash flow as the workforce is being retrenched and subsequently loss of induced jobs created by the decreased spending in the economy;
- Reduction in spending within the local economy due to a loss of economic opportunities associated with the Mine’s operational activities;

- The project will no longer be contributing to economic development and diversification;
- Loss of in-direct and induced employment due to the termination of procurement contracts associated with operations;
- Reduction in the rates and taxes paid to the municipality for utilities resulting in a decreased spending in community infrastructure and services development, whilst the pressure on these increases;
- Increased unemployment rate within the study area;
- Increased dependencies in government social grant system due to job losses;
- Reduction in social capital due to the out-migration of in-migrant labour, returnees, and camp followers, etc; as people move to other areas in search of economic opportunities;
- Increased criminal activities such as livestock, home break-in due to a reduction in economic opportunities; and
- Increased price sensitivity especially among the vulnerable households within the study area due to decreased economic activity, shrinkage of the population and oversupply of labour in the area.

If no alternative livelihood options are presented to the workforce and households within the study area; most of mining towns become ghost towns with limited population, and economic opportunities.

9.3.1.1. Management Objectives

- To minimise and manage the economic fall-out associated with the closure of the mine.

9.3.1.2. Management Actions

- Develop and implement an integrated Mine Closure Plan; and
- Proactively assess and manage the social and economic impacts on individuals, regions, and economies where retrenchment and/or closure of the Project are certain.

9.3.1.3. Impact Ratings

The impact significance is described, assessed and rated in Table 9-15.

Table 9-15: Economic Boom-Bust after the Operation Phase

Economic boom-bust after the construction and operation phases				
Project phase			Decommissioning	
Dimension	Rating	Motivation	Consequence	Significance
Pre-Mitigation				
Duration	Medium term (3)	Effects of retrenchments/ decommissioning will be long-lasting on employees, local businesses, and government.	Moderately detrimental (-13)	Moderate - negative (-78)
Extent	Regional (5)	All nonessential employees will be retrenched regardless of their areas of origin.		
Intensity	High - negative (-5)	Loss of employment will be detrimental to all personnel that will be retrenched and in some case those who lose their jobs may be the breadwinners and the loss of employment will affect their households.		
Likelihood	Highly probable (6)	The Project will inevitably come to an end		
Post-Mitigation				
Duration	Medium term (3)	Effects of retrenchments/ decommissioning will be long-lasting on employees, local businesses, and government	Moderately detrimental (-11)	Minor - negative (-66)
Extent	Regional (5)	Will most severely affect employees and service providers from the primary study area		
Intensity	Moderate - negative (-3)	Implementation of social closure plan will reduce the impact of job losses		
Probability	Highly probable (6)	Mitigation will reduce severity of impact on retrenched workers		

9.4. Cumulative Impacts

Potential cumulative impacts associated with the Project are listed in Table 9-16.

Table 9-16: Potential Cumulative Impacts Related to Proposed Project

Nature	Direction of change	Extent of impact
Improved standard of living through increased employment opportunities, local business development, and improved public and community services and facilities (the latter will be dependent on government and private-sector contributions).	Positive	Local and regional
Urban sprawl, housing backlog and / or growth of informal settlements.	Negative	Local and regional
Added pressure on local public service delivery and infrastructure, including housing, health systems, water and sanitation facilities, schools, and police services.	Negative	Local and regional
The use of non-local labour, due to unavailability of local skilled workers, may cause tension in local communities due to expectations that the Project should provide employment to locals.	Negative	Local
The visual impact of mining infrastructure and other industrial developments, and associated changes in land use, are significant and imprint an industrial character onto the rural agricultural landscape, impacting on sense of place.	Negative	Local and regional
Increased pressure on water resources to maintain the reserves required to supply basic human and ecological needs.	Negative	Local and regional
Compounded effects of lighting, noise, traffic, water pollution, dust emission, groundwater abstraction and physical reduction in habitat impacts community health and safety.	Negative	Local and regional
Reduced land availability for agricultural use (crop and livestock production).	Negative	Local, regional and national
Economic dependency on surrounding mines will negatively impact local, regional and national economies with decommissioning and mine closure.	Negative	Local, regional and national

Isolated attempts by the Project to ameliorate the above impacts will have only limited success. It is essential that the Project collaborates with the appropriate governmental and non-governmental structures and forums as well as the mining projects listed above to address these impacts.

9.5. Unplanned and Low Risk Events

Table 9-17 summarises some of the potential unplanned and low risks events associated with the Project implementation.

Table 9-17: Unplanned Events and Associated Mitigation Measures

Unplanned Risk	Mitigation Measures
<ul style="list-style-type: none"> • Potential for accidental spillage of hazardous materials such as fuel (heavy fuel oil or diesel), lubricants, sewerage etc. along transport routes or at proposed infrastructure. • Improper management and disposal of hazardous materials during construction, operation and closure of the mine that could result in water resource contamination. • Land-disturbing activities that may result in increased dust emissions. • Project related traffic along the Transport Corridor that may be sources of fugitive dust emissions, and combustion emissions leading to higher levels of air pollution. 	<ul style="list-style-type: none"> • Develop and implement the following industry standard procedures and protocols: • Spill Prevention, Control and Containment Plan • Waste Management Plan • Emergency Preparedness and Response Plan • Traffic Management Plan
<ul style="list-style-type: none"> • Increased antisocial behaviours associated with presence of mine followers such as prostitution, illegal gambling, illegal shebeens, drug uses, etc. 	<ul style="list-style-type: none"> • Collaborate with the relevant government offices and partners to manage the increase in antisocial behaviours.

10. Environmental Management Plan

Table 10-1: Environmental Management Plan

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
<ul style="list-style-type: none"> Removal of vegetation / topsoil for establishment of mining and linear infrastructure. Diesel storage and explosives magazine. Construction of additional infrastructure, and ventilation fans. (Noise generation/ increased noise level). Construction of access road and haul roads. Stockpiling of soils, rock dump and discard dump establishment. 	Creation of Temporary Employment Opportunities	Socio-economic	Construction	<ul style="list-style-type: none"> As per the legal requirements update, disclose, and implement the SLP. Develop and implement the site-specific Employment Policy in compliance with the South African legal framework and company standards. As part of the Policy: <ul style="list-style-type: none"> Set employment targets aimed at increasing local employment. Set monitoring indicators for local employment. Integrate local employment targets into all procurement contracts to which the appointed contractors must adhere to. To accommodate those that do not have access to android phones or internet, widely advertise employment opportunities using community newspapers, notice boards, etc. All employment opportunities must be advertised in predominantly spoken languages within the primary study area. Ensure that no employment take place at the entrance to the site (to avoid people congregating at the work site). Only formal channels for employment will be used. Develop and implement a grievance mechanism. The mechanism must be widely communication to stakeholders within the primary study area, and a grievance register must be kept up-to-date. 	Remedy and control through monitoring of local employment targets	Pre-construction and construction
All project related activities associated with construction.	Opportunities and Capabilities within the supply chain	Socio-economic	Construction	<ul style="list-style-type: none"> Implement the SLP commitments as they relate to the local business development. Development a Local Procurement Strategy with local business development targets aligned to the commitments set-up in the SLP for the project. Effectively communicate the benefits of local procurement to external stakeholders. Considerations for local procurement should support groups, such as women, visible minorities, and youths. Strengthen the capacity of local businesses to ensure that they are in a better position to supply the services required by the project, through holding workshops and seminars geared towards explain the tender requirements. Consider unbundling of contracts into small work programs to ensure that small and locally based businesses can benefit. Propose and promote joint ventures between large and small Contractors to ensure equitable sharing of economic benefits and skills development. Establish a time-bound commitments to increase local procurement. Such commitments could include annual or mid-term targets for local procurement spending, supplier development programs, local 	Remedy and Control Through implementation of the SLP and monitoring procurement targets.	Pre-construction and construction

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				<p>procurement plans, local procurement key performance indicators (KPIs) for procurement staff, and other local procurement objectives.</p> <ul style="list-style-type: none"> All tender process must follow existing Exxaro's SMME development strategies and programs. Host workshops to provide training for current and potential suppliers to build up skills that were commonly identified as lacking in the supplier audits (e.g., business plan creation, tender preparation, etc.). 		
<ul style="list-style-type: none"> All project related activities associated with construction 	Increase incidences of livestock theft	Socio-economic	Construction and Operation	<ul style="list-style-type: none"> Ensure that no employment take place at the entrance to the site. Within the limits of the law, livestock owners should consider adopting an appropriate animal identification system in accordance with the Draft Document for Livestock Identification and Traceability System South Africa (LITS SA). Livestock owners are encouraged to regularly count their livestock to ensure that all are still accounted for. In case of missing livestock, the incident must be reported to the nearest police station. Where site access requires that Project personnel use farm parameter fences or gates – these must be closed immediately upon entry or exit. Livestock owners are encouraged to regularly monitor, and mend broken fences. Livestock should be kept away from fences or roads to reduce exposure to pedestrians. Once the relevant environmental and mine authorizations are in place, the applicant will commence with negotiations with affected landowners to discuss suitable compensation methods to address livestock theft. Implement the grievance mechanism. 	Control and stop <i>through appropriate identification systems and regular monitoring of livestock</i>	Construction and Operation
<ul style="list-style-type: none"> All project related activities associated with construction 	Impacts Associated with Community Health, Safety and Security	Socio-economic	Construction and Operation	<ul style="list-style-type: none"> Design and implement measures to minimize the risk of hazardous substances entering the environment, including development of an Emergency Prevention, Preparedness and Response Plan for accidents involving release of hazardous substances to the environment. Secure storage and labelling of hazardous substances in line with the manufacturer's recommendations and measures to prevent contact with untrained personnel, birds, and animals. Secondary containment using impervious, chemically resistant material and designed to prevent contact between incompatible materials in the event of a release. Develop information, education and communication campaigns around diseases and health practices including communicable diseases such as HIV/AIDS, TB, and Covid-19; etc. Regularly review and update as necessary its existing communicable diseases management strategy. 	Remedy and Control <i>through appropriate emergency prevention and preparedness in response to hazardous substances.</i> Remedy and Control <i>through effective communication, education and information campaigns around</i>	Construction and Operation

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				<ul style="list-style-type: none"> During the project lifecycle, the risks and impacts to health and safety of affected landowners and communities should be evaluated and preventative measures should be taken early in the project. Integration of organisational policies, programs, and practices, including those relevant to the control of hazards and exposures, the organisation of work, compensation, and benefits, built environment supports, leadership, changing workforce demographics, policy issues, and community supports, that will contribute to safety, health, and wellbeing. Road safety interventions may need to range beyond their fleets of company vehicles and their workers' commutes and should consider the driving, walking, and riding practices of community members in the locality. 	<i>disease awareness and effective health practices</i>	
<ul style="list-style-type: none"> All project related activities associated with construction 	Loss of Agricultural Land	Socio-economic	All project related activities associated with construction	<ul style="list-style-type: none"> The Project shall purchase the land required from the directly affected landowners at the current market value to be determined by a qualified and registered land valuer. This will allow landowners who want to continue their farming activities to purchase replacement farmland elsewhere. The Project shall identify farm portions which will not be immediately mined or used and where possible, lease such to the directly affected farmers to enable them to continue with their crop production. All Project land purchase agreements with the landowners shall include special provisions for farmworkers and / or farm dwellers. Should the landowner plan to sell he / she must do the following: Inform all farm workers and farm dwellers of the change in ownership of the land. Explain in detail the consequences of the sale of land as it relates to the farmworkers and farm dwellers. In case where the farmers will no longer continue with farming, once the relevant environmental and mine authorizations are in place, the Applicant will commence negotiations with the affected landowners and farmworkers to agree on suitable compensation. In discussions with the municipality and the department of rural development and land reforms, ensure that all farm dwellers are accommodated elsewhere within eleven months after the sale of the farm. Implement the grievance mechanism. 	Remedy and Control through appropriate measures to manage land acquisition	Construction and Operation
<ul style="list-style-type: none"> All project related activities associated with construction 	Potential Physical Displacement of Farm Dweller Households	Socio-economic	Construction and Operation	<ul style="list-style-type: none"> Develop and implement a RAP to best practice guidelines. Provide transitional support to displaced farm dweller households to support livelihoods during the transitional period. Establish a consultative structure to comply with the RAP's requirements for informed participation and consultation of affected households and relevant government representatives and departments. 	Remedy and Control through best practice and implementation of a RAP	Construction and Operation

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				<ul style="list-style-type: none"> Ensure that RAP implantation is monitored across time to ensure that displaced households' livelihoods are restored or improved and that they have obtained security of tenure at resettlement site. 		
<ul style="list-style-type: none"> All project related activities associated with construction 	Change of Sense of Place	Socio-economic	Construction and Operation	<ul style="list-style-type: none"> Implement mitigation measures proposed in the Visual Impact Assessment Study. Implement induction programs for all employees and contractors to increase sensitivity to local norms and customs. Project Contractors shall implement a 'no fraternization' policy at the worker's camp to minimise relations with prostitutes and unsafe sexual interaction with residents. Implement traffic safety measures, particularly speed control and driver awareness training for all drivers. Minimise the construction footprint in forested areas and ensure that disturbed areas are rehabilitated with indigenous trees and other plants. Implement mitigation measures and recommended in the relevant specialist reports. Adequate plan for rehabilitation. Offset negative experience of altered sense of place by maximising local employment/ economic benefits. Implementation of the grievance procedure 	Remedy and Control through appropriate measures outlined in the Visual Impact Assessment Study, ensure control of traffic, traffic safety and speed control measures.	Construction and Operation
<ul style="list-style-type: none"> Ventilation fans and infrastructure area containing stockpile areas Underground blasting Maintenance of haul roads, pipelines, machinery, water, effluent and stormwater management infrastructure and stockpile areas. Removal of rock(blasting) Concurrent rehabilitation as mining progresses 	Creation of Long-term Employment opportunities, skills development, and work experience	Socio-economic	Operation	<ul style="list-style-type: none"> As per the legal requirements update, disclose, and implement the Social and Labour Plan. Develop and implement the site-specific Employment Policy in compliance with the South African legal framework and company standards. As part of the Policy: Set employment targets aimed at increasing local employment. Set monitoring indicators for local employment. Integrate local employment targets into all procurement contracts to which the appointed contractors must adhere to. To accommodate those that do not have access to android phones or internet, widely advertise employment opportunities using community newspapers, notice boards, etc. All employment opportunities must be advertised in predominantly spoken languages within the primary study area. Ensure that no employment take place at the entrance to the site (to avoid people congregating at the work site). Only formal channels for employment will be used. Develop and implement a grievance mechanism. The mechanism must be widely communication to stakeholders within the primary study area, and a grievance register must be kept up to date. 	Remedy and control through monitoring of local employment targets	Operation

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
<ul style="list-style-type: none"> All project-related activities associated with operation 	Opportunities and Capabilities within the supply chain	Socio-economic	Operation	<ul style="list-style-type: none"> Implement the SLP commitments as they relate to the local business development. Development a Local Procurement Strategy with local business development targets aligned to the commitments set-up in the SLP for the project. Effectively communicate the benefits of local procurement to external stakeholders. Considerations for local procurement should support groups, such as women, visible minorities, and youths. Strengthen the capacity of local businesses to ensure that they are in a better position to supply the services required by the project, through holding workshops and seminars geared towards explain the tender requirements. Consider unbundling of contracts into small work programs to ensure that small and locally based businesses can benefit. Propose and promote joint ventures between large and small Contractors to ensure equitable sharing of economic benefits and skills development. Establish a time-bound commitments to increase local procurement. Such commitments could include annual or mid-term targets for local procurement spending, supplier development programs, local procurement plans, local procurement key performance indicators (KPIs) for procurement staff, and other local procurement objectives. All tender process must follow existing Exxaro's SMME development strategies and programs. Host workshops to provide training for current and potential suppliers to build up skills that were commonly identified as lacking in the supplier audits (e.g., business plan creation, tender preparation, etc.). 	Remedy and Control Through implementation of the SLP and monitoring procurement targets.	Construction and Operation
<ul style="list-style-type: none"> All project-related activities associated with operation 	Changes to the water quality	Socio-economic	Operation	<ul style="list-style-type: none"> Implement mitigation measures outline in the Surface and Ground Water Specialist Studies associated with this project. Implement a grievance mechanism 	Remedy and control any spills to prevent contamination of groundwater and surface water	Construction and Operation
<ul style="list-style-type: none"> All project-related activities associated with operation 	Impacts associated with surface subsidence	Socio-economic	Operation	<ul style="list-style-type: none"> Develop a Subsidence Management Plan (SMP) prior to the establishment of the mine. The Plan should prioritise the adequate protection of important natural and built features within the Project area. Management could include avoidance of damage to particularly natural features, mitigation of damage or rehabilitation. Possible relocation of people away from all infrastructure areas while surface subsidence occurs could be implemented in accordance with best practice guidelines for resettlement. In all cases, adequate budget 	Remedy and Control through appropriate protection measures. Minimise impacts to people through appropriate relocation.	Construction and Operation

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				<ul style="list-style-type: none"> must be provided for repairs to water and electrical supply systems, walls of buildings, fencing, and roadways. Implement a grievance mechanism. 		
<ul style="list-style-type: none"> All project-related activities associated with operation 	Occupational Health Risks to Mine Workers	Socio-economic	Operation	<ul style="list-style-type: none"> Develop and implement a detailed Occupational Health and Safety Management Plan and System. The Occupational Health and Safety (OHS) management plan should include, but not limited to: <ul style="list-style-type: none"> Hazard identification and risk assessment procedure. A 'fitness for work' programme to ensure that all employees are physically able to undertake their work without impact to their health. Mandatory OHS training programmes provided to all employees, including contractors to ensure staff are aware of the health and safety guidelines. Specific OHS training programmes provided for workers assigned to tasks associated with H&S risks. All workers should be provided with Personal Protective Equipment (PPE) and be mandated to use it. Placement of visual warning signs in place, including those for the electrical and mechanical equipment safety warning, and chemical hazard warning. Toolbox talks or health and safety meeting daily to ensure that procedures are being adhered to, and to discuss any incidents that have occurred. Develop and implement a workforce grievance procedure where they can raise issues and concerns relating to OHS. Conduct information, education, and communication campaigns amongst Project Personnel on hygiene and sanitation. Provide awareness, counselling, and testing (ACT) for all Project personnel, including voluntary testing for STIs and HIV/AIDS in pre-employment and on-going health screening. (Workers will not be denied employment or discriminated against in any way based on their HIV status). Project workers including third party Contractors to be subject to health and safety standards and policies. Develop and implement a workforce grievance mechanism. 	Remedy and Control <i>Hazards and risks through proper assessment procedures.</i>	Construction and Operation
<ul style="list-style-type: none"> All project-related activities associated with operation 	Economic Multiplier	Socio-economic	Operation	<ul style="list-style-type: none"> Implement enhancement measures linked to employment creation and opportunities associated with the supply chain. Implement the SLP related interventions. Compliance with SLP commitments to make maximum use of local SMMEs and BBBEE companies. Implement the grievance mechanism. 	Remedy and Control through SLP related interventions.	Construction and Operation

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
<ul style="list-style-type: none"> All project-related activities associated with operation 	Social Development as part of the Social and Labour Plan (SLP)	Socio-economic	Operation	<ul style="list-style-type: none"> Consultation with Project beneficiaries regarding proposed community development needs and associated initiatives. Early identification of community members for enrolment in ABET and portable skills training to improve likelihood of employment on the mine. Conduct baseline socio-economic survey of households located within primary study area prior to commencement of community development initiatives to enable accurate identification of eligible Local Economic Development (LED) project and skills training beneficiaries and measure impacts of development initiatives on households. Collaboration with other developmental role players during implementation. Establishing an external monitoring program to monitor and evaluate community development initiatives as well as HRDP and procurement policy implemented by the mine and its contractors. Expanding skills development and capacity building programs to non-employees. Maintaining a record of training courses completed per individual and community. Where training is offered to non-employees, their contact information and qualifications can be shared with other industries. 	Remedy and Control <i>Community development initiatives through socio-economic baseline surveys to determine eligible LED projects.</i>	Construction and Operation
<ul style="list-style-type: none"> Demolition and removal of infrastructure Post-closure monitoring and rehabilitation Closure of the underground mine 	Economic Boom-Bust after the operation phase	Socio-economic	Decommissioning	<ul style="list-style-type: none"> Develop and implement an integrated Mine Closure Plan. Proactively assess and manage the social and economic impacts on individuals, regions, and economies where retrenchment and/or closure of the Project are certain. 	Remedy and Control <i>Social impacts through continuous monitoring and assessment during mine closure</i>	Decommissioning

11. Monitoring Programme

The key relevant social aspects to be monitored are based on the social impacts and the relevant mitigation measures that have been identified. These social aspects are as follows:

- Water quality impacts;
- Procurement targets;
- Grievances;
- Community development initiatives as part of the SLP;
- Local employment targets; and
- Livestock monitoring.

Table 11-1: Monitoring Program

Monitoring Element	Comment	Frequency	Responsibility
Water Quality Impacts	<p>Ensure water quality monitoring as per sampled and proposed monitoring locations. Parameters should include but not limited to pH; Electrical Conductivity; Sulphate; major cations (K, Ca, Mg & Na); trace metals (Al, Fe, Zn, Cu, Mn, Co, Se, Mo, Cd, Ni, Cr (VI), Pb, Hg & As); Anions (NO₃, NO₂, NH₄, Cl, F, PO₄); Total Dissolved Solids; Total Suspended solids.</p> <p>It is also recommended to monitor water quality within the mine water dams or water containment facilities to determine the concentration levels in case of an overflow or need for discharge.</p>	<p>Monthly monitoring during construction, operation, decommissioning and for at least three (3) years after closure, or until rehabilitation has reached a sustainable state with no further changes.</p>	<p>Environmental Officer</p>
Procurement targets	<p>Targets for local employment should be monitored</p>	<p>Quarterly</p>	<p>Supply chain management/Human Resource management</p>
Grievances	<p>Review, log, track and document all grievances related to the project.</p>	<p>Daily/Weekly</p>	<p>Community Development/Stakeholder Engagement</p>



Monitoring Element	Comment	Frequency	Responsibility
Community Development Initiatives as part of the SLP	Community Development initiatives should be monitored and evaluated through an external monitoring programme.	Every six months	Community Development/Stakeholder Engagement
Local Employment Targets	Targets for local employment should be monitored	Quarterly	Human Resource Management
Livestock Monitoring	Ensure regular monitoring of livestock	Every six months	Livestock Owners

12. Stakeholder Engagement Comments Received

The Public Participation Process (PPP) has been completed in part, as a process separate to the Social Impact Assessment. No formal consultation was undertaken as part of this assessment. Should any I&AP comments be submitted in relevance to socio-economic aspects during the SEP, these will be considered in the final EIA report.

13. Recommendations

From a socio-economic perspective, it is recommended that the proposed Project should proceed. This recommendation is however subject to the following conditions:

- The mitigation and enhancement measures listed for each impact, negative and positive, must be implemented; especially those relating to:
 - Impacts associated with surface subsidence;
 - Changes to water quality;
 - Impacts associated community health, safety and security;
 - A social management plan and social monitoring plan must be developed to manage and monitor the implementation of these measures and recommend corrective measures, where necessary; and
 - Implement mitigation measures recommended in other specialist studies, including traffic, dust, blasting, air quality, noise, ground and surface water, that are likely to have socio-economic impacts.

14. Reasoned Opinion Whether Project Should Proceed

Digby Wells does not object to the Project provided the recommendations detailed above are implemented.

15. Conclusion

Digby Wells has been appointed to undertake an EA Application Process for the underground mining of Arnot South. This report therefore includes inputs to the EMPr for the application of an IWUL supported by an IWWMP. This report focussed on the Social Impact Assessment and was undertaken in compliance with the following relevant legislation:

- EIA Regulations, 2014 (GN R982 of 04 December 2014, as amended) (the “EIA Regulations, 2014) promulgated under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);

The aims of the SIA were to comply with NEMA EIA Regulations 2014 as they relate to Appendix 6 (Part 1) specialist studies through the following:

- A description of the methodology adopted in preparing the report;
- A description of study limitations and constraints;
- A description of the findings and potential implications of such findings on the impacts of the Project;
- Consideration of socio-economic benefits associated with the Project;
- The provision of implementable mitigation and enhancement measures; and
- Monitoring requirements for inclusion in the EMP or environmental authorisation. To this end, the objectives of the study have been met in Sections 5 through to 12 of this Report.

Based on the findings of the study, Digby Wells has no objects to the Project proceeding if all mitigation and enhancement measures provided are implemented.

16. References

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