

**DIGBY WELLS**  
ENVIRONMENTAL

Your Preferred Environmental  
and Social Solutions Partner

Providing innovative and sustainable  
solutions throughout the resources sector

## Socio-Economic Impact Assessment Report

### Environmental Impact Assessment Study for Dorstfontein East

**Prepared for:**

Exxaro Coal Central (Pty) Ltd

**Project Number:**

EXX5725

September 2021

Digby Wells and Associates  
(South Africa) (Pty) Ltd  
Company Registration:  
2010/008577/07

Turnberry Office Park,  
Digby Wells House.  
48 Grosvenor Road,  
Bryanston, 2191

Phone: +27 (0) 11 789 9495  
Fax: +27 (0) 11 789 9495  
E-mail: [info@digbywells.com](mailto:info@digbywells.com)  
Website: [www.digbywells.com](http://www.digbywells.com)



Directors: J Leaver (Chairman)\*,  
NA Mehloakulu\*, A Mpelwane\*, DJ  
Otto,  
M Rafundisani  
\*Non-Executive



**DIGBY WELLS**  
ENVIRONMENTAL

This document has been prepared by Digby Wells Environmental.

<b>Report Type:</b>	Environmental Impact Assessment Study for Dorstfontein East
<b>Project Name:</b>	Socio-Economic Impact Assessment Report
<b>Project Code:</b>	EXX5725

<b>Name</b>	<b>Responsibility</b>	<b>Signature</b>	<b>Date</b>
Janet Mkhabela	Report Compiler		May 2021
Nonka Byker	Report Compiler & Reviewer		July 2021
Kelly Tucker	Project Manager		

*This report is provided solely for the purposes set out in it and may not, in whole or in part, be used for any other purpose without Digby Wells Environmental prior written consent.*

## DETAILS AND DECLARATION OF THE SPECIALIST

Digby Wells and Associates (South Africa) (Pty) Ltd

**Contact person: Janet Mkhabela**

Digby Wells House

Tel: 011 789 9495

Turnberry Office Park

Fax: 011 789 9498

48 Grosvenor Road

E-mail: janet.mkhabela@digbywells.com

Bryanston

2191

<b>Full name:</b>	Janet Mkhabela
<b>Title/ Position:</b>	Manager: Social Sciences
<b>Qualification(s):</b>	M.SocSci (Policy and Development Studies) (KZN, 2005)
<b>Experience (years):</b>	16
<b>Registration(s):</b>	-

I, **Janet Mkhabela**, declare that: –

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



1 July 2021

*Signature of the Specialist*

*Date*

*Findings, recommendations, and conclusions provided in this report are based on the best available scientific methods and the author's professional knowledge and information at the time of compilation. Digby Wells employees involved in the compilation of this report, however, accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and using the information contained in this document.*

*No form of this report may be amended or extended without the prior written consent of the author and/or a relevant reference to the report by the inclusion of an appropriately detailed citation.*

*Any recommendations, statements or conclusions drawn from or based on this report must clearly cite or refer to this report. Whenever such recommendations, statements or conclusions form part of a main report relating to the current investigation, this report must be included in its entirety.*

## EXECUTIVE SUMMARY

Exxaro Coal Central (Pty) Ltd (Exxaro Coal) holds an approved Mining Right with reference number **MP 30/5/1/2/3/2/1 (51) MR** for opencast and underground mining at the Dorstfontein East Coal Mine (DECM). The DECM is located east of the R547/R544 intersection in the Emalahleni Local Municipality (ELM) of the Nkangala District (NDM), Mpumalanga. The closest human settlements are Thubelihle (approximately 4.5 km west of the mine) and Kriel (approximately 8 km southwest of the mine).

The current proposal aims to extend the existing approved underground mining area (approved under the ownership of Total Coal South Africa (Pty) Ltd) and introduce supporting infrastructure to achieve this. DECM was previously owned by Total Coal South Africa (Pty) Ltd (Total) and was ceded to Exxaro Resources Limited on 20 August 2015 which has an approved Environmental Management Programme (EMPr), dated October 2017. Exxaro Coal aims to extend the underground mining area of the 2 Seam and 4 Seam associated with the Mining Right (the Project). The Project area straddles the ELM and neighbouring Govan Mbeki Local Municipality (GMLM) in the Gert Sibande District (GSD).

This report details the results of the Socio-Economic Impact Assessment (SIA) that was undertaken in support of the environmental authorisation process for the proposed project and builds on the SIA Scoping study that was completed in 2020. Socio-economic impacts can usually be divided into three broad categories, namely:

- **Physical intrusion** refers to the impact that Project infrastructure and Project-related activities' material presence could have on an area.
- **Economic pull** occurs when a Project exerts changes and impacts on job creation, in-migration of workers and jobseekers, multiplier effects in the local and regional economy – all of which can lead to an increased risk of social pathologies and community conflict. These impacts can typically be expected in settlements and towns closest to the Project.
- **Indirect or induced impacts** are by-products of the above-mentioned categories and can include aspects such as increased pressure on local services and resources, macro-economic benefits, etc.

Bearing these categories in mind, three interdependent study areas were identified that correspond, where relevant, to existing administrative boundaries. The study areas were derived through a mapping exercise considering settlements in relation with Project footprint and its associated buffer areas. Subsequently, areas of that are likely to experience Project impacts were identified and categorised as shown the table below.

Study Area	Definition	Administrative Boundary
Regional	The area likely to experience broader (higher level) indirect impacts, e.g., an increase tax base that assists with	NDM & GSDM ELM & GMLM

Study Area	Definition	Administrative Boundary
	non-mining related community development.  (Indirect or induced impacts)	
Secondary	The area likely to experience indirect Project impacts, such as the economic pull exerted by the Project.  (Economic Pull)	Kriel, comprised of ELM Wards 26 and 27
Primary	The area likely to experience direct Project impacts. It is defined as the area containing the existing DECM, the Project site and the immediate neighbouring area.  (Physical intrusion)	GMLM Ward 15 ELM Ward 25

The expected socio-economic impacts during the construction phase are as follows:

- Temporary employment creation: Temporary economic injection through income, mostly on an individual or household level.
- Project-induced in-migration: A temporary increase in certain segments of the population can place additional strain on housing and services.

The expected socio-economic impacts during the construction phase is as follows:

- Longer term employment creation: Extended employment periods at the mine through the extension of the Life of Mine (LoM).
- Project-induced in-migration: An increase in certain segments of the population can place additional strain on housing and services.
- Skills training: As per the requirements of the Social and Labour Plan (SLP), the workforce and some of the local community will be upskilled in line with the mine's skills development plan.
- Social investment in local communities: The mine is currently implementing mine community development projects and will continue to do so under this project that extends the LoM and the mine's SLP commitments.
- Multiplier effects on the local and regional economy: Through the expansion of the DEMC, direct and multiplier effects will continue for a further 14 years.
- Increase in nuisance factors: The extended LoM implies an extension and intensification of certain nuisance factors such as blasting, resulting in continued noise and dust pollution and other issues.

- Increased competition of water resources: Water is a scarce resource, and the expansion of the mine could further impact on this limited resource.
- Community health, safety, and security: Continuation and expansion of mining activities will lead to a possible increase and continuation of impacts associated with community health, safety, and security.

The most significant impact expected during the decommissioning phase at this stage has to do with economic contraction, i.e., the loss of employment and a reduction in the local area's tax base. This is likely to have a negative economic impact on the area at large.

The current opencast mining operation has an Environmental Management Programme (EMPr) in place that contains various mitigation measures that the mine must adhere to and report on to the Department of Mineral Resources and Energy (DMRE). Most of these mitigation measures will continue during the expansion phase of the underground mining. However, once the expansion has been approved, it may become necessary to develop I measures to address any additional impacts associated with the expansion project, which will be subject to a revised EMPr.

It is expected that the overall Project would have a beneficial socio-economic impact on the area by expanding the Life of Mine by 14 years, thereby extending the employment and other tax benefits for this period.

It is, however, also important to take note of a growing movement of social mobilisation against coal mining in the highveld and Mpumalanga areas – based largely on the health impacts that coal mining is perceived to have on surrounding communities (see reports such as the 2016 GroundWork Report entitled “The destruction of the highveld”, amongst others). Coal mining by its nature is not a clean industry and therefore the mine should pay careful attention to implementing the required mitigation measures under its EMPr and take appropriate and timeous corrective action where mitigation measures fail.

Communities have the means and opportunities these days to mobilise social action successfully and therefore the mine's continued stakeholder engagement actions are key in the success of the Project. If communities are of the opinion that they are left out or ignored, or that their grievances are not addressed, it is likely to lead to protest action and rioting at the mine gate.

The potential cumulative negative impacts of mining on agricultural production and long-term food security are of specific concern but is an issue for the wider Mpumalanga area that falls outside the scope of this SIA. It is regarded as a public policy issue that needs to be addressed through clear spatial planning principles to protect arable land on a national and local level, including the demarcation of no-go areas and/or requirements for alternative mining methods such as underground mining in priority areas.

## TABLE OF CONTENTS

1.	Introduction .....	1
1.1.	Definition of a Socio-Economic Impact Assessment .....	6
1.2.	Study Objectives .....	6
2.	Project Description .....	6
2.1.	Underground Mining .....	6
2.2.	Additional Surface Infrastructure .....	7
2.2.1.	Sewage Treatment Plant .....	7
2.2.2.	Water Treatment Plant .....	7
2.2.3.	Water Storage Tank .....	7
2.2.4.	Discard Processing Plant .....	7
2.3.	Proposed Infrastructure and Activities .....	7
3.	Relevant Legislation, Standards and Guidelines .....	8
4.	Assumptions, Limitations and Exclusions .....	10
5.	Methodology .....	10
5.1.	Literature Review and Desktop Assessment .....	10
5.2.	Impact Assessment Methodology .....	11
6.	Socio-Economic Baseline Profile .....	16
6.1.	Regional Study Area .....	17
6.1.1.	Nkangala District Municipality .....	17
6.1.2.	Gert Sibande District Municipality .....	21
6.1.3.	Emalahleni Local Municipality .....	21
6.1.4.	Govan Mbeki Local Municipality .....	22
6.2.	Secondary Study Area .....	22
6.2.1.	History of the Area .....	23
6.2.2.	Land Use .....	23
6.2.3.	Population Demographics .....	23
6.2.4.	Household Characteristics .....	24
6.2.5.	Economic Profile .....	25



6.2.6.	Development Needs .....	27
6.3.	Primary Study Area .....	28
6.3.1.	Summary of Population Demographics .....	28
6.3.2.	Summary of Household Characteristics .....	29
6.3.3.	Summary of Economic Profile .....	30
6.3.4.	Income Profiles .....	30
6.3.5.	Access to Social Services and Infrastructure .....	31
6.3.6.	Development Needs .....	31
7.	Impact Assessment.....	32
7.1.	Construction Phase .....	32
7.1.1.	Impact: Temporary Employment Creation.....	32
7.1.2.	Impact: Project-induced In-migration.....	34
7.2.	Operational Phase.....	36
7.2.1.	Impact: Longer Term Employment Creation.....	37
7.2.2.	Impact: Project-induced In-migration.....	39
7.2.3.	Impact: Skills Training.....	40
7.2.4.	Impact: Social Investment in Local Communities .....	43
7.2.5.	Impact: Multiplier Effects on the Local and Regional Economy .....	44
7.2.6.	Impact: Community Health, Safety and Security .....	46
7.3.	Decommissioning Phase .....	51
7.3.1.	Impact: Economic Contraction .....	51
7.4.	Cumulative Impacts.....	53
7.5.	Unplanned and Low Risk Events.....	54
8.	Social Impact Management Plan .....	55
9.	Monitoring Programme.....	60
10.	Stakeholder Engagement Comments Received .....	61
11.	Recommendations .....	64
11.1.	Stakeholder Engagement.....	64
11.2.	Mitigation Measures .....	66
12.	Reasoned Opinion Whether Project Should Proceed.....	66

13. Conclusion .....66

## LIST OF FIGURES

Figure 1-1: Approved and Proposed Underground Areas (Seam 2) ..... 3  
Figure 1-2: Approved and Proposed Underground Areas (Seam 4) ..... 4  
Figure 1-3: Surface Infrastructure Layout ..... 5  
Figure 5-1: Relationship Between Consequence, Probability and Significance Ratings ..... 15  
Figure 6-1: Overview of Relationship between Study Areas ..... 17  
Figure 6-2: Overview of Nkangala District’s Spatial Development Framework ..... 20  
Figure 6-3: Education Profile of the Secondary Study Area..... 24  
Figure 6-4: Employment Profile of the Secondary Study Area..... 25  
Figure 6-5: Employment Profile of the Economically Active Population ..... 26  
Figure 6-6: Annual Household Income in the Secondary Study Area ..... 27  
Figure 6-7: Annual Household Income ..... 30

## LIST OF TABLES

Table 2-1: Project Phases and Associated Activities ..... 8  
Table 3-1: Applicable Legislation, Regulations, Guidelines and By-Laws ..... 9  
Table 4-1: Applicable constraints and limitations and their consequences ..... 10  
Table 5-1: Impact Rating Options..... 12  
Table 5-2: Significance Ratings..... 14  
Table 6-1: SIA Study Areas..... 16  
Table 6-2: Development Needs in the Secondary Study Area..... 27  
Table 6-3: Population Demographics ..... 29  
Table 6-4: Summary of the Household Characteristics..... 29  
Table 6-5: Summary of the Population’s Education and Employment Status ..... 30  
Table 6-6: Access to Social Services ..... 31  
Table 6-7: Development Needs in the Primary Study Area ..... 31

---

Table 7-1: Summary of Impacts expected during the Construction Phase.....	32
Table 7-2: Impacts associated with Temporary Employment Creation .....	33
Table 7-3: Impacts associated with Project-induced In-migration .....	35
Table 7-4: Summary of Impacts expected during the Operational Phase .....	36
Table 7-5: Impact associated with Employment Creation during Operations .....	38
Table 7-6: Influx-related Impacts during the Operational Phase .....	40
Table 7-7: Impacts associated with Skills Training during the Operational Phase .....	42
Table 7-8: Impact related to Social Investment in Local Communities during the Operational Phase .....	44
Table 7-9: Impacts related to Multiplier Effects on the Local and Regional Economy .....	45
Table 7-10: Impacts associated with Community Health, Safety and Security.....	50
Table 7-11: Impacts associated with Economic Contraction due to Decommissioning .....	52
Table 7-12: Potential Cumulative Impacts related to the Project .....	53
Table 7-13: Unplanned Events and Associated Mitigation Measures .....	55
Table 8-1: Social Impact Management Plan.....	56
Table 9-1: Summary of Social Aspects to be Monitored .....	60
Table 10-1: Summary of Socio-Economic related issues .....	61
Table 11-1: Media for Disseminating Key Messages.....	65

## ACRONYMS, ABBREVIATIONS AND DEFINITION

<b>ECC</b>	Exxaro Central Coal
<b>GMLM</b>	Govan Mbeki Local Municipality
<b>DECM</b>	Dorstfontein East Coal Mine
<b>GSDM</b>	Gert Sibande District Municipality
<b>NDM</b>	Nkangala District
<b>ROM</b>	Run of Mine
<b>EMPr</b>	Environmental Management Programme
<b>ELM</b>	Emalahleni Local Municipality
<b>MQA</b>	Mining Qualifications Authority
<b>EAP</b>	Environmental Assessment Practitioner
<b>SIA</b>	Socio-Economic Impact Assessment
<b>STP</b>	Sewage Treatment Plant
<b>LoM</b>	Life-of-Mine
<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation, And Amortisation
<b>IDP</b>	Integrated Development Plan
<b>SDF</b>	Spatial Development Framework
<b>KTPM</b>	Kilotons Per Month
<b>EIA</b>	Environmental Impact Assessment
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
<b>MRA</b>	Mining Rights Area
<b>MTIS</b>	Mineable tonnes in-situ
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>IWUL</b>	Integrated Water Use License
<b>PCD</b>	Pollution Control Dam
<b>LED</b>	Local Economic Development
<b>GVA</b>	Gross Value Add
<b>SMMEs</b>	Small, Medium and Micro Enterprises

<b>SLP</b>	Social Labour Plan
<b>BBBEE</b>	Broad-Based Black Economic Empowerment (Act 53 of 2003)
<b>HIV/AIDS</b>	Human immunodeficiency virus infection and acquired immunodeficiency syndrome
<b>TB</b>	Tuberculosis
<b>Covid-19.</b>	Coronavirus disease 2019
<b>IFC</b>	International Finance Corporation

The table below shows where legal requirements pertaining to the SIA was addressed in this report:

<b>Legal Requirement</b>		<b>Section in Report</b>
(1)	A specialist report prepared in terms of these Regulations must contain-	
	details of-	
(a)	(i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	See page iii.
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	See page iii.
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.2
cA	And indication of the quality and age of the base data used for the specialist report;	Section 5.1
cB	A description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7.4
(d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	n/a
(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 5.1
(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 alternatives;	n/a
(g)	an identification of any areas to be avoided, including buffers;	n/a

<b>Legal Requirement</b>		<b>Section in Report</b>
(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;	n/a
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 4
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7
(k)	any mitigation measures for inclusion in the EMPr;	Section 8
(l)	any conditions/aspects for inclusion in the environmental authorisation;	n/a
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
(n)	a reasoned opinion (Environmental Impact Statement) -	Section 12
	whether the proposed activity, activities or portions thereof should be authorised; and	Section 11
	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 9
(o)	a description of any consultation process that was undertaken during preparing the specialist report;	Section 5.1
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Section 10
(q)	any other information requested by the competent authority.	To be determined after authority review

## 1. Introduction

Exxaro Coal Central (Pty) Ltd (Exxaro Coal) holds an approved Mining Right with reference number **MP 30/5/1/2/3/2/1 (51) MR** for opencast and underground mining at the Dorstfontein East Coal Mine (DECM). The DECM is located east of the R547/R544 intersection in the Emalahleni Local Municipality (ELM) of the Nkangala District (NDM), Mpumalanga. The closest human settlements are Thubelihle (approximately 4.5 km west of the mine) and Kriel (approximately 8 km southwest of the mine).

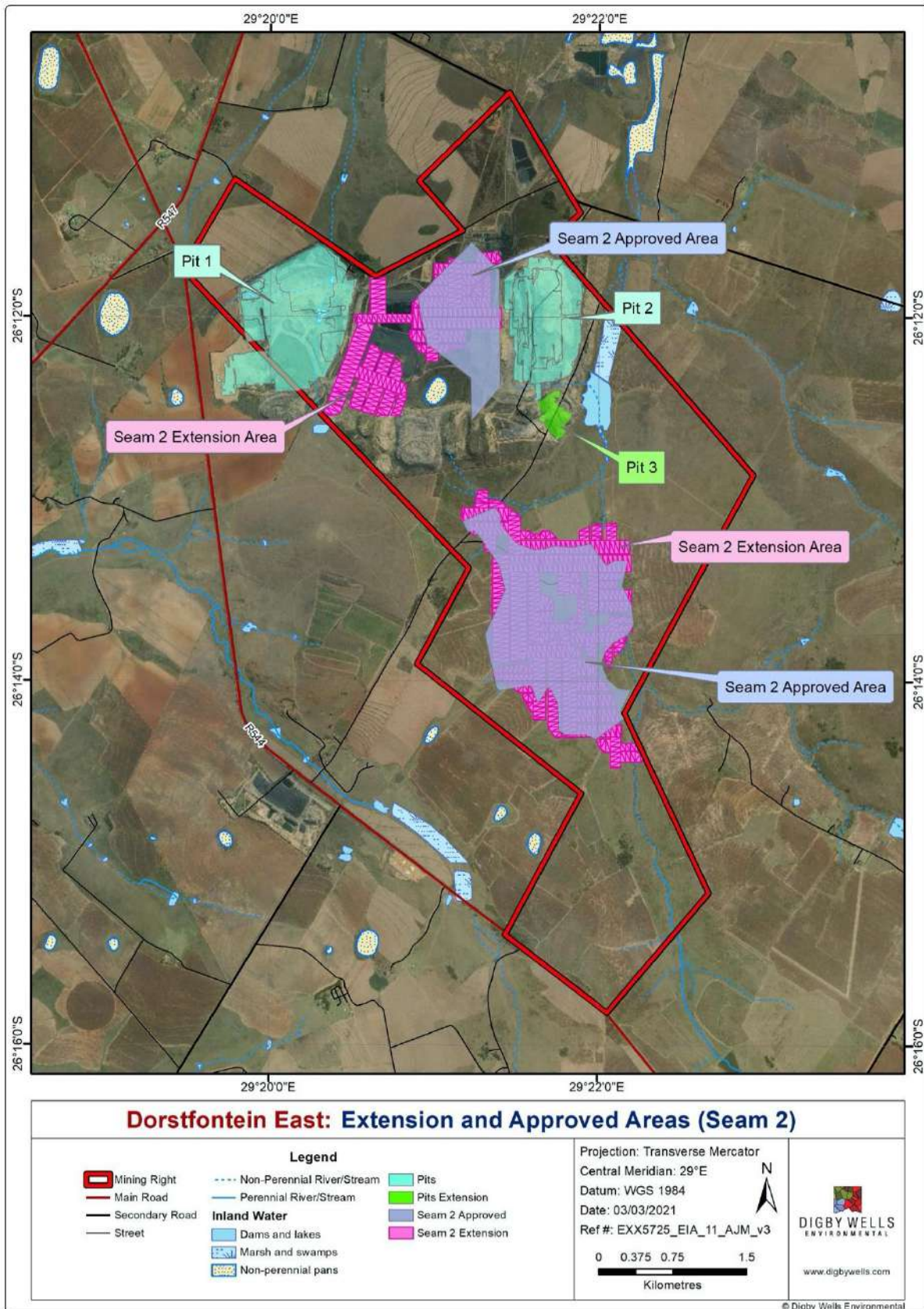
The current proposal aims to extend the existing approved underground mining area (approved under the ownership of Total Coal South Africa (Pty) Ltd) and introduce supporting infrastructure to achieve this. DECM was previously owned by Total Coal South Africa (Pty) Ltd (Total) and was ceded to Exxaro Resources Limited on 20 August 2015 which has an approved Environmental Management Programme (EMPr), dated October 2017. Exxaro Coal aims to extend the underground mining area of the 2 Seam and 4 Seam associated with the Mining Right (the Project). The Project area straddles the ELM and neighbouring Govan Mbeki Local Municipality (GMLM) in the Gert Sibande District (GSD) (refer to Figure 1-1 and Figure 1-2).

The required infrastructure/activities proposed for the extension include (refer to Figure 1-3):

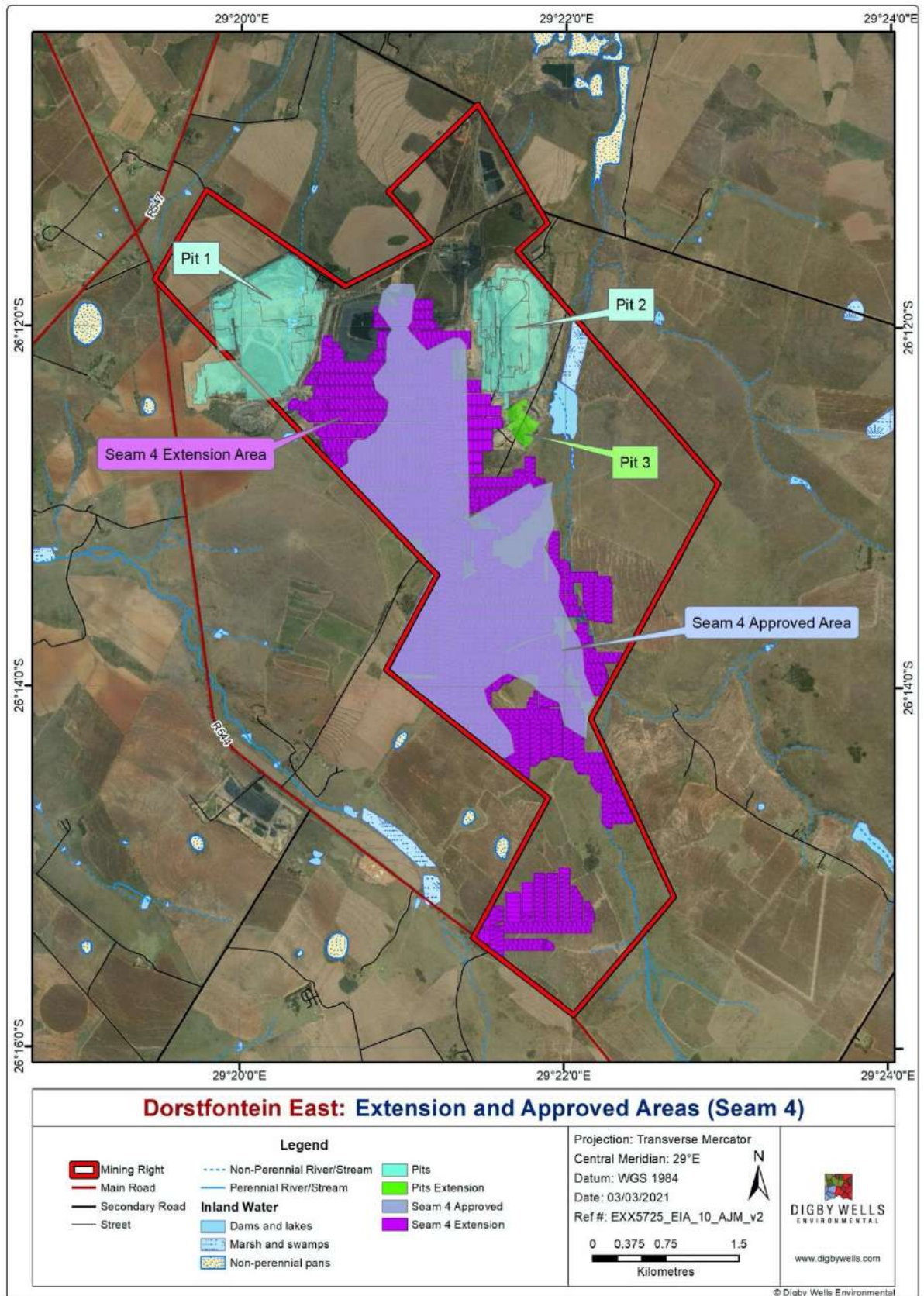
- Portal ventilation fan;
- Sewage Treatment Plant;
- Water Treatment Plant;
- Potable Water storage tank;
- Erikson Pond;
- A new 22 kV overhead powerline from the existing substation to a new 22kV substation;
- Run of Mine (ROM) Stockpile conveyor at portal;
- Change house;
- Lamp room;
- Office;
- Clinic;
- Stores;
- Workshop area;
- Stone dust silo; and
- Coal discard processing plant.

An environmental regulatory process comprising of an amendment and consolidation of the Environmental Management Programme (EMPr) and Integrated Water Use License (IWUL) is required for the new proposals.





**Figure 1-1: Approved and Proposed Underground Areas (Seam 2)**



**Figure 1-2: Approved and Proposed Underground Areas (Seam 4)**

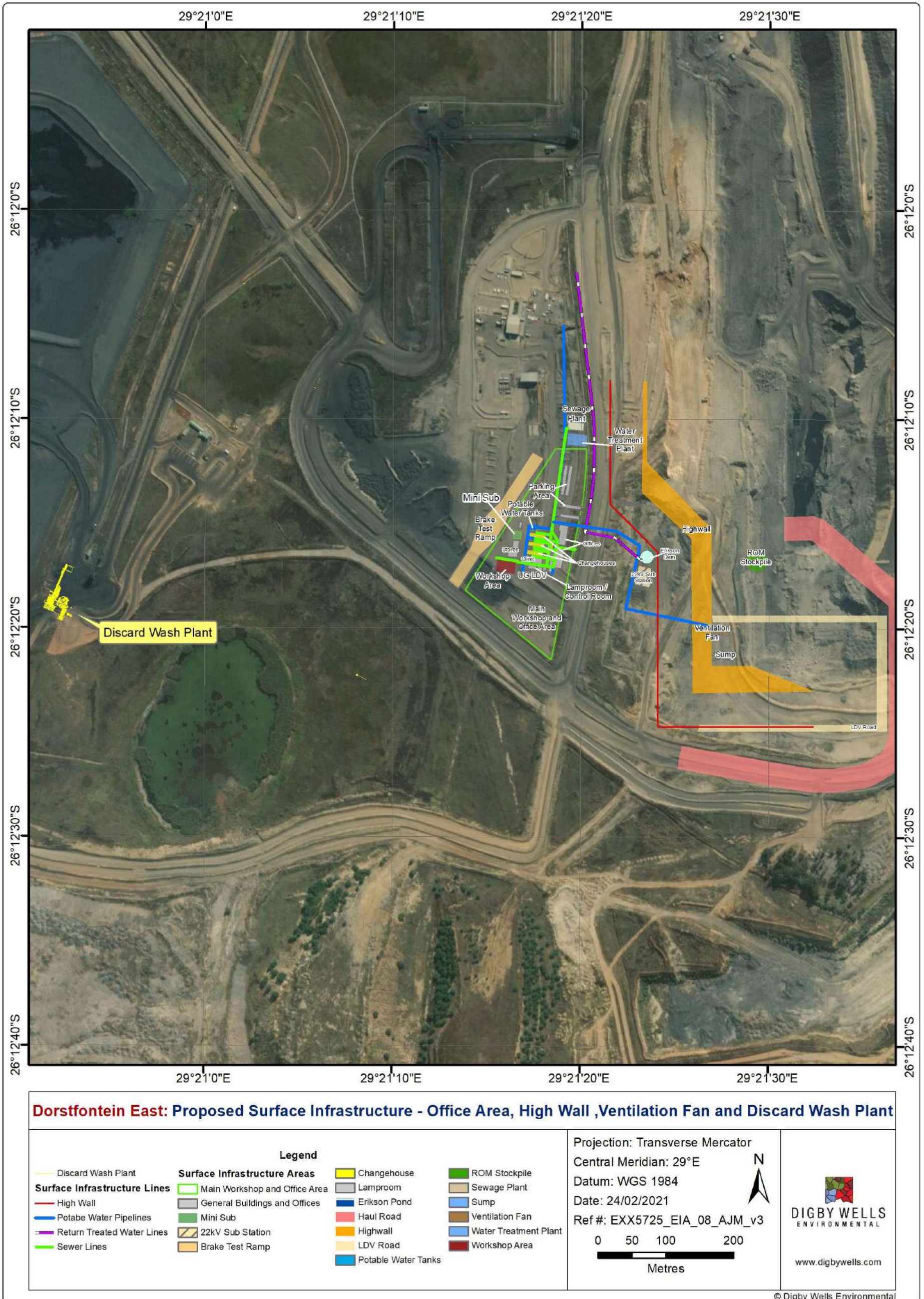


Figure 1-3: Surface Infrastructure Layout

Exxaro Coal has appointed Digby Wells Environmental (Digby Wells) as the Environmental Assessment Practitioner (EAP) to undertake the environmental authorisation and associated specialist studies required for the Project (i.e., the extension of the underground mining area of 2 Seam and 4 Seam). This report details the results of the Socio-Economic Impact Assessment (SIA) that was undertaken in support of the environmental authorisation process for the proposed project and builds on the SIA Scoping study that was completed in 2020.

## 1.1. Definition of a Socio-Economic Impact Assessment

The International Association of Impact Assessment (IAIA) endorsed the *International Principles for Social Impact Assessment*, which defines a SIA as “*the process of analysing, monitoring, and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment*” (Vanclay, 2003).

## 1.2. Study Objectives

The SIA has the following objectives:

- To describe the existing socio-economic impacts of the current opencast mining project as a point of departure (baseline);
- To predict the likely socio-economic impacts of the proposed new mining activities, ranking these in terms of relative priority; and
- Based on the outcome of the impact assessment, formulate appropriate mitigation measures to avoid or ameliorate negative impacts and enhance positive ones.

## 2. Project Description

This application pertains to the expansion of underground mining and additional surface infrastructure. These activities are explained in more detail below.

### 2.1. Underground Mining

The project aims to expand the DECM’s underground mining area within the existing Mining Right Areas (Ref no. MP30/5/1/2/51MR). DECM was previously owned by Total Coal South Africa (Pty) Ltd (Total) and was ceded to Exxaro Resources Limited on 20 August 2015, who has an approved Environmental Management Programme (EMPr), dated October 2017. On 3 September 2021 Overlooked Colliery (Pty) Ltd acquired Dorstfontein East Coal Mine from Exxaro Resources Limited. Exxaro Coal is now applying to expand the underground mining areas as approved under Total. Subsequently, additional coal reserves have been identified for mining which are not covered under the existing approval. Exxaro Coal is also approved to undertake underground mining of deeper coal reserves at DECM. The underground mining operations will be accessed from the existing Pit 2 open cast and Dorstfontein West

operations. DECM therefore intends to further extend the Life-of-Mine () through the exploitation of these identified additional coal reserves between 2021 until 2034 (14 years).

In addition, a portion of Pit 3, which is approved for opencast mining, will now be included into the underground mining extension. The Pit 3 coal reserves are contained in Seam 4.

## **2.2. Additional Surface Infrastructure**

For the proposed expansion, DECM will require a new Sewage Treatment Plant, a new Water Treatment Plant, a water storage tank, and a coal discard processing plant. These are described in more detail below.

### **2.2.1. Sewage Treatment Plant**

DECM has an approved Sewage Treatment Plant (STP) on site, however, with the extension of underground operations additional sewage capacity is required. The plant will be in a “dirty water area” in the main workshop and office area and will service up to 220 people per day. The treatment plant will require 45m<sup>3</sup> of water per day to process 16.2kg of organic load. The plant is 3m high, with a 2.3m diameter, with a 10m<sup>3</sup> volume. The STP will discharge into the existing Pollution Control Dams (PCDs).

### **2.2.2. Water Treatment Plant**

The proposed Water Treatment Plant is located north of the main workshop and office area, also within a previously disturbed area. The plant will treat domestic wastewater only, therefore, no gypsum or brine by-products will result from the treatment process. The effluent emanating from the plant will be collected by the existing PCDs.

### **2.2.3. Water Storage Tank**

Water from the PCDs will be stored in a raw water tank with a capacity of 300m<sup>3</sup>. This dirty water will be fed into the STP.

### **2.2.4. Discard Processing Plant**

Establishing a coal discard processing plant has also been proposed. This plant will treat 100 kilotons per month (ktpm) of re-mined coal discard. The plant will process discard from both the existing discard dump and the coal handling and preparation plant. The plant will also accommodate all future DECM discard production. The product will be transported to the plant feed stockpile area by means of truck haul and from there, fed into the plant through a conveyor.

## **2.3. Proposed Infrastructure and Activities**

Table 2-1 provides an overview of the project activities relevant to the SIA.

**Table 2-1: Project Phases and Associated Activities**

<b>Project Phase</b>	<b>Associated Activities</b>
Pre-construction Phase	Site clearance, clearing and grubbing operations.
	Cut vegetation stockpiles and disposal.
Construction Phase	Planning for mining-related activities, including scheduling of construction and commissioning of facilities, and environmental aspects of the project.
	The site will be stripped of overburden, which will be stockpiled if it is suitable for use later in the mine reclamation.
	Surface and underground infrastructure will be established, including the 22kV substation and power line, stockpile conveyor, administration block (offices, clinic, etc.)
	Blasting and drilling will commence to reach the coal.
Operational Phase	Coal extraction, processing, and associated activities, including periodic blasting and drilling (extraction is more selective in underground mining than in open pit mining, and less waste rock is generated).
	Stockpiling (rock dumps, softs dumps, soils, RoM, product, discard dump, etc.)
	Water use and storage on-site – water will be required for various domestic and industrial use. The PCDs will be used to capture water from the mining area, which will be stored and used as needed.
	Storage, handling, and treatment of hazardous products (such as fuel, explosives, and oil) and waste.
	Maintenance activities to ensure that all infrastructure is operating optimally and does not pose a threat to the environment. Maintenance operations will include haul roads, crushing and washing plants, machinery, water and stormwater management infrastructure, stockpile areas, dumps, etc.
Decommissioning Phase	Removal of equipment and plant infrastructure.
	Rehabilitation of disturbed areas, including rehabilitation of PCDs and other discard plants.
	Protecting the pit (by building a bund, installing a security fence, and stabilising the top bench).
	Environmental monitoring and maintenance.
	Submission of closure report and application for closure to the authorities.

### 3. Relevant Legislation, Standards and Guidelines

There is currently no legislation in South Africa that has any direct bearing on SIAs. However, there are laws that govern public participation and stakeholder engagement and these, either

directly or indirectly, inform the socio-economic context of SIA studies. The relevant legislation and other regulatory guidelines are briefly summarised in Table 3-1.

**Table 3-1: Applicable Legislation, Regulations, Guidelines and By-Laws**

Legislation, Regulation, Guideline or By-Law	Applicability
<p><b><u>Constitution of South Africa (Act 7 of 1996)</u></b>                      The Constitution mostly speaks of human rights with the intention of establishing a “society based on democratic values, social justice and fundamental human rights.</p>	<p>The SIA considers ways to promote equality and the advancement of human rights and freedoms.</p>
<p><b><u>National Environmental Management Act (Act 107 of 1998)</u></b>                      The National Environmental Management Act (NEMA) defines environment as the natural, physical, chemical, aesthetic and cultural properties affecting a person’s health and wellbeing.                      It further stipulates that sustainable development requires an integrated approach to social, economic, and environmental factors to ensure that development serves present and future generations.</p>	<p>The SIA considers other specialist studies to ensure that the socio-economic environment also considers the effect that the biophysical, aesthetic, and cultural environments have on their health and wellbeing.</p>
<p><b><u>Mineral and Petroleum Resources Development Act (Act 28 of 2002), as amended</u></b>                      The Mineral and Petroleum Resources Development Act (MPRDA) requires all mining companies to assess their social impacts from start to post-closure.                      The 2018 Mining Charter furthermore requires that neighbouring communities must hold 8% of the mining right (usually done through community trusts) and the payment of 1% EBITDA (earnings before interest, taxes, depreciation, and amortisation) are paid to communities and employees as a trickle dividend from year 6 of the mining right.</p>	<p>The SIA sets the tone for the Social and Labour Plan (SLP) as it highlights socio-economic impacts and mitigation measures. The latter can often be utilised to inform community development projects as part of the mine’s commitments to mine community development.</p>
<p><b><u>Municipal Systems Act (Act 32 of 2000)</u></b>                      The Municipal Systems Act provides for the principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and to ensure universal access to essential services that are affordable to all. In accordance with this Act, all municipalities are required to develop and implement a five-year Integrated Development Plan (IDP) and Spatial Development Framework (SDF) for their areas of jurisdiction.</p>	<p>Any development, whether because of the Project directly or as a spin-off from the Project, should consider the local municipality’s SDF and IDP.</p>

## 4. Assumptions, Limitations and Exclusions

The constraints and limitations to the impact assessment are presented in Table 4-1 below.

**Table 4-1: Applicable constraints and limitations and their consequences**

Constraint or Limitation	Consequence
Due COVID-19, people have become reluctant to participate in direct engagement activities and have become non-responsive to e-mails and telephonic interviews.	The primary data used in the report is limited and relied heavily on other engagement activities that were undertaken by the broader team, in particular the public participation team.
The report used secondary data that was drawn from Census 2011 as the last official census and Community Survey 2016. Data from the latter is only available on municipal level (i.e., not ward level).	Some of the data used on this report may be outdated owing to the last official census conducted in 2011 and 2016.
Technical and other information supplied by Exxaro Coal Central is assumed to be correct.	Incorrect or outdated project information influences the outcome of the assessment.

## 5. Methodology

This section provides an overview of the approach followed to address the study objectives (see Section 1.2).

### 5.1. Literature Review and Desktop Assessment

The approach taken to data collection – and to the SIA in general – was to collaborate with other members of the Digby Wells team involved in the EIA and supporting specialist studies. Instances of such collaboration included the following:

- Information obtained by the Digby Wells public participation team (e.g., during meetings with local government officials and other Interested & Affected Parties [I&APs]) was used to inform the social baseline and impact assessment; and
- The findings of other specialist studies were reviewed to identify cross-disciplinary linkages, i.e., impacts assessed by one specialist discipline that could give rise to indirect or induced impacts relevant to another discipline. As an example, project-induced changes in groundwater quality and quantity could cause social impacts by altering the availability and/or quality of water for domestic consumption.

Available public documents were reviewed to obtain relevant information on current and planned Project activities, on baseline socio-economic conditions and on anticipated impacts of the Project. Secondary data sources reviewed included the following:



- Provincial reports, district and local municipal Integrated Development Plans (IDPs) and Local Economic Development (LED) Plans;
- StatsSA census data from Wazimap (2019)<sup>1</sup> as the prime source of desktop data to prepare the baseline socio-economic profiles of potentially affected areas;
- Previous studies and reports concerning the proposed Project, specifically the SIA Scoping Study compiled by Digby Wells (2020) and the SIA compiled by SRK (April 2017) for the proposed extension of Pit 1 and the pipeline between Dorstfontein West and East; and
- Available maps and satellite imagery.

## 5.2. Impact Assessment Methodology

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.

The impact assessment methodology is based on a rating process that is designed to provide a numerical rating of the various social impacts identified. The significance rating process follows the established impact / risk assessment formula, as shown below:

---

<sup>1</sup> Wazimap data is supported by the South African government, specifically through the Department of Public Service and Administration's (DPSA's) initiative to develop [www.data.gov.za](http://www.data.gov.za) as a central point for accessing public government data. Wazimap is a featured app on the website (South Africa National Data Portal, 2019) and provides Census 2011 socio-economic data adjusted to 2016 ward boundaries. The latter dataset was used as it allowed comparisons across the province, district and local municipality, and the ward in which the project was located. More recent estimates of socio-economic status of the population are available in the Community Survey 2016 dataset for the first three levels of government but not at ward level

**Significance = consequence of an event x probability of the event occurring**

where

**Consequence = Type of impact x (Intensity + Spatial Scale + Duration)**

and

**Probability = Likelihood of an impact occurring**

In the formula for calculating **consequence**:

**Type of impact = +1** (for positive impacts) **or -1** (for negative impacts)

The weight assigned to the various parameters for positive and negative impacts in the formula is presented in Table 5-1.

**Table 5-1: Impact Rating Options**

Rating	Criteria and Definitions	
	Negative Impacts (type of impact = -1)	Positive Impacts (type of impact = +1)
<b>Intensity</b>		
7	Irreversible damage to highly valued items of great sociocultural significance or complete breakdown of social order	Noticeable, on-going social benefits which have improved the livelihoods and living standards of the local community in general
6	Irreparable damage to highly valued items of sociocultural significance or breakdown of social order	Great improvement to livelihoods and living standards of a large percentage of population
5	Very serious widespread social impacts. Irreparable damage to highly valued socio-cultural items	On-going and widespread positive benefits to local communities which improves livelihoods
4	On-going serious social issues. Significant damage to structures / items of sociocultural significance	Average to intense social benefits to some people
3	On-going social issues. Damage to items of sociocultural significance	Average, on-going positive benefits, not widespread but felt by some
2	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected	Low positive impacts experience by very few of population

Rating	Criteria and Definitions	
	Negative Impacts (type of impact = -1)	Positive Impacts (type of impact = +1)
1	Minimal social impacts, low-level repairable damage to commonplace structures	Some low-level social benefits felt by very few of the population
<b>Spatial Scale</b>		
7	<u>International</u> : The effect will occur across international borders	
6	<u>National</u> : Will affect the entire country	
5	<u>Province/ Region</u> : Will affect the regional study area and potentially the Mpumalanga Province	
4	<u>Municipal Area</u> : Affect will be limited to the local study area	
3	<u>Local</u> : Extending across the site and to nearby settlements within the local study area	
2	<u>Limited</u> : Limited to the site and its immediate surroundings (i.e., site-specific study area)	
1	<u>Very limited</u> : Limited to specific isolated parts of the site	
<b>Duration</b>		
7	<u>Permanent</u> : The impact will remain long after the life of the project	
6	<u>Beyond project life</u> : The impact will remain for some time after the life of the project	
5	<u>Project Life</u> : The impact will cease after the operational life span of the Project (20 years)	
4	<u>Long term</u> : 6-15 years	
3	<u>Medium term</u> : 1-5 years	
2	<u>Short term</u> : Less than one year	
1	<u>Immediate</u> : Less than one month	
<b>Probability</b>		
7	<u>Certain/ Definite</u> : There are sound scientific reasons to expect that the impact will occur	
6	<u>Almost certain/Highly probable</u> : It is most likely that the impact will occur	
5	<u>Likely</u> : The impact may occur	

Rating	Criteria and Definitions	
	Negative Impacts (type of impact = -1)	Positive Impacts (type of impact = +1)
4	<u>Probable</u> : Has occurred here or elsewhere and could therefore occur	
3	<u>Unlikely</u> : Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	
2	<u>Rare/ improbable</u> : Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the Project but has happened elsewhere. The possibility of the impact materialising is very low because of design, historic experience, or implementation of adequate mitigation measures	
1	<u>Highly unlikely/None</u> : Expected never to happen.	

Impacts are rated prior to mitigation or enhancement and again after consideration of the proposed mitigation or enhancement measures. The impact is then determined and categorised into one of eight significance categories, as indicated in Table 5-2. The relationship between consequence, probability and significance ratings is graphically depicted in Figure 5-1.

**Table 5-2: Significance Ratings**

Score	Description	Rating
109 to 147	A very beneficial impact that may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change	Major (positive) (+)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and / or social) environment	Moderate (positive) (+)
36 to 72	A positive impact. These impacts will usually result in positive medium to long-term effect on the natural and / or social environment	Minor (positive) (+)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the natural and / or social environment	Negligible (positive) (+)

Score	Description	Rating
-3 to -35	An acceptable negative impact for which mitigation is desirable. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural and / or social environment	Negligible (negative) (-)
-36 to -72	A minor negative impact requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the natural and / or social environment	Minor (negative) (-)
-73 to -108	A moderate negative impact may prevent the implementation of the project. These impacts would be considered as constituting a major and usually a long-term change to the (natural and / or social) environment and result in severe changes.	Moderate (negative) (-)
-109 to -147	A major negative impact may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects. The impacts are likely to be irreversible and/or irreplaceable.	Major (negative) (-)

### Significance

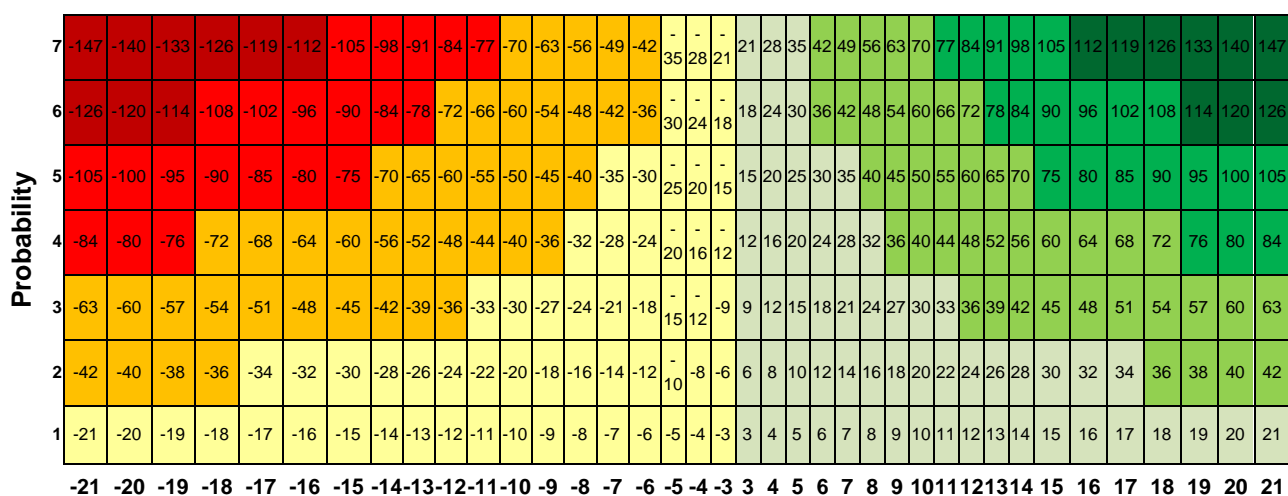


Figure 5-1: Relationship Between Consequence, Probability and Significance Ratings

## 6. Socio-Economic Baseline Profile

This section introduces the socio-economic baseline profile of the area and considers the existing impact that the Dorstfontein Mines (both West and East) have on the socio-economic environment.

Socio-economic impacts can usually be divided into three broad categories, namely:

- **Physical intrusion** refers to the impact that Project infrastructure and Project-related activities' material presence could have on an area.
- **Economic pull** occurs when a Project exerts changes and impacts on job creation, immigration of workers and jobseekers, multiplier effects in the local and regional economy – all of which can lead to an increased risk of social pathologies and community conflict. These impacts can typically be expected in settlements and towns closest to the Project.
- **Indirect or induced impacts** are by-products of the above-mentioned categories and can include aspects such as increased pressure on local services and resources, macro-economic benefits, etc.

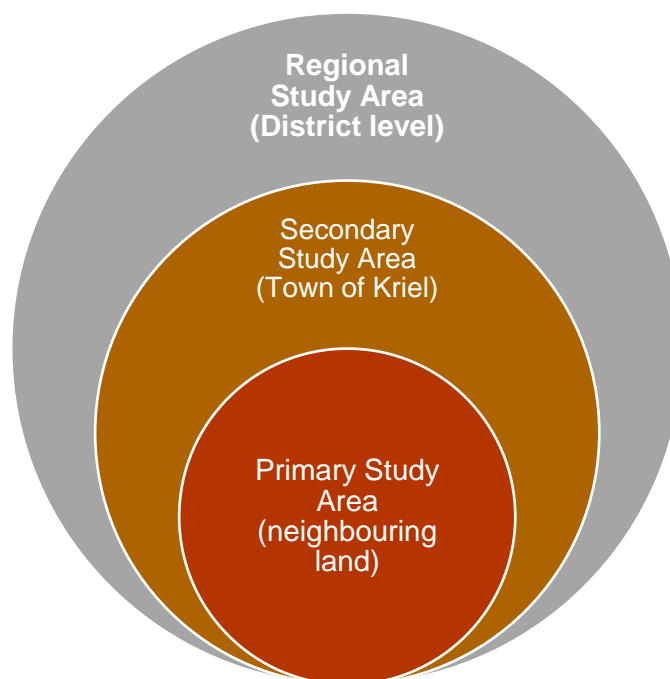
Bearing these categories in mind, three interdependent study areas were identified that correspond, where relevant, to existing administrative boundaries. The study areas were derived through a mapping exercise considering settlements in relation with Project footprint and its associated buffer areas. Subsequently, areas of that are likely to experience Project impacts were identified and categorised as shown in Table 6-1.

**Table 6-1: SIA Study Areas**

Study Area	Definition	Administrative Boundary
Regional	The area likely to experience broader (higher level) indirect impacts, e.g., an increase tax base that assists with non-mining related community development.  (Indirect or induced impacts)	Nkangala (NDM) and Gert Sibande (GSDM) District Municipalities  Emalahleni (ELM) and Govan Mbeki (GMLM) Local Municipalities
Secondary	The area likely to experience indirect Project impacts, such as the economic pull exerted by the Project.  (Economic Pull)	Kriel, comprised of ELM Wards 26 and 27
Primary	The area likely to experience direct Project impacts. It is defined as the area containing the existing DECM,	GMLM Ward 15  ELM Ward 25

Study Area	Definition	Administrative Boundary
	the Project site and the immediate neighbouring area.  (Physical intrusion)	

As the receiving environment is interlinked, the baseline profile that follows starts with a broad overview of the regional study area, followed by more detailed overviews of the secondary and primary study areas.



**Figure 6-1: Overview of Relationship between Study Areas**

Each study area is discussed in more detail in the following subsections.

## 6.1. Regional Study Area

This section provides an overview of the regional study area that consists of the Nkangala and Gert Sibande District Municipalities and the Emalahleni and Govan Mbeki Local Municipalities.

### 6.1.1. Nkangala District Municipality

Nkangala District Municipality is one of three districts of the Mpumalanga Province. It covers a geographical area of 16 758 km<sup>2</sup> and consists of 160 towns and villages. Even though the NDM is the smallest of the three districts, it is the economic hub of Mpumalanga. The district is made up of six local municipalities, namely Emalahleni, Steve Tshwete, Emakhazeni, Thembisile Hani, Dr JS Moroka and Victor Khanye. The district has an average population density of 83.3 people per km<sup>2</sup>.

Between 2005 and 2015, the district experienced a population growth rate of two (2%) per annum – in 2015 the total population stood at an estimated 1.4 million people. This represents approximately 33% of Mpumalanga’s population. Of these, 89% are Black African, nine percent (9%) are White, and the remainder are made up of Coloured and Indian/Asian population groups. Nkangala is made up of 388 000 households at an average occupancy rate of 3.6 persons per household.

Nkangala is made up of various economic industries, of which the mining sector is the largest, accounting for R 45.9 billion (41%) of the district’s Gross Value Add (GVA). In comparison, the agricultural sector only contributes an estimated two percent (2%) or R 2.14 billion to the GVA. However, the agricultural sector experienced the highest growth rate between 2005 and 2015 at 18%. According to the Nkangala IDP (2017-2022), the district had a GDP of R 123 billion in 2015 – a significant increase from 2005’s R 43.3 billion. This means that the NDM contributed approximately 41.2% to Mpumalanga’s overall GDP of R 300 billion and three percent (3%) to South Africa’s GDP of R 4 trillion in 2015. The IDP further states that it is expected that the district will continue to grow at an average annual rate of two percent (2%) between 2015 and 2020, which is slightly higher than that of the province at two percent (1.67%) and the country (1.79%). Nkangala’s forecasted GDP in 2020 is an estimated R 100 billion (41.6% of Mpumalanga’s total GDP). The district has a tress index of 48<sup>2</sup>, which is brought about by the mining sector.

The NDM IDP for the 2017 to 2022 period incorporates the District LED Strategy, which focuses on the development of the following sectors:

- Tourism;
- Property and infrastructure development;
- Mineral beneficiation;
- Mining (improving impact of SLPs and Corporate Social Investments (CSIs); critical skills development; infrastructure development and maintenance);
- Agriculture (agro-processing and integration of small-scale farmers into commercial farming);
- Small, Medium, and Micro Enterprises (SMME) and co-operative development through accredited training and mentorship programmes (with a focus on agriculture development); and
- The green economy (recycling, composting, and biogas energy).

An overview of the NDM’s spatial development framework is provided in Figure 6-2. From this map it is evident that large sections of the land use within the ELM have been dedicated to mining or a combination of mining and agriculture. The study area (indicated by the dotted

---

<sup>2</sup> The tress index measures the concentration of an area’s sector economy on a scale of 0 to 100, where 0 = all economic sectors contribute equally to the GVA and 100 = one economic sector dominates the GVA. The more diverse an economy is, the more likely it is to create employment opportunities.



pink line) is characterised by a combination of mining and agriculture. Kriel is regarded as a tertiary (or third) order centre, i.e., a small rural town with limited resources.

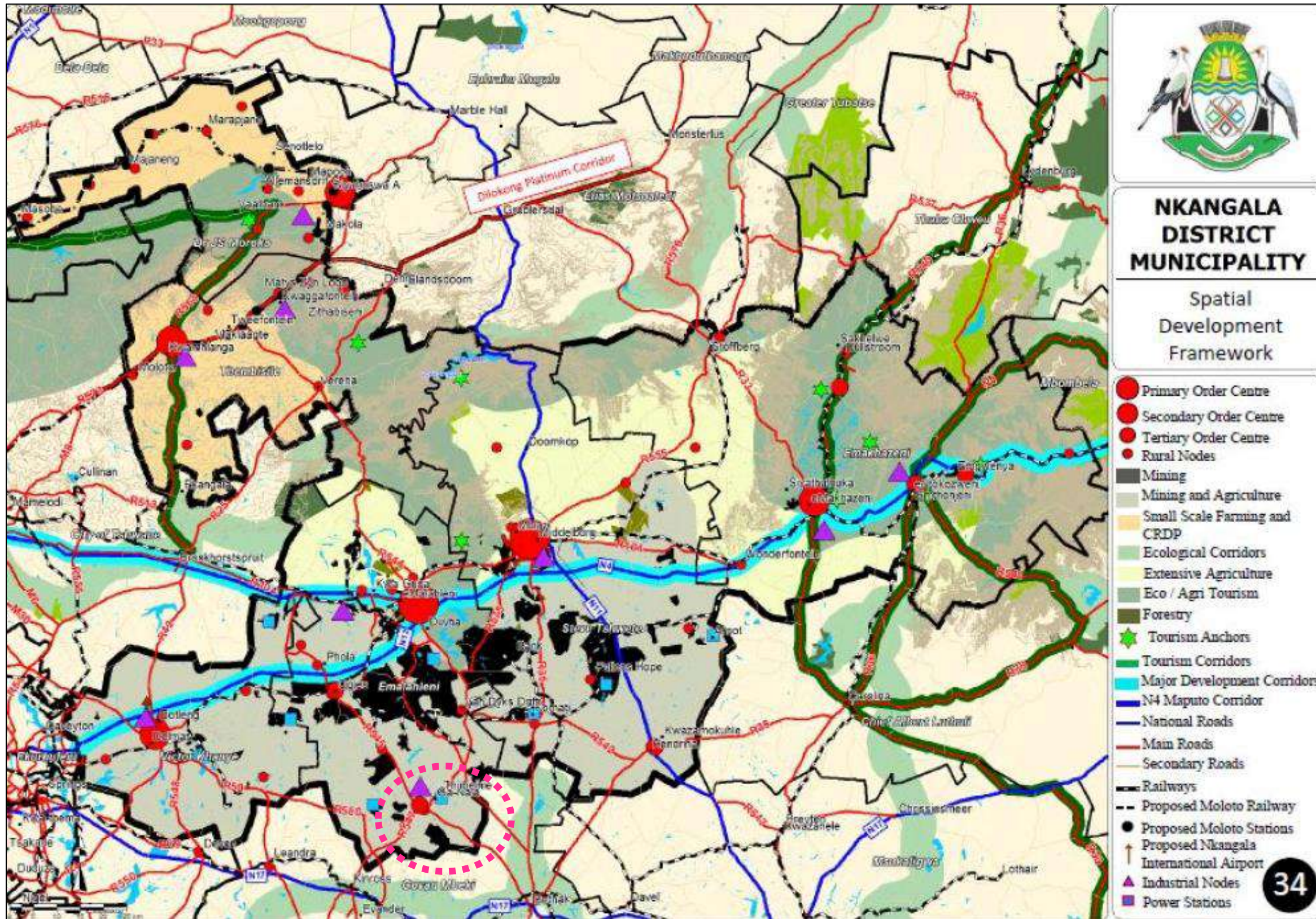


Figure 6-2: Overview of Nkangala District's Spatial Development Framework

Source: Nkangala District IDP (2017-2022)

### 6.1.2. Gert Sibande District Municipality

The Gert Sibande District Municipality comprises seven local municipalities, including GMLM. Spatially, the GSDM is the largest of the three districts in Mpumalanga Province. The manufacturing sector, dominated by mining products, electricity generation and petrochemicals, is the leading industry (57%) in terms Gross Value Add (GVA) contribution to the district economy, followed by mining (14%) and community services (12%). Overall, the GSDM was the second largest contributor to GVA in Mpumalanga in 2012 after Nkangala. Four of the ten coal-fired power stations in Mpumalanga are in the GSDM.

The GSDM also accommodates the largest agricultural sector in the province, supported by strong service centres such as Standerton, Ermelo, Bethal and Piet Retief. Almost 23% of the district land is under cultivation, 80% of which is under commercial dry land cultivation for producing grains. Other significant economic sectors in the GSDM are commercial forestry and tourism.

### 6.1.3. Emalahleni Local Municipality

The ELM is one of six municipalities under the jurisdiction of the Nkangala District. It has a population of around half a million with a population density of approximately 170 persons per square kilometre.

Emalahleni is the most industrialised municipal area in the NDM and its landscape features mainly underground and opencast coal mines. The southern areas of ELM form part of the region referred to as the Energy Mecca of South Africa, due to its rich deposits of coal reserves and power stations. The ELM is the biggest economic contributor to the district, with a Gross Value Add (GVA) contribution of 45% to the district economy and 17% to the provincial economy in 2017.

Mining is the leading industry in terms of GVA contribution to the Emalahleni economy, contributing 55% in 2017. The influx of job seekers and workers to mines and power stations has led to population increase and resulted in pressures on housing and social services (water, sanitation, electricity) in the municipal area.

The municipality's LED strategy for 2017 – 2022 focuses on the following initiatives:

- Tourism;
- Mining and Metals Technology Park;
- Agriculture (agro-processing, organic produce);
- Resuscitation of township economies;
- Support to SMMEs and co-operatives (manufacturing and construction skills development);
- Fly ash beneficiation; and
- Tourism (establishment of mining museum and convention centre).

#### 6.1.4. Govan Mbeki Local Municipality

GMLM is one of seven local municipalities under the jurisdiction of Gert Sibande District. It has a population of 340 091 and a population density of 114.9 persons per square kilometre. Govan Mbeki has the most diversified economy in the GSDM and is dominated by the petrochemical industry (SASOL II and III complexes) and coal and gold mining. GMLM has the largest underground coal mining complex in the world which renders it an important strategic area within the national context.

The municipality's LED strategy for 2017 – 2022 focuses on the following initiatives:

- Industrialization programme and construction of an industrial park (production of petrochemical, mining (equipment), agricultural and manufacturing products);
- SSME and cooperatives incubation hub (focus on agriculture and agro-processing);
- Tourism development programme;
- Warehousing and logistics programme (establish warehouses and facilities for high-demand commodities);
- Education, skills, and capacity development programme (focus on engineering education programme and skills and capacity training for SMMEs and cooperatives).
- Enterprise and supplier development programme;
- Business development hub;
- Contractor support and development programme; and
- Small business capacity building.

#### 6.2. Secondary Study Area

As previously indicated, the secondary study area refers to the area that is most likely to experience induced impacts brought on by the Project. Induced impacts refer to those impacts that are not directly caused by the Project but occur as an unplanned consequence of it. Typical examples of induced impacts are an increase in the local population size due to the arrival of a construction team or job seekers, which in turn leads to an increase in a demand for housing and services.

Areas that are likely to experience induced impacts are usually the closest formal human settlements as these areas already have formal housing and services available. In the case of the Project, this is likely to be Thubelihle and Kriel.

Thubelihle is directly opposite the Dorstfontein West mine and falls within ELM Ward 15 and was therefore included in the primary study area (see Section 6.3 and the SIA Scoping Report, 2020). It is more likely that job seekers would settle in Thubelihle (as opposed to Kriel) due to its proximity to the mine, and the mixture of formal and informal housing in this area.

A baseline profile of Kriel was not included in the SIA Scoping report but is included here as the other formal area of human settlement consisting of formal housing and services

(municipal and otherwise, e.g., shops, doctors, schools, etc.). Kriel is made up of two municipal wards, namely ELM Wards 26 and 27. A comparative and combined overview of these two Wards are presented in the following subsections to provide an overview of the town itself. It should be noted that Ward 27 also consists of vast pockets of agricultural land that could skew the population density for this portion of Kriel.

### 6.2.1. History of the Area

Kriel (also known as Ga-Nala) was first resident magistrate, Mr DJ Kriel, and proclaimed on the farms Onverwacht and Roodebloem in the early seventies. In 1973 Eskom was granted authorisation to develop a town on the farm Roodebloem to provide housing and other services for its staff employed at the Kriel power station. The construction of the power station itself followed soon after in 1975 and was completed in 1979. Not long after, in 1983, the construction of the Matla power station followed. The town became part of the Transvaal Local Government Affairs Council in 1988 and was proclaimed as a local authority on 1 July 1990. Kriel's economy is largely based on producing electricity, but mining (as a supportive industry to coal fired power stations) and agriculture also play a key role. In July 2013, residents demanded to be removed from the jurisdiction of the ELM over what they considered to be a poor record of service delivery.

### 6.2.2. Land Use

The secondary study area's land use consists of residential areas (in Kriel), agricultural land, mining, and industrial uses – the latter three land uses predominantly in Ward 27. The Matla power station complex is located to the southwest of Kriel, also in Ward 27. The R547 traverses Kriel and connects the town with Thubelihle, located around 2.5 km northeast of Kriel. The closest primary order centre to Kriel is Emalahleni, approximately 65 km to the north of Kriel.

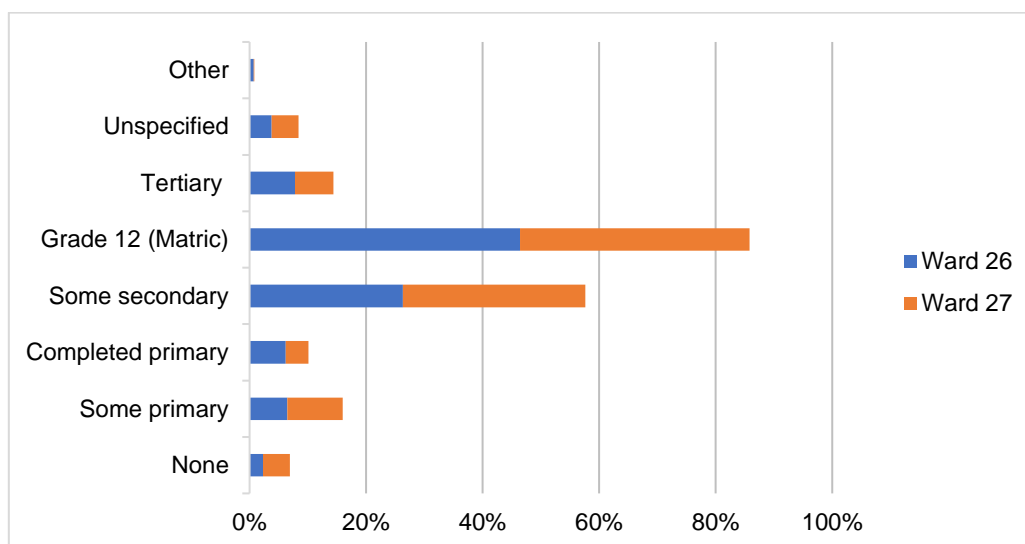
### 6.2.3. Population Demographics

Wards 26 and 27, have covers a combined geographical area of 380 km<sup>2</sup> and is collectively home to 18 111 people. Ward 26 is an urban ward whereas Ward 27 is a combination of urban and rural, which accounts for the difference in geographical areas – 5.6 km<sup>2</sup> (Ward 26) and 374.4 km<sup>2</sup> (Ward 27). The population densities in the two wards also differ significantly – 20 people per km<sup>2</sup> in Ward 27 against Ward 26's 1 888 people per km<sup>2</sup> - the latter is characteristic of an urban setting.

Both wards have a mixture of Black African and White people as their predominant population groups, with the former in the majority at around 60% and the latter averaging at around 38% of the total population. There are slightly more males than females in both wards at an average of around 54%. Afrikaans is the language spoken by most (around 34% of the population), followed by Zulu (around 24%). Most of Ward 26's population are native to Mpumalanga (55%), followed by significant influxes from mostly Kwazulu-Natal (10%) and Gauteng (9%). Interestingly, less than half (47%) of the rural population in Ward 27 were born in Mpumalanga. This ward also experienced significant population influx from Gauteng and Kwazulu-Natal

(10% each) and the Eastern Cape (8%). This migration pattern in these two wards is suggesting that in- and out-migration are already taking place in the area and could be as a result of the presence of coal-fired power stations and coal mines in the area (responsible for in-migration when people come to the area in search of employment) causing land use changes from, for example, agriculture to mining (responsible for out-migration when people leave the area due to job losses).

An overview of the secondary study area’s education profile is provided in Figure 6-3. The overall educational level of the area appears to be low with less than half of the adult population (those aged 20 years and older) having completed Grade 12. More people in Ward 26 (46%) completed their secondary education when compared to Ward 27 (39%). Because of this, more people in Ward 26 (7.8%) have completed a tertiary education than in Ward 27 (6.6%).



**Figure 6-3: Education Profile of the Secondary Study Area**

#### 6.2.4. Household Characteristics

The study area consists of around 5 850 households, of which 3 350 are in Ward 26 and the remaining 2 500 in Ward 27. Most households are male headed (77% in Ward 26 and 86% in Ward 27). The types of dwellings in Ward 26 are mostly formal brick houses (79%), whereas the types of dwellings in Ward 27 are more diverse – ranging from a formal brick house (58.5%) to rooms or flatlets (13%), apartments at eight percent (8%) and other (around 19%). The total number of dwellings that are considered informal in the study area amounts to around 165 dwellings. Ward 26 have a slightly higher percentage of informal dwellings than Ward 27 (3.3% compared to 2.2%).

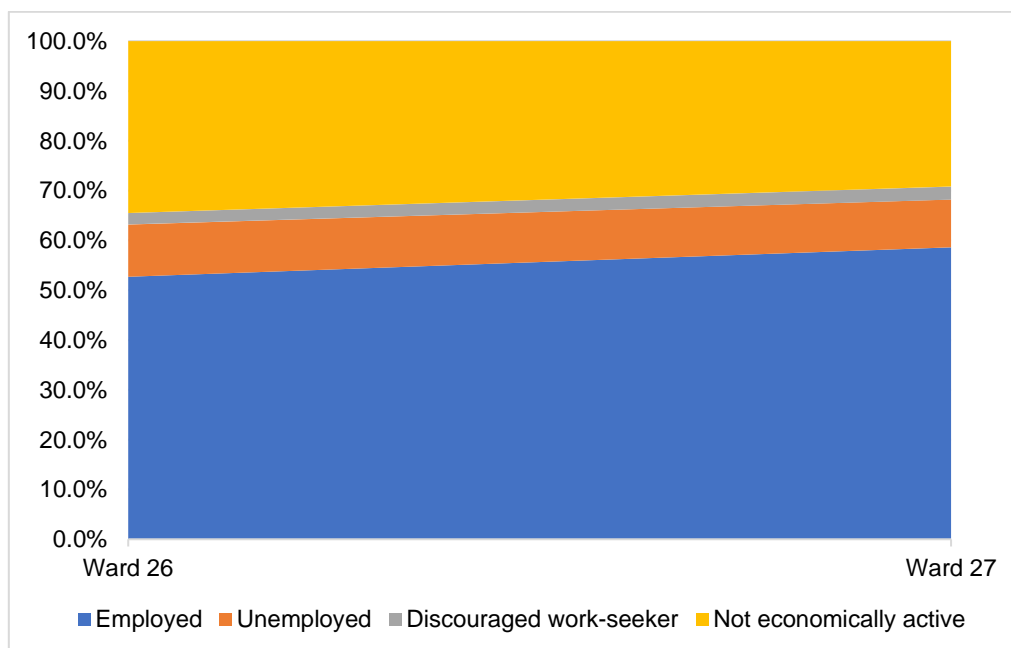
Most households receive their water from a regional or local service provider – 96% in Ward 26 and 80% in Ward 27. The decreased percentage in Ward 27 is likely due to the parts of the ward being occupied by agricultural land and in such instances, piped water becomes a challenge due to the distance from a main centre. Most households have access to a flush or

chemical toilet (98% in Ward 26 and 88% in Ward 27). Refuse is disposed by the local authority on a regular basis for 97% of households in Ward 26 and 81% in Ward 27.

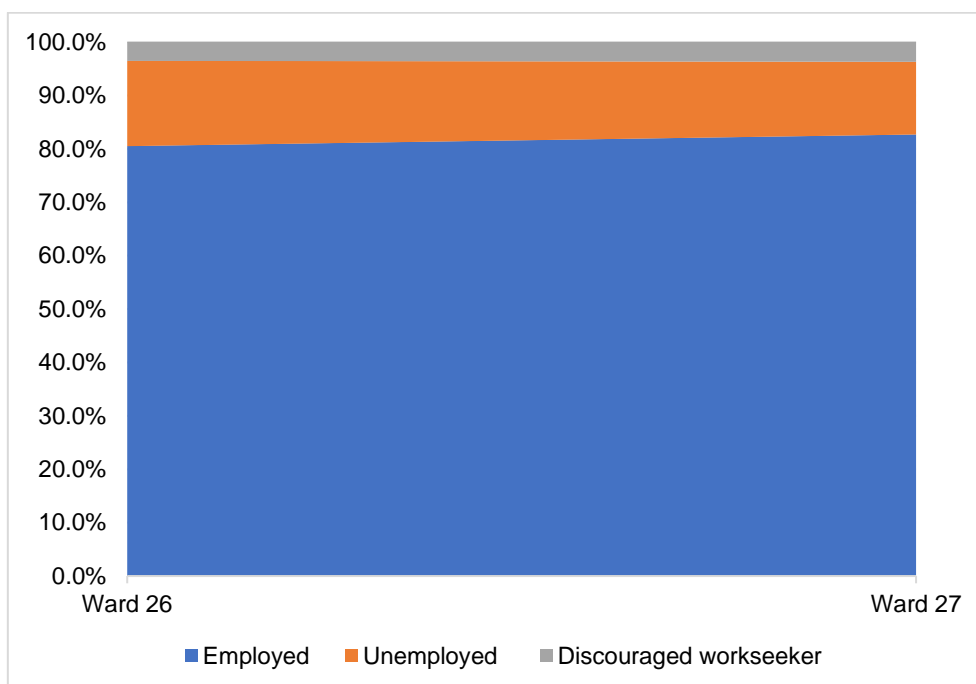
### 6.2.5. Economic Profile

When considering the total population of the secondary study area (see Figure 6-4), the employment rate is between 53% (Ward 26) and 59% (Ward 27). The unemployment rate is low for both areas at around ten percent (10%). About a third of the secondary study area's population are not economically active, i.e., they are either below the age of 15 or over the age of 65 and are therefore not actively participating in the area's economy. This segment of the population is dependent on the economically active population.

To obtain a true reflection of the employment rate in the area, only the economically active population was considered (see Figure 6-5). Amongst those aged 15-64, there are employed, unemployed individuals, as well as discouraged work-seekers (a person who is part of the economically active age group but who is not actively seeking employment and who prefers not to be working). Within this segment of the population, the employment rate is above 80% for both wards, with around 15% of the population being unemployed. Just under four percent (4%) of both wards' economically active population regard themselves as discouraged work-seekers.



**Figure 6-4: Employment Profile of the Secondary Study Area**

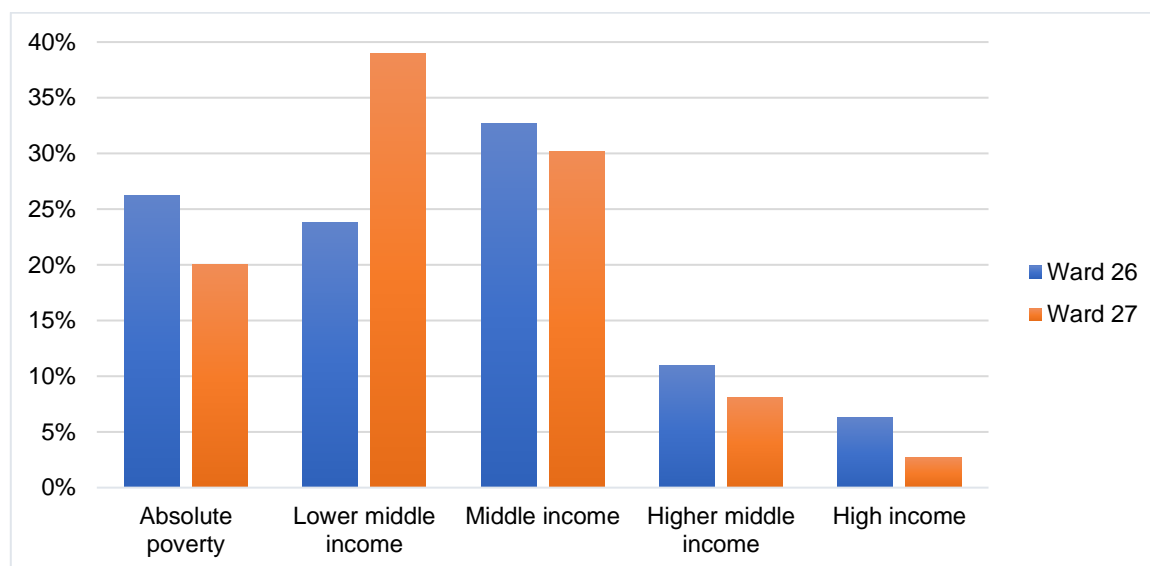


**Figure 6-5: Employment Profile of the Economically Active Population**

The formal sector accounts for at least 78% of the employment profile in the municipality. Ward 27 has a higher percentage of people employed in the formal sector (14.9%) compared to Ward 26 (7.2%)– this could be indicative of spin-off employment created by the mining and agricultural sector, e.g., food stalls on route to the mine.

Figure 6-6 provides an overview of the annual household income for the secondary study area. Around a quarter of the study area’s population live in absolute poverty, which is defined as an annual household income of R 19 200 or less for a family of four (i.e., often these families are unable to meet their basic needs and are dependent on social grants and the goodwill of other people). Most of the population (around two thirds) fall into the lower middle- and middle-income bracket, with between 3-10% of the population in the higher middle- and high-income brackets. On average, households in Ward 26 tend to have a more stable income with most households in the middle to high income brackets.





**Figure 6-6: Annual Household Income in the Secondary Study Area**

Considering that the study area’s land use is a combination of agriculture and mining, the assumption is that the local economy would also be more diverse. The more diverse an economy, the more likely it will lead to job creation and a better balance between labour-intensive and capital-intensive industries. However, this implies that there is a need for fast growing industries to also create employment, particularly for the semi-skilled and the unskilled. Unfortunately, in practice, many fast-growing industries are of such a nature that they do not create job opportunities for unskilled labour (e.g., very few such opportunities exist within the mining sector) and therefore these industries do not contribute significantly towards a reduction in unemployment and poverty alleviation in the local area. This is one of the reasons why the MPRDA requires mines to develop a Social Labour Plan (SLP) to outline how they would contribute to the socio-economic development of their area of impact.

### 6.2.6. Development Needs

The development needs of Wards 26 and 27 have been identified through the IDP public participation process and is reflected in the ELM IDP of 2020/21. These are shown in Table 6-2 below. Not all the development needs were identified only by the residents of these areas, but that some development needs were identified by the municipality itself. As such some of the development needs listed apply to the wider Kriel area and not just the ward.

**Table 6-2: Development Needs in the Secondary Study Area**

Area	Identified Development Needs
Ward 26 (Kriel “south”)	<ul style="list-style-type: none"> <li>Streetlights and poles need to be fixed. Rusted poles cause structure to collapse leaving live wires lying on the pavement that is dangerous to people.</li> <li>Storm water drains are blocked and must be cleaned and fixed.</li> </ul>

Area	Identified Development Needs
	<ul style="list-style-type: none"> <li>● Potholes must be fixed throughout the ward.</li> <li>● Parks and other open spaces must be cleaned and maintained. Park next to the municipal offices needs public toilet facilities.</li> <li>● A fire station must be constructed. The traffic department’s computer system must be checked so that they are not offline so often.</li> <li>● The current municipal clinic is small and cramped, short-staffed and short on medicine. The site that was set aside for the new clinic in Kingfisher Street must be developed.</li> <li>● The ward requires public amenities such as a community hall, a youth centre, sports grounds, and a play park.</li> <li>● Reconstruction and Development Plan (RDP) houses required.</li> </ul>
Ward 27 (Kriel “north” and surrounding agricultural land)	<ul style="list-style-type: none"> <li>● Maintenance of streetlights and high mast lights.</li> <li>● Fixing of potholes (Merlin, Bokmakierie, Albatros, Nagtegaal and Bosbok Streets mentioned specifically, but can assume that it would be a recurring problem throughout the ward).</li> <li>● Refurbishment of licence office.</li> <li>● Replacement of solar panels in Emaline Street.</li> <li>● Erection of road signs.</li> </ul>

### 6.3. Primary Study Area

The primary study area is the area closest to the mine, which is expected to experience the most direct impacts as a result of the physical intrusion of the mine infrastructure and daily mining activities. For the purposes of this SIA, the primary study area is defined as the area in which the existing DECM is located, as well as the Project stie and the areas adjacent to the mining area, i.e., GMLM Ward 15 and ELM Ward 25.

This section provides a high-level discussion of these areas..

#### 6.3.1. Summary of Population Demographics

Table 6-3 provides a summary of the primary study area population demographics. Ward 25 is the most populous of the two Wards with a population of 14 938 and it has a higher population density as well. Most of the population in the Wards are of economically active age groups (19 to 64 years old) with a median age of 26.5 years. Most of the population are Black African and the predominant languages isiZulu, Afrikaans, and isiNdebele. The proportion of males is slightly higher than females across the wards.

**Table 6-3: Population Demographics**

Variable	GMLM Ward 15	ELM Ward 25	Combined
Geographical area	1 032	223	1 255
Population	10 334	14 938	25 272
Population density	10 / km <sup>2</sup>	67 / km <sup>2</sup>	20 / km <sup>2</sup> (avg)
Economically active population	61%	63%	-
Largest population group	Black African (72%)	Black African (98%)	Black African
Dominant sex	Male (53%)	Male (52%)	Male
Languages	Zulu (48%) Afrikaans (23%)	Zulu (54%) Ndebele (15%)	Zulu, Afrikaans, and Ndebele
Province of birth	Mpumalanga (65%)	Mpumalanga (76%)	Mpumalanga

### 6.3.2. Summary of Household Characteristics

Ward 25 has nearly double the number of households compared to that of Ward 15 with an average household size of 3.3 persons per household. Most of the households are headed by males with an average of 28% being headed by females. Research indicates that female headed households tend to face greater social and economic challenges and are vulnerable to lower household incomes and higher rates of poverty<sup>3</sup>. Table 6-4 provides a summary of the household characteristics.

**Table 6-4: Summary of the Household Characteristics**

Variable	GMLM Ward 15	ELM Ward 25	Combined
Number of households	2 871	4 868	7 739
Female headed households	25%	31%	28%
Household size (avg.)	3.6	3.1	3.3
Sex head of household	Male (76%)	Male (69%)	Male
Average household income	R 29 400 p.a. (R 2 450 p.m.)	R 29 400 p.a. (R 2 450 p.m.)	R 29 400 p.a. (R 2 450 p.m.)

<sup>3</sup> [https://www.econrsa.org/system/files/publications/working\\_papers/working\\_paper\\_761.pdf](https://www.econrsa.org/system/files/publications/working_papers/working_paper_761.pdf)

### 6.3.3. Summary of Economic Profile

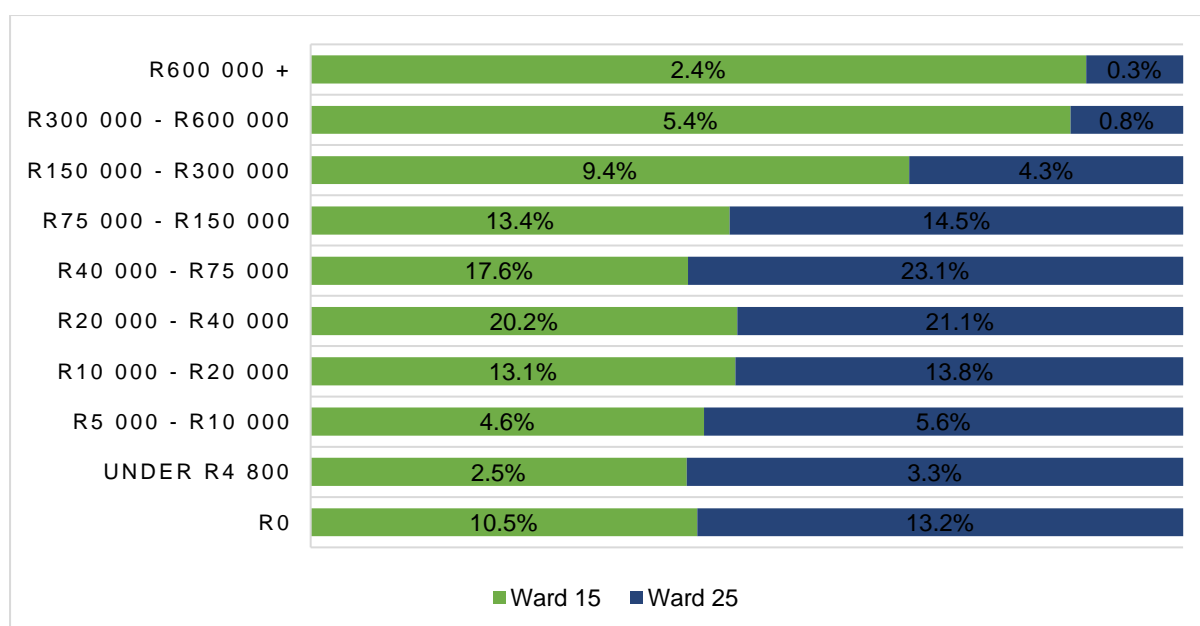
In both wards, the percentage of the population that has obtained a Grade 12 average 25% and lowest in ELM Ward 25 – with only 22% of the population with a matric or higher education. According to the 2016 Community Survey an average of 50% of the population was employed within the formal economic sector. This may have changed due to Covid-19 and its associated loss of employment.

**Table 6-5: Summary of the Population’s Education and Employment Status**

Variable	GMLM Ward 15	ELM Ward 25	Combined
Education level: matric or higher	32.6%	21.7%	~ 25%
Employment rate <sup>4</sup>	53.4%	46.7%	~ 50%
Economic sector	Formal (74%)	Formal (78%)	Formal

### 6.3.4. Income Profiles

An average of 12% of households within the Wards did not earn an income while an average of eight percent (8%) earned an annual income of less than R10 000 per annum. This signifies that a substantial portion of households are living within the low bound and upper bound poverty line, which refers to the food poverty line plus the average amount derived from non-food items of households whose total expenditure is equal to the food poverty line (see Figure 6-7).



**Figure 6-7: Annual Household Income**

<sup>4</sup> Of the economically active population

### 6.3.5. Access to Social Services and Infrastructure

Households residing in Ward 25 were reported to have better access to social services compared to those found in Ward 15. This may be attributed to the economic sectors served by the municipality within which the Ward sits such as mining and power generation. A summary of the indicators related to access to social services and infrastructure is provided in Table 6-6 below.

**Table 6-6: Access to Social Services**

Variable	GMLM Ward 15	ELM Ward 25	Combined
Water services	Service provider (62%)	Service provider (86%)	Service provider
Toilet facilities	Flush or chemical (59.1%)	Flush or chemical (89.8%)	Flush or chemical
Refuse disposal	Local authority (50.8%)	Local authority (82.2%)	Local authority
Informal dwellings	623 (21.7%)	652 (13.4%)	1 275 (16.5%)

### 6.3.6. Development Needs

Table 6-7 below lists the development needs that were identified for the primary study area, as contained in the IDP.

**Table 6-7: Development Needs in the Primary Study Area**

Area	Identified Development Needs
ELM Ward 25	<ul style="list-style-type: none"> <li>● Residential development stands.</li> <li>● RDP houses.</li> <li>● Road and storm water infrastructure.</li> <li>● Combined school.</li> <li>● High mast streetlights.</li> <li>● Formal township establishment for Ext. 6.</li> </ul>
GMLM Ward 15	<ul style="list-style-type: none"> <li>● Regular disposing of sewage through sewage trucks.</li> <li>● Constructing new communal toilet facilities.</li> <li>● Repairing of boreholes and windmills to solve water problems.</li> <li>● Road maintenance.</li> <li>● Allocation of low-cost houses.</li> <li>● Electrification of houses.</li> <li>● Employment creation.</li> </ul>

Area	Identified Development Needs
	<ul style="list-style-type: none"> <li>• Deploying of LED projects.</li> </ul>

## 7. Impact Assessment

This section provides an overview of the potential socio-economic impacts identified. The impact assessment methodology that was used is described in Section 5.2. The discussion of impacts is structured as follows:

- Impact description;
- Impact rating prior to mitigation or enhancement;
- Proposed mitigation measures to avoid or minimise negative impacts and enhancement measures to enhance any positive impacts;
- Impact rating post mitigation or enhancement to provide an indication of the effectiveness of the proposed measures and to assist with the identification of any residual impacts.

Impacts are discussed per project phase.

### 7.1. Construction Phase

A summary of the expected socio-economic impacts during the construction phase is listed in Table 7-1 and discussed in more detail in the ensuing subsections.

**Table 7-1: Summary of Impacts expected during the Construction Phase**

Activity	Impact
Temporary employment creation	Temporary economic injection through income, mostly on an individual or household level.
Project-induced in-migration	A temporary increase in certain segments of the population can place additional strain on housing and services.

#### 7.1.1. Impact: Temporary Employment Creation

At the time of this report, the number of construction-related opportunities were not known. However, it is expected that the number of unskilled job opportunities that would be suited to the local community (i.e., people who are not part of a formal construction team) would be limited. The construction phase is also short-term and therefore any job opportunities associated with this phase of the project would be temporary in nature.

##### 7.1.1.1. Management Objectives

- Maximise local employment where possible; and
- Ensure a fair and transparent recruitment process.

### 7.1.1.2. Management Actions

- Advertise any local employment opportunities in local community papers and at venues frequented by community members (e.g., community hall, municipal offices, etc.).
- Develop and maintain a database of job seekers who apply for any job advertised through the above-mentioned measures.
- Do not employ at the gate. Employment at the gate of day labourers will stimulate an influx of job seekers and crowds gathering at the work site; and
- Ensure that local communities are aware of and have easy access to the mine's grievance mechanism so that they can register complaints around employment practices. This will also allow the mine with opportunities to address any legitimate complaints.

### 7.1.1.3. Impact Ratings

The impact of temporary employment creation during the construction phase is assessed in Table 7-2.

**Table 7-2: Impacts associated with Temporary Employment Creation**

Temporary employment creation				
Project phase		Pre-construction and Construction		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Medium term (3)	The construction phase is limited to a few years.	Slightly beneficial (6)	Negligible - positive (24)
<b>Extent</b>	Project footprint and immediate surrounds (2)	Although most unskilled and semi-skilled workers will originate from the primary study area (i.e., Thubelihle); some workers might also originate from the secondary study area (i.e., Kriel). It is expected that most skilled workers will likely originate from elsewhere in the region.		
<b>Intensity</b>	Very low - positive (1)	Low skill levels imply that local populations might not be able to take optimal advantage of temporary employment opportunities. Also, it is possible that contractors will use their		

Temporary employment creation				
Project phase		Pre-construction and Construction		
Dimension	Rating	Motivation	Consequence	Significance
		existing workforce, decreasing local employment.		
<b>Likelihood</b>	Probable (4)	Without appropriate mitigation (e.g., local employment policy and monitoring thereof, skills development, etc.), local employment will be limited		
POST-MITIGATION				
<b>Duration</b>	Medium term (3)	The duration of the impact will not be affected by mitigation.	Slightly beneficial (8)	Minor - positive (40)
<b>Extent</b>	Local (3)	The extent of the impact will not be reduced by mitigation.		
<b>Intensity</b>	Low - positive (2)	Measures will ensure and potentially increase employment from primary and secondary study areas, but these will still be limited in extent and duration.		
<b>Probability</b>	Likely (5)	Mitigation will maximise probability, through monitoring, that local employment is maximised, and benefits optimised.		

### 7.1.2. Impact: Project-induced In-migration

During the construction phase it is likely that there would be a slight increase in the local population due to the perceived economic opportunities associated with construction job opportunities, i.e., a potential increase in job seekers. Unlike the regulated circumstances surrounding a construction workforce (i.e., a set number of people who enter the area for certain period), the influx of job seekers is unregulated and often very difficult to control. In-migration of job seekers is usually motivated by a search for economic opportunities (including business and employment) and in the case of job seekers, it is likely that the impact would mostly manifest in nearby Thubelihle as the closest settlement to the project site – an area that already experience difficulties with housing and sufficient service delivery. Project-induced in-migration can lead to the following socio-economic impacts where it occurs:

- Increased demand for land to be used for informal housing.
- Increased demand on the natural environment for resources such as wood for fuel.
- Increased pressure on existing public infrastructure and services, such as communal toilet facilities, water standpipes, etc.; and



- Possible increase in conflict situations over limited resources, including services such as water and sanitation, land, and employment opportunities.

### 7.1.2.1. Management Objectives

Minimise project-induced in-migration but where this does occur, manage associated impacts.

### 7.1.2.2. Management Actions

- Discourage in-migration from other areas by focusing employment opportunities at the local community and widely publicising this intent, and refrain from employing day labourers at the gate. Maintain a job seeker register and only employ people who are registered on this database and who have been verified as being from the local area.
- Engage with local communities to understand their concerns, raise awareness of risks and opportunities, and identify solutions to issues related to in-migration.

### 7.1.2.3. Impact Ratings

The impact of project-induced in-migration during the construction phase is assessed in Table 7-3.

**Table 7-3: Impacts associated with Project-induced In-migration**

Influx-related impacts				
Project phase		Pre-construction and Construction		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Short term (2)	Expectations around construction job opportunities could start before construction commences but can be curbed with the implementation of suggested mitigation measures.	Slightly detrimental (-7)	Negligible - negative (-28)
<b>Extent</b>	Local (3)	Will mostly affect settlements within the local study area (e.g., Thubelihle and Kriel)		
<b>Intensity</b>	Low - negative (-2)	Influx during the construction phase is expected to be minimal as this is an Lifex Project at an operational mine.		
<b>Likelihood</b>	Probable (4)	A certain degree of influx can always be expected due to job seekers.		

Influx-related impacts				
Project phase		Pre-construction and Construction		
Dimension	Rating	Motivation	Consequence	Significance
<b>POST-MITIGATION</b>				
<b>Duration</b>	Immediate (1)	Effective mitigation will prevent long lasting consequences of influx, especially social pathologies	Negligible (0)	Negligible (0)
<b>Extent</b>	Project footprint and immediate surrounds (2)	The extent of the impact will not be reduced by mitigation.		
<b>Intensity</b>	Negligible (0)	Mitigation measures should be effective in reducing severity of impacts to a limited degree		
<b>Probability</b>	Improbable (2)	Mitigation will reduce the likelihood of this impact occurring to the extent predicted		

## 7.2. Operational Phase

A summary of the expected socio-economic impacts during the operational phase is listed in Table 7-4 below and discussed in more detail in the ensuing subsections.

**Table 7-4: Summary of Impacts expected during the Operational Phase**

Activity	Impact
Long term employment creation	Extended employment periods at the mine through the extension of the LoM.
Project-induced in-migration	An increase in certain segments of the population can place additional strain on housing and services.
Skills training	As per the requirements of the SLP, the workforce and some of the local community will be upskilled in line with the mine's skills development plan.
Social investment in local communities	The mine is currently implementing mine community development projects and will continue to do so under this project that extends the LoM and the mine's SLP commitments.
Multiplier effects on the local and regional economy	Through the expansion of the DEMC, direct and multiplier effects will continue for a further 14 years.

Activity	Impact
Increase in nuisance factors	The extended LoM implies an extension and intensification of certain nuisance factors such as blasting, resulting in continued noise and dust pollution and other issues.
Increased competition of water resources	Water is a scarce resource, and the expansion of the mine could further impact on this limited resource.
Community health, safety, and security	Continuation and expansion of mining activities will lead to a possible increase and continuation of impacts associated with community health, safety, and security.

### 7.2.1. Impact: Longer Term Employment Creation

The Dorstfontein East Coal Mine has a current workforce of 395 people. It is anticipated that the current project will extend the LoM and that all personnel will be transferred to the mine extension, thereby extending their employment contracts with 14 years. It is anticipated that no new employment opportunities will be created as the current workforce will transition from open cast pit to underground operations.

#### 7.2.1.1. Management Objectives

Enhance employment opportunities for people living within the study area or areas affected by the project?.

#### 7.2.1.2. Management Actions

- Revise the DECM's Employment Policy where necessary with the objective of increasing local employment and transferring operational positions from migrant workers to people from within the study areas.
- In the event of new positions being created or vacant posts being filled, local labour should be prioritised in the recruitment process as part of the DECM's employment policy or as part of a contractor management plan with the objective of recruiting 100% of any new or additional unskilled labour from local communities.
- Develop a database of goods and services that could potentially be outsourced to the local community.
- Implement a contractor management plan (including direct service providers) in place to ensure that the local employment and procurement targets of the operation is met. The targets should be aligned to the Mining Charter 2018.
- Ensure that the grievance mechanism is widely known and accessible to allow communities the opportunity to register complaints and have these addressed in a timeous manner.

### 7.2.1.3. Impact Ratings

The impact of employment creation during the operational phase is assessed in Table 7-5.

**Table 7-5: Impact associated with Employment Creation during Operations**

Employment creation during operations				
Project phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Long term (4)	Equal to the duration of the extended LoM, i.e., 14 years.	Slightly beneficial (9)	Minor - positive (36)
<b>Extent</b>	Local (3)	Most positions are currently filled by people who have settled in the local area when they were first employed at DECM.		
<b>Intensity</b>	Low - positive (2)	Limited employment opportunities will be created through the Project, most of the workforce will be transferred to the new operations		
<b>Likelihood</b>	Probable (4)	Without appropriate mitigation, forecasts of majority local recruitment might not be achieved		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Long term (4)	The duration of the impact will not be shortened by mitigation.	Moderately beneficial (11)	Minor - positive (55)
<b>Extent</b>	Sub-regional (4)	Additional employment, if required, could be sourced from as wide as the Mpumalanga Province.		
<b>Intensity</b>	Moderate - positive (3)	Mitigation will maximise local job creation		
<b>Probability</b>	Likely (5)	Mitigation will maximise probability that local recruitment targets are achieved, and local benefits optimised		

## **7.2.2. Impact: Project-induced In-migration**

A total of 1 095 people is currently employed at the Dorstfontein Complex (SLP, 2017-2021), consisting of 91 permanent employees and 1 004 contractors. Of these 395 are employed at the surface operations at Dorstfontein East, and 609 at Dorstfontein West. The Dorstfontein West mine consists of surface operations (235 employees) and underground operations (374 employees). The current workforce constitutes around 5.2% of the primary and secondary study areas' total population.

The Project is not expected to create new employment opportunities, rather, transfer of workers from the open cast pit to the underground miners.

Although it is not expected that the operational phase would cause direct in-migration due to the expansion of the DECM's workforce, it is possible that the extended LoM could lead to renewed interest in the mine as a source of economic opportunity through employment and/or other contractual positions associated with the mine. This in turn could lead to a renewed influx of job seekers to the area or cause those who have travelled to the area during the construction phase, to settle in the area on a more permanent basis. It is difficult to predict with a level of certainty what the number of job seekers might be but given the areas average population growth rate of 3.2% per annum, it is safe to assume that in-migration to the area is still active. As is the case during the construction phase, the in-migration of people into the area is not an impact per se, but their presence impacts on the local population in terms of the following:

- Increased demand for job opportunities (which are limited to start off with).
- Increased demand for housing and other services; and
- Increased risk for conflict over limited resources or cultural clashes.

### **7.2.2.1. Management Objectives**

Minimise project-induced in-migration as much as possible.

### **7.2.2.2. Management Actions**

- Discourage in-migration from other areas by focusing employment opportunities at the local community and widely publicising this intent.
- Communicate the mine's intent of utilising the existing workforce at the mine expansion rather than employing additional people.
- Any new job opportunities should be offered only to those job seekers who have registered on the mine's database during the construction phase.
- Engage with local communities to understand their concerns, raise awareness of risks and opportunities, and identify solutions to issues related to in-migration.

### **7.2.2.3. Impact Ratings**

The impacts associated with project-induced in-migration during the operational phase is assessed in Table 7-6.

**Table 7-6: Influx-related Impacts during the Operational Phase**

Influx-related impacts				
Project phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Long term (4)	Expectations around job opportunities could start before operation commences but can be curbed with the implementation of suggested mitigation measures.	Moderately detrimental (-10)	Minor – negative (-40)
<b>Extent</b>	Local (3)	Will mostly affect settlements within the local study area (e.g., Thubelihle and Kriel).		
<b>Intensity</b>	Moderate – negative (-3)	Influx of formal workforce is expected to be minimal due to redeployment of current workforce. Number of job seekers unpredictable. This group is unemployed and therefore heavily reliant on local resources without the ability to pay for such resources.		
<b>Likelihood</b>	Probable (4)	A certain degree of influx can always be expected due to job seekers.		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Medium term (3)	Effective mitigation will prevent long lasting consequences of influx, especially social pathologies	Slightly detrimental (-8)	Negligible – negative (-24)
<b>Extent</b>	Local (3)	The extent of the impact will not be reduced by mitigation.		
<b>Intensity</b>	Low – negative (-2)	Mitigation measures should be effective in reducing severity of impacts to a limited degree		
<b>Probability</b>	Unlikely (3)	Mitigation will reduce the likelihood of this impact occurring to the extent predicted		

### 7.2.3. Impact: Skills Training

Apart from a continuation of employment opportunities created, the mine is also legally obligated to commit towards training of its labour force as per skills development legislation

for the industry. The mine makes provision for a skills development plan of its local workforce through the programmes required by legislation that regulates SLPs of mines. Required training includes functional literacy and numeracy programmes, career progression plans, up-skilling for hard to fill vacancies and management positions, bursary and internships and portable skills training.

The current five-year SLP (2017-2021) for DECM indicates that all training at the Dorstfontein Complex is based on a needs analysis that considers skills deficiencies against requirements, performance management, succession planning, career structuring as well as the operational employment equity plan. The skills development plan in the current SLP is aimed at permanent employees only, but contracting companies are required to align their programmes to that of the DECM. This entails that DECM ensures that contractors have fully developed skills plans and that all their employees receive training and development in accordance with these plans.

The Dorstfontein Complex is committed to ensuring the training and development of skilled personnel at all levels through the provision of internships and bursaries. To date 29 positions have been offered with a budget of around R 8.3 million at the end of 2021. DECM also offers learnerships aimed at the youth to developed core and critical disciplines of engineering, mining, and plant learnerships. The average period of a learnership is between 24-30 months and to date the mine has spent around R 1.9 million on learnerships between 2017 and 2021.

The Dorstfontein East Coal Mine makes use of the Mining Qualifications Authority's (MQA) accredited training providers to offer other skills programmes as part qualifications. These skills programmes form part of job requirements and are incorporated in the skills matrices of various jobs. Areas of training include electrical, fitting, plater welder, diesel mechanic and riggers.

#### **7.2.3.1. Management Objectives**

Continue and expand on its skills training initiatives through the continuation of its SLP commitments over the next 14 years.

#### **7.2.3.2. Management Actions**

- Revise current SLP for the next 5-year cycle between 2022-2027 and include additional skills training programmes to ensure required skills are in place to support redeployment of workforce.
- Identify skills deficiencies against requirements, performance management, succession planning, career structuring and operational equity plan and include appropriate training programmes in the new SLP cycle. Ensure that these aligned to the core skills areas of the mine and hard to fill vacancies.
- Give preference to students for local communities for bursaries and internships. Advertise these in the local media.

### 7.2.3.3. Impact Rating

Table 7-7 shows the assessment of impacts associated with skills training during the operational phase.

**Table 7-7: Impacts associated with Skills Training during the Operational Phase**

<b>Skills training</b>				
<b>Project phase</b>		<b>Operation</b>		
<b>Dimension</b>	<b>Rating</b>	<b>Motivation</b>	<b>Consequence</b>	<b>Significance</b>
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	Skills training will continue as per SLP regulations as long as the mine is operational.	Moderately beneficial (10)	Minor - positive (70)
<b>Extent</b>	Local (3)	Skills training programmes also offered to local communities in addition to the workforce - albeit on a more limited scale.		
<b>Intensity</b>	Low - positive (2)	Skills training programmes largely aimed at the current workforce with little benefit to the local community.		
<b>Likelihood</b>	Certain (7)	Skills training programmes already taking place and a legal requirement of the SLP.		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	The duration of the impact will not be increased by mitigation.	Moderately beneficial (11)	Moderate - positive (77)
<b>Extent</b>	Local (3)	The extent of the impact will not be broadened by mitigation.		
<b>Intensity</b>	Moderate - positive (3)	Mitigation measures could aid in expanding the skills training programmes to more of the local community, having further reaching effects.		
<b>Probability</b>	Certain (7)	It is certain that skills training programmes will continue as part of the mine's SLP commitments.		



#### **7.2.4. Impact: Social Investment in Local Communities**

The MPRDA through the Mining Charter 2018 specifies that mining operations should contribute to the economic development of their mine communities as per a SLP. The mine community development plan should be aligned to the local, provincial, and national development priorities. The local communities should furthermore be consulted. Both income generating activities and social infrastructure should be implemented as part of the plan.

While the old (2010) SLP guidelines did not specify a specific portion of turnover or profit to be allocated to such a fund, a generally good practice among mining companies was to set aside 1% of net profits after tax. The 2018 Mining Charter targets an equity equivalent benefit to the minimum of 5% to be allocated to the socio-economic development of local communities. Mining legislation furthermore specifies that 0.5% of income that multinational suppliers receive from the mining operations must be contributed to a social development fund.

##### **7.2.4.1. Management Objectives**

Identify and implement mine community development projects as part of the SLP.

##### **7.2.4.2. Management Actions**

- Revise and update SLP for next 5-year cycle to include updated mine community development projects.
- Ensure mine community development projects are in line with identified projects in the IDP and decided on in consultation with relevant stakeholders (municipality, communities, etc).
- Develop an updated mine community plan as part of an updated SLP for the project in consultation with relevant local stakeholders.
- Ensure that the current allocation as per DECM's Mine Works Programme for the updated SLP is in line with the targets of the Mining Charter 2018.
- Monitor and manage the social contribution of multinational suppliers (in-house as well as suppliers to the contractors and direct service providers).

##### **7.2.4.3. Impact Rating**

An assessment of the impact related to social investments in local communities during the operational phase is shown in Table 7-8.

**Table 7-8: Impact related to Social Investment in Local Communities during the Operational Phase**

Social investment in local communities				
Project phase		Operation		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	Mine community development projects will be in place as per SLP if the mine is operational.	Moderately beneficial (13)	Minor - positive (52)
<b>Extent</b>	Regional (5)	Mine community development projects to be implemented in local mine communities as well as labour sending areas.		
<b>Intensity</b>	Moderate - positive (3)	Mine community development projects are a requirement under the SLP.		
<b>Likelihood</b>	Probable (4)	Legal requirement to implement some mine community development projects.		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	The duration of the impact will not be increased by enhancement measures.	Highly beneficial (14)	Minor - positive (70)
<b>Extent</b>	Regional (5)	The extent of the impact will not be broadened by enhancement measures.		
<b>Intensity</b>	Moderately high - positive (4)	Mine community development projects that are relevant and developed with the mine community in mind can aid the development of the area in a non-mining dependent way.		
<b>Probability</b>	Likely (5)	Mine community development projects can be enhanced when developed in line with community's development priority needs.		

### 7.2.5. Impact: Multiplier Effects on the Local and Regional Economy

The proposed Project would continue several socio-economic benefits through direct and multiplier effects stimulated by capital expenditure on construction and operational activities. Industrial construction activities increase the demand for a wide variety of goods and services, and as a result stimulate and / or sustain growth within the regional manufacturing

Mpumalanga Province, which has a highly developed coal mining industry. This economic environment has the potential to generate opportunities for SMMEs, provided they are formalised and able to meet the procurement requirements of the mine. The Project and its contractors are committed to making maximum use of local SMMEs and Broad-based Black Economic Empowerment (BBBEE) companies (as they are currently doing and as a requirement of the SLP) but may need to procure from businesses elsewhere in the province or the country to meet highly technical needs.

In addition, the capital spent on Human Resource Development (HRD) for mine employees and community development initiatives (see Sections 7.2.3 and 7.2.4) could, if implemented effectively and sustainably, represent economic progress within the Project area, thereby also creating conditions conducive to economic growth.

#### **7.2.5.1. Management Objectives**

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

#### **7.2.5.2. Management Actions**

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

#### **7.2.5.3. Impact Rating**

The potential impacts and associated enhancement measures related to multiplier effects on the local and regional economy are described in Table 7-9.

**Table 7-9: Impacts related to Multiplier Effects on the Local and Regional Economy**

Multiplier effects on the local and regional economy				
Project phase		Construction and Operation		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	Will peak during construction phase and continue throughout the remainder of the life of the Project.	Moderately beneficial (11)	Minor - positive (44)

<b>Multiplier effects on the local and regional economy</b>				
<b>Project phase</b>		<b>Construction and Operation</b>		
<b>Dimension</b>	<b>Rating</b>	<b>Motivation</b>	<b>Consequence</b>	<b>Significance</b>
<b>Extent</b>	Sub-regional (4)	Will include some local, but mostly impacts within the local and regional study areas.		
<b>Intensity</b>	Low - positive (2)	Will derive from increase in disposable income community development programmes, stimulation of economic sectors, procurement, economic growth, and increased local markets.		
<b>Likelihood</b>	Probable (4)	Will primarily depend on proportion of local spending by employees as well as the capacity of local and regional enterprises to supply.		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	The duration of the impact will not be increased by enhancement measures.	Highly beneficial (16)	Moderate - positive (96)
<b>Extent</b>	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.		
<b>Intensity</b>	Very high - positive (6)	Mitigation will likely increase and intensity of multiplier effects as it will concentrate impact within the secondary and primary study area.		
<b>Probability</b>	Highly probable (6)	Increased local employment and procurement as well as upskilling of local enterprises will enhance likelihood of benefits to local economy.		

### 7.2.6. Impact: Community Health, Safety and Security

The following sections presents the potential impacts related to community health, safety, and security in relation to the mine proposals. Most of the impacts discussed will occur in all phases of the project i.e., through construction, operation and decommissioning and closure, and have been assessed in detail in other specialist studies These impacts are likely to be experienced

by farm workers and dwellers, the community of Thubelihle and some residents of Kriel. The most significant health, safety and security impacts on communities may include:

**Health:**

- Potential contamination of underground water resources due blasting activities; an issue which is commonly raised by mine communities in other areas where mining occurs (see Ground and Surface Water specialist reports for more detail).
- Unplanned spillage of dangerous goods during transportation to the Project area resulting in contamination of soils and waterbodies.
- Potential increase in the transmission of communicable diseases, such as respiratory and sexually transmitted infections resulting from the influx of jobs and business seekers.

**Noise:**

- A potential increase in noise from blasting or traffic.

**Safety:**

- Fly rock from blasting during construction may cause injury and / or death of people and livestock.
- Dust from blasting and other Project activities may adversely impact humans, livestock, and wildlife.
- Increased number of road traffic accidents – the project will have 194 heavy vehicles per week in the morning and night, respectively.
- Damage to structures from vibrations caused by blasting or road traffic.
- Injuries and / or fatalities involving community members entering hazardous, access-restricted areas on the construction or mine site and / or being exposed to hazardous materials related to the Project.
- Decreased ambient air quality due to blasting, movement of vehicles, and site equipment and machinery (see specialist report on Air Quality for more detail).

**Security:**

- The increased movement of people in the area will result in increased incidences of livestock and game theft; and an increase in number of house break-ins.

Issues of community health, safety and security will be experienced in the area long after the mine has closed. This relates specifically to the following:

- Some sexually transmitted diseases such as Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) lead to permanent poor health outcomes and those affected may need long term care from others.
- The risk of collapse of mine dumps owing to unplanned events such as floods and blasting from other activity mines in the area will remain in place.

- Risks associated with children venturing into the closed mine putting their lives in danger will remain in place.

#### **7.2.6.1. Management Objectives**

- Mitigate the risk of increased Sexually Transmitted Infections (STIs) and other communicable diseases.
- Mitigate the potential for diseases associated with access to water and sanitation facilities.
- Manage potential impacts related to hazardous substances.
- Mitigate risks associated with safety at the mine works and road traffic.
- Promote the security of the public and communities.

#### **7.2.6.2. Management Actions**

##### **General:**

- In partnership with government authorities the Project to support improvements to existing health services to handle the increase in population numbers and changes to the existing health profile of the area. This may include facilities, quality of medical personnel, diagnostic capacity, and treatment, etc.

##### **Develop and implement an Emergency Prevention, Preparedness and Response Plan:**

- 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. This will include:
  - Installation of oil water separators and grease traps as appropriate at fixed refuelling facilities, workshops, parking areas, fuel storage and containment areas.
  - Use of drip trays and other temporary measures to prevent entry of hazardous substances into the environment during fuelling or servicing of vehicles and equipment on site.
  - Provision of spill kits and training of staff in their use.
  - Secure storage and labelling of hazardous substances in line with the manufacturer's recommendations and measures to prevent contact with untrained personnel, birds, animals.
  - Secondary containment using impervious, chemically resistant material and designed to prevent contact between incompatible materials in the event of a release.

**To mitigate the risk of increased transmission of communicable diseases:**

- Develop information, education and communication campaigns around diseases and health practices including communicable diseases such as HIV/AIDS, TB, and Covid-19.
- Regularly review and update as necessary its existing communicable diseases management strategy.

**To mitigate the potential for diseases associated with access to water and sanitation facilities:**

- Survey all households in the primary study area to record the location, extent, and quality of water sources the size of the population reliant on water and its usage patterns, particularly regarding seasonality, and differences in water use or access by vulnerable populations, including women.
- Develop a programme in consultation with local communities to improve access to decent quality potable water and determine preferred water infrastructure.

**To mitigate community safety from road traffic:**

- Develop a Traffic Management Plan covering vehicle safety, driver, and passenger behaviour, use of drugs and alcohol, hours of operation, rest periods and accident reporting and investigations.
- Strictly enforce drug and alcohol policies in relation to Project drivers and undertake regular and random testing of drivers and in response to suspicious behaviour.
- Require Project drivers to be trained in defensive driving and provided regular refresher courses.
- Propose road bypasses where there is a significant risk to public safety from road accidents.
- Establish preparedness and response capabilities to deal with any road traffic or other accidents that may occur including multiple casualty events.
- In partnership with local authorities and the police, educate communities on road traffic laws and road safety.

**7.2.6.3. Impact Rating**

The potential impacts associated with decreased community health, safety and security are assessed and described in Table 7-10.

**Table 7-10: Impacts associated with Community Health, Safety and Security**

Health and safety impacts				
Project phase		All mining phases		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Beyond project life (6)	Will continue for the duration of the Project, and likely continue during decommissioning when the Mine infrastructure is dismantled.	Moderately detrimental (-13)	Minor - negative (-65)
<b>Extent</b>	Project footprint and immediate surrounds (2)	Will mostly affect the population within site-specific study area, some users of local roads, as well as project and contracted employees.		
<b>Intensity</b>	High - negative (-5)	Could place the lives of employees and community members at risk, especially those travelling on the initial access road as well as exposure to fires and hazardous materials.		
<b>Likelihood</b>	Likely (5)	The nature of the Project requires the infrastructure and activities described, which hold an inherent risk.		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Beyond project life (6)	The duration of the impact will not be shortened by mitigation.	Moderately detrimental (-10)	Negligible - negative (-30)
<b>Extent</b>	Project footprint and immediate surrounds (2)	The extent of the impact will not be reduced by mitigation.		
<b>Intensity</b>	Low - negative (-2)	Impacts will still occur, albeit not to the degree it was initially expected		
<b>Probability</b>	Unlikely (3)	Appropriate mitigation will reduce the risk of this impact		



## 7.3. Decommissioning Phase

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

### 7.3.1. Impact: Economic Contraction

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 results 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.
- 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.

#### 7.3.1.1. Management Objectives

Minimise and manage the economic fallout associated with the closure of the mine.

### 7.3.1.2. Management Actions

- 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.

### 7.3.1.3. Impact Ratings

The impacts associated with economic contraction due to the decommissioning of the mine is assessed in Table 7-11.

**Table 7-11: Impacts associated with Economic Contraction due to Decommissioning**

Economic Contraction				
Project phase		Decommissioning		
Dimension	Rating	Motivation	Consequence	Significance
<b>PRE-MITIGATION</b>				
<b>Duration</b>	Project Life (5)	Effects of retrenchments/ decommissioning will be long-lasting on employees, local businesses, and government.	Highly detrimental (-15)	Moderate - negative (-90)
<b>Extent</b>	Sub-regional (4)	Will most severely affect employees and service providers from the primary study area.		
<b>Intensity</b>	Very high - negative (-6)	Local economy will likely be very dependent on the Project.		
<b>Likelihood</b>	Highly probable (6)	The Project will inevitably come to an end		
<b>POST-MITIGATION</b>				
<b>Duration</b>	Medium term (3)	Effects of retrenchments/ decommissioning will be long-lasting on employees, local businesses, and government.	Moderately detrimental (-10)	Minor - negative (-60)
<b>Extent</b>	Sub-regional (4)	Will most severely affect employees and service providers from the primary study area.		
<b>Intensity</b>	Moderate - negative (-3)	Mitigation will reduce the impact of retrenchment.		

<b>Probability</b>	Highly probable (6)	Mitigation will reduce severity of impact on retrenched workers.	
--------------------	---------------------	--	--

## 7.4. Cumulative Impacts

Cumulative impacts are those impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned, or defined developments (including third-party developments) at the time that the risks and impacts identification process is conducted (IFC PS 1, 2012). Potential cumulative impacts associated with the Project and the potential of more mines being established in the study area are outlined in Table 7-12.

**Table 7-12: Potential Cumulative Impacts related to the Project**

Cumulative Impact	Mitigation Measures
<ul style="list-style-type: none"> <li>Compounded effects of lighting, noise, traffic, water pollution, dust emission, groundwater abstraction and physical reduction in habitat impacts community health and safety.</li> </ul>	<ul style="list-style-type: none"> <li>Implement all mitigation measures recommended by the associated Specialist Studies in collaboration with other active mines in the study area.</li> </ul>
<ul style="list-style-type: none"> <li>Economic dependency on surrounding mines will negatively impact local, regional, and national economies with decommissioning and mine closure.</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate with government, agencies, and civil society to identify alternative economic activities in the study area.</li> </ul>
<p>The presence of multiple mines in the study area is likely to result in the influx of business and job seekers attracted by the economic activities. The increased in-migration of people may result in:</p> <ul style="list-style-type: none"> <li>Urban sprawl, housing backlog and / or growth of informal settlements.</li> <li>Increased social capital associated with an increase in number of highly educated and skilled people searching for economic opportunities associated with the mines.</li> <li>Increased the pressure on water resources for local communities.</li> <li>Increased population, demand for goods and services, and constraints on supply because of pressure on resources, will all contribute to inflation in local prices and increased economic vulnerability of local people, those who are already vulnerable.</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement an In-migration Plan in collaboration with government, civil society, and other active mines in the study area.</li> </ul>

Cumulative Impact	Mitigation Measures
<ul style="list-style-type: none"> <li>Increased anti-social behaviours will adversely affect the lives of the local population.</li> </ul>	
<ul style="list-style-type: none"> <li>Increased risks associated with road traffic accidents between humans, livestock, game, and mining vehicles. In some cases, this will lead to fatalities.</li> </ul>	<ul style="list-style-type: none"> <li>Make financial provisions to be used in case of reported and proven incidences of health, safety, and security issues.</li> </ul>
<ul style="list-style-type: none"> <li>The increase in the number of mines in the area may result in a decreased ambient air quality due to the increase in carbon dioxide emissions associated with increased vehicle movement, machinery, and equipment on mine sites as well as blasting activities. This may, in turn, result in poor health outcomes to those exposed to it.</li> </ul>	<ul style="list-style-type: none"> <li>Implement recommendations and mitigation measures as per the air quality specialist study as well comply with the national and international standard procedures and protocols for active open cast mining.</li> <li>Development and implementation of a grievance procedure.</li> <li>Make financial provisions to be used in case of reported and proven incidences of health, safety, and security issues.</li> </ul>
<ul style="list-style-type: none"> <li>The presence of multiple active mines in the area has a potential to cause structural damage through blasting and the movement of heavy-duty vehicles; thus, causing health and safety risks to those dwelling in such structures.</li> </ul>	<ul style="list-style-type: none"> <li>Implement mitigation measures outlined in the blasting, vibrations, and traffic specialist studies.</li> <li>Collaborate with other mines in the area to develop and implement long-term health and safety procedures and protocols to minimise and avoid the impacts.</li> <li>Development and implementation of a grievance procedure.</li> <li>Make financial provisions to be used in case of reported and proven incidences of health, safety, and security issues.</li> </ul>

## 7.5. Unplanned and Low Risk Events

Table 7-13 summarises some of the potential unplanned and minimal risk events associated with the Project.

**Table 7-13: Unplanned Events and Associated Mitigation Measures**

Unplanned Risk	Mitigation Measures
<ul style="list-style-type: none"> <li>● 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.</li> <li>● Improper management and disposal of hazardous materials during construction, operation and closure of the mine that could result in water resource contamination.</li> <li>● Land-disturbing activities that may result in increased dust emissions.</li> <li>● Project related traffic may be sources of dust emissions, and combustion emissions leading to higher levels of air pollution.</li> </ul>	<p>Develop and implement the following industry standard procedures and protocols:</p> <ul style="list-style-type: none"> <li>● Spill Prevention, Control and Containment Plan</li> <li>● Waste Management Plan</li> <li>● Emergency Preparedness and Response Plan</li> <li>● Traffic management plan</li> </ul>
<ul style="list-style-type: none"> <li>● Increased antisocial behaviours associated with presence of mine followers such as prostitution, illegal gambling, illegal shebeens, drug uses, etc.</li> </ul>	<ul style="list-style-type: none"> <li>● Collaborate with the relevant government offices and partners to manage the increase in antisocial behaviours.</li> </ul>

## 8. Social Impact Management Programme

Table 8-1 below provides a summary of the mitigation and/or enhancement measures required to address the social impacts identified in Section 7.

**Table 8-1: Social Impact Management Programme**

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
<ul style="list-style-type: none"> <li>Site clearing</li> <li>Fencing</li> </ul>	Limited number of unskilled job opportunities could be offered to the local community.	Job creation and income	Construction	<ul style="list-style-type: none"> <li>Advertise any local employment opportunities utilising community engagement structures</li> <li>Utilise the recruitment policy of the Dorstfontein East to employ local community members.</li> <li>Ensure that local communities are aware of and have easy access to the mine's grievance mechanism so that they can register complaints around employment practices. This will also allow the mine with opportunities to address any legitimate complaints.</li> </ul>	<b>Control</b>	Pre-construction and construction
<ul style="list-style-type: none"> <li>Construction activities attract attention. People inform friends and family members of possible job opportunities.</li> <li>Construction team mobilises.</li> </ul>	project-induced in-migration can lead to the following socio-economic impacts where it occurs: <ul style="list-style-type: none"> <li>Increased demand for land to be used for informal housing and land invasions.</li> <li>Increased demand on the natural environment for resources such as wood for fuel.</li> <li>Increased pressure on existing public infrastructure and services, such as communal toilet facilities, water standpipes, etc.; and</li> <li>Possible increase in conflict situations over limited resources, including services such as water and sanitation, land, and employment opportunities.</li> </ul>	Local housing Demand on natural resources Local services Community cohesion	Construction	<ul style="list-style-type: none"> <li>Discourage in-migration from other areas by focusing employment opportunities at the local community and widely publicising this intent, and refrain from employing day labourers at the gate. Only employ people who have been verified as being from the local area.</li> <li>Engage with local communities to understand their concerns, raise awareness of risks and opportunities, and identify solutions to issues related to in-migration and land invasion.</li> </ul>	<b>Stop</b> influx by preventing influx	Pre-construction and construction
<ul style="list-style-type: none"> <li>Economic activities associated with extended life of mine</li> </ul>	<ul style="list-style-type: none"> <li>Longer term employment opportunities</li> <li>Influx of people and job seekers</li> <li>Skills training</li> <li>Social investment opportunities in the local community</li> </ul>	Local population Workforce Local households Local and provincial government	Operations	<ul style="list-style-type: none"> <li>Discourage in-migration from other areas by focusing employment opportunities at the local community and widely publicising this intent.</li> <li>Communicate the mine's intent of utilising the existing workforce at the mine expansion rather than employing additional people.</li> <li>Any new job opportunities will be advertised locally to ensure that local community members are employed.</li> </ul>	<b>Control</b>	End of construction period, transitioning into operations, and life of mine



Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
	<ul style="list-style-type: none"> <li>Multiplier effects on the local and regional economy</li> </ul>			<ul style="list-style-type: none"> <li>Engage with local communities to understand their concerns, raise awareness of risks and opportunities, and identify solutions to issues related to in-migration and land invasion. DECM will also engage the contractors to ensure that the contractor employ people from the local area.</li> <li>Enforce the DECM's Employment Policy where necessary with the objective of increasing local employment and transferring operational positions from migrant workers to people from within the study areas.</li> <li>Prioritise local labour in the recruitment process as part of the DECM's employment policy or as part of a contractor management plan with the objective of recruiting 100% of any new or additional unskilled labour from local communities.</li> <li>Develop a database of goods and services that could potentially be outsourced to the local community.</li> <li>Implement a contractor management plan (including direct service providers) to ensure that the local employment and procurement targets of the operation is met. The targets should be aligned to the Mining Charter 2018.</li> <li>Ensure that the grievance mechanism is widely known and accessible to allow communities the opportunity to register complaints and have these addressed in a timeous manner.</li> <li>Revise current SLP for the next 5-year cycle between 2022-2026 and include additional skills training programmes to ensure required skills are in place to support redeployment of workforce.</li> <li>Identify skills deficiencies against requirements, performance management, succession planning, career structuring and operational equity plan and include appropriate training programmes in the new SLP cycle. Ensure that these aligned to the core skills areas of the mine and hard to fill vacancies.</li> <li>Give preference to students for local communities for learnerships and internships. Advertise these via the community structures and in the local media.</li> <li>Ensure mine community development projects are in line with identified projects in the IDP and decided on in consultation with relevant stakeholders (municipality, communities, etc).</li> <li>Ensure that the current allocation as per DECM's Mine Works Programme for the updated SLP is in line with the targets of the Mining Charter 2018.</li> </ul>		

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				<ul style="list-style-type: none"> <li>• Monitor and manage the social contribution of multinational suppliers (in-house as well as suppliers to the contractors and direct service providers).</li> <li>• Implement enhancement measures linked to employment creation and opportunities associated with the supply chain.</li> <li>• Implement SLP related interventions.</li> <li>• Compliance with SLP commitments to make maximum use of local SMMEs and BBBEE companies.</li> <li>• Implement grievance procedure.</li> </ul>		
<ul style="list-style-type: none"> <li>• Daily mining activities giving rise to nuisance factors</li> </ul>	<ul style="list-style-type: none"> <li>• Dust and noise impact on health</li> <li>• People movement impact on people’s sense of safety and security (perceived increase in crime)</li> <li>• Impacts on people’s water sources</li> </ul>	Neighbouring communities	Operations	<p><b>Health:</b></p> <ul style="list-style-type: none"> <li>• Potential contamination of underground water resources due to blasting activities; an issue which is commonly raised by mine communities in other areas where mining occurs.</li> <li>• Increased incidences of road traffic accidents between humans, livestock, and wildlife. Some small and large mammals roam freely in the primary study area and are often seen crossing the road; thus, increasing the potential road traffic accidents.</li> <li>• Unplanned spillage of dangerous goods during transportation to the Project area resulting in contamination of soils and waterbodies.</li> <li>• Potential increase in the transmission of communicable diseases, such as respiratory and sexually transmitted infections resulting from the influx of jobs and business seekers.</li> <li>• Consider mitigation measures identified in the relevant specialist studies (i.e. Air Quality, Ground and Surface Water).</li> </ul> <p><b>Safety:</b></p> <ul style="list-style-type: none"> <li>• Dust from blasting and other Project activities may adversely impact humans, livestock, and wildlife.</li> <li>• Increased number of road traffic accidents – the project will have 194 heavy vehicles per week in the morning and night, respectively.</li> <li>• Damage to structures from vibrations caused by blasting or road traffic.</li> <li>• Injuries and / or fatalities involving community members entering hazardous, access-restricted areas on the construction or mine</li> </ul>	<b>Control</b>	Operations



Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
				site and / or being exposed to hazardous materials related to the Project. <b>Security:</b> <ul style="list-style-type: none"> <li>The increased movement of people in the area will result in increased incidences of livestock and game theft; and an increase in number of house break-ins.</li> <li>Issues of community health, safety and security will be experienced in the area long after the mine has closed. This relates specifically to the following:</li> <li>Some sexually transmitted diseases such as HIV/AIDs lead to permanent poor health outcomes and those affected may need long term care from others.</li> <li>The risk of collapse of mine dumps owing to unplanned events such as floods and blasting from other activity mines in the area will remain in place.</li> </ul>		
<ul style="list-style-type: none"> <li>Mine closure</li> </ul>	Loss of employment Decreased contribution to LED	Workforce and their families Local and provincial government	Decommissioning	<ul style="list-style-type: none"> <li>Develop and implement an integrated Mine Closure Plan.</li> <li>Proactively assess and manage the social and economic impacts on individuals, regions, and economies where retrenchment and/or closure of the Project are certain.</li> <li>Plan for downscaling and retrenchments through re-skilling of local community members.</li> </ul>	<b>Control</b>	Towards end of LoM, care and maintenance, decommissioning

## 9. Monitoring Programme

The key social aspects that require monitoring are summarised in Table 9-1.

**Table 9-1: Summary of Social Aspects to be Monitored**

Monitoring Element	Comment	Frequency	Responsible Department
Local employment targets	Review against set local employment targets	Quarterly	Human Resources
Local procurement targets	Review the numbers of local businesses in programmes either as individuals or JVs	Quarterly	Supply Chain
Community and workforce health, safety, and security	Ongoing identification, management, monitoring of HSS risks	Daily	Health and Safety Stakeholder Affairs
Structural integrity of houses	Ongoing monitoring of structural integrity of houses near the mine after blasting	Annually	Environment Department
Water quality and quantity	Implement standard operating protocols Track and monitor the number of grievances registered on the matter	Weekly	Environmental Stakeholder Affairs
Air quality	Implement standard operating protocols Track and monitor the number of grievances registered on the matter	Weekly	Environmental Stakeholder Affairs
Grievance registration	Track and monitor the number of grievances registered and addressed	weekly	Stakeholder Affairs

## 10. Stakeholder Engagement Comments Received

Table 10-1 below provides a summary of the socio-economic comments and issues that were raised during the Project's public participation process as part of the EIA process

**Table 10-1: Summary of Socio-Economic related issues**

Category	Issue/Concern raised	Name of Stakeholder
<b>Water</b>	How will the fountains in the area be affected by the mining activities?	Landowner Edmund Muller
	<ul style="list-style-type: none"> <li>Containment of grey surface water and sub-surface water.</li> <li>Cut-off drains, which prohibits surface water as well as sub-surface water from flowing outside the relevant site. Each site / company must cater for his or her own grey water. If a cut-off drain is not installed the surface water and especially the sub surface water can move laterally underground to other waterways, streams, wetlands, and settlements.</li> <li>Impact on water sources in view of possible spillage.</li> </ul>	J Venter Department of Agriculture, Rural Development, Land and Environmental Affairs
	Groundwater- Protect the boreholes.	Joseph Mtshweni Ward Councillor (Ward 15)
<b>Employment</b>	influx of people which will result in stock theft and veld fires	Landowner Edmund Muller
	The biggest challenge is the existing community Forums as they will want employment opportunities and will also want to do business with the mine.	Joseph Mtshweni Ward Councillor (Ward 15)
	Are there any business opportunities that will be offered to the community? The people that you are training are you going to hire them?	Maggy Magagula
<b>Heritage resources</b>	Respect the graves.	Joseph Mtshweni Ward Councillor (Ward 15)

Category	Issue/Concern raised	Name of Stakeholder
<b>Land and Soil Management</b>	The project is around Dorstfontein. How many hectares will be utilised, and is it private land?	Maggy Magagula Ward Councillor (Ward 25)
	Are you going to blast?	Maggy Magagula Ward Councillor (Ward 25)
	<ul style="list-style-type: none"> <li>• The primary and secondary impact in natural resources, especially soils.</li> <li>• The available information indicates that Land Type information was used in assessing farm level soil types, which is not adequate. The land type data is a mixture of verification points and remote sensing data at a very high scale of 1:250 000 scale, which is too coarse when assessing the various soil forms especially in view of rehabilitating the area. A detail soil survey whereby a grid of at least 200m x 200m is used, the survey is not a desktop study but a physical bucket and auger method through ground truthing. This method will always supersede any desktop / remote sensing exercise. If we are serious in protecting the environment and its natural resources this is the only method in ensuring proper planning and management of our resources for generations to come.</li> <li>• The desktop / remote sensing exercise is not acceptable in view of protecting agriculture potential soils ensuring food security.</li> <li>• The geo-tech studies focus only on the geological aspects</li> <li>• Various homogeneous soil type must preferably be stockpile together. It must also be considered that the restrictive layers, which prevented the water from leeching out of the profile does not exist anymore. No sub-surface layers that prevent the water from leeching out of the profile. The water is now outside the reach of the plant and the</li> </ul>	J Venter  Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA)

Category	Issue/Concern raised	Name of Stakeholder
	<p>possibility of the profile obtaining field capacity regarding water availability is very limited. On the other hand, the water will leech through the profile reaching the overburden and decanting upwards to the plant with unwanted toxic chemicals.</p> <ul style="list-style-type: none"> <li>• The method of stripping the soils is very important, less rehabilitation cost when reseeding thus reaching the necessary vegetation cover that is required, it is also important to rehabilitate the stockpiles as soon as possible therefore preventing unnecessary erosion on the stockpiles</li> <li>• Possible impact on agriculture activities or nearby agricultural livelihoods</li> <li>• Current land use zonings and alignment thereof with regards to the relevant legislations such ACT 70-1970, CARA Act 43 of 1983, Spatial Planning and Land.</li> <li>• Use Management Act, 2013, historical land uses are not always up to date or compliant with current land uses</li> <li>• Current land use zonings and alignment thereof with regards to the relevant legislations such ACT 70-1970, CARA Act 43 of 1983, Spatial Planning and Land Use Management Act, 2013, historical land uses are not always up to date or compliant with current land uses.</li> </ul>	
<b>Pollution</b>	Geochemistry. Chemical fallout with regards to surrounding areas.	J Venter  Department of Agriculture, Rural Development, Land and Environmental Affairs (dardlea)
<b>Socio-economic Development</b>	The biggest issue is the extent of the mine that might affect the community.	Joseph Mtshweni  Ward Councillor (Ward 15)

Category	Issue/Concern raised	Name of Stakeholder
<b>Project Administration</b>	On the presentation, you mention that you applied for a water license. Is it approved?	Maggy Magagula Ward Councillor (Ward 25)
	Requested Background Information Documentation (BID).  Indicated that comments will be made and submitted in due time.	Joseph Mtshweni Ward Councillor (Ward 15)
	The community is not using the library, so where will the scoping report be placed? Is it possible that a different location can be used for the document? The Community Forum comes to the office requesting information which I am not in possession of, and I do not want to be part of the Forums.	Maggy Magagula Ward Councillor (Ward 25)

## 11. Recommendations

Recommendations arising from this SIA can be grouped into three themes:

- Stakeholder engagement;
- Development and implementation of mitigation measures; and
- Updates to this SIA and to key stakeholder messaging.

### 11.1. Stakeholder Engagement

Concerns surrounding potential impacts will surface during engagement with internal and external stakeholders when discussing the possible expansion of underground mining. Extensive and sustained stakeholder engagement will be essential to address such concerns and, where necessary, taking action to address them. Communication should not focus only on predicted or potential impacts, but also in stakeholder perceptions and concerns regarding such impacts.

Adequate preparation and accuracy of information are key success factors for effective stakeholder engagement. The development of key messages prior to engagement with stakeholders is important to ensure that information provided is consistent, relevant, concise, and not overly technical. Organising the material into themes may aid the flow of information.

Components of this report that are suitable for incorporation into key messages include:

- Descriptions of the proposed underground infrastructure and activities;
- The overview of current and potential future socio-economic impacts; and
- The summary of current and planned mitigation measures as described in Table 8-1.

Key messages about the Project can be disseminated by various means. Some potential options are outlined in Table 11-1 below. The table also identifies some key success factors for each communication medium. It is important that communication around the proposed expansion of the underground mining be included in the mine's Stakeholder Engagement Plan, which should include the community's concerns about the safety of underground mining.

**Table 11-1: Media for Disseminating Key Messages**

<b>Medium</b>	<b>Benefits</b>	<b>Factors for Success</b>
Verbal communication	Verbal communication provides opportunity for stakeholders to ask questions and project representatives to correct misunderstandings before they take root.	Meetings must be facilitated by credible project representatives. Information to be conveyed must be prepared and rehearsed beforehand in internal dry-run meetings. Debriefing sessions after meetings allow project team members to benefit from lessons learnt. Concerns raised during meetings must be documented and responded to as appropriate.
Newsletter	Successive issues can inform stakeholders of the most recent project developments.	The newsletters should contain a combination of informative graphics and explanatory text and be used for general distribution to keep stakeholders updated on mining activities.
Project information brochures	Can be left behind in libraries and other community facilities to be shared with those not able to attend meetings, or to assist those who attended in sharing information with others.	Brochures must be readable as stand-alone documents for those not able to attend meetings. Must include website information, email addresses and telephone numbers of those who can be contacted for further information.
Poster-boards	Effective for displaying figures, maps, and photographs. Useful as conversation starters. Re-usable: can be taken to meetings and displayed in the office following meetings.	The poster-boards should contain a combination of informative graphics and explanatory text and must be updated/ replaced as newer information becomes available.
Computer-generated models	Effective for enabling persons unfamiliar with mining to visualise what the project will look like during its various phases.	These models should accurately portray essential features of the project during each phase of its lifecycle, including closure.

## 11.2. Mitigation Measures

The current opencast mining operation has an Environmental Management Programme (EMPr) in place that contains various mitigation measures that the mine must adhere to and report on to the DMRE. Most of these mitigation measures will continue during the expansion phase of the underground mining. Certain impacts might require additional mitigation measures, as described in this report and that will be included in the mine's EMP.

Table 8-1 above outlines the mitigation measures required to address the various current and predicted socio-economic impacts discussed in Chapter 7. It will be important to maintain the momentum created through previous work (including the SIA) by continuing the work required to develop and implement the mitigation measures required for future Project phases.

## 12. Reasoned Opinion Whether Project Should Proceed

It is expected that the overall Project will have a positive socio-economic impact on the project area by expanding the Life of Mine by 14 years, thereby extending the employment and other tax benefits for this period.

It is, however, also important to take note of a growing movement of social mobilisation against coal mining in the highveld and Mpumalanga areas – based largely on the health impacts that coal mining is perceived to have on surrounding communities (see reports such as the 2016 GroundWork Report entitled “The destruction of the highveld”, amongst others). Coal mining by its nature is not a clean industry and therefore the mine should pay careful attention to implementing the required mitigation measures under its EMPr and take appropriate and timeous corrective action where mitigation measures fail.

Communities have the means and opportunities to mobilise social action successfully and therefore the mine's continued stakeholder engagement actions are key in the success of the Project. If communities are of the opinion that they are left out or ignored, or that their grievances are not addressed, it is likely to lead to protest action and rioting.

## 13. Conclusion

The findings of this report considered the Project's proposed activities, its existing socio-economic impacts, the location of the Project, the status of existing socio-economic environment and the potential new impacts that the Project might bring to the fore.

Impacts that are in the low to medium negative range, are all associated with physical intrusion, i.e., nuisance factors brought about to the immediate environment due to the nature of the mining activities. These impacts are all subject to a stringent EMPr that should ensure that any such negative impacts are mitigated and, that the local community have access to a grievance management system to formally register their complaints.

Impacts that are considered beneficial all have to do with the economic impact that the mine expansion is expected to have on the current workforce (i.e., being able to retain their job) and the continued expansion of the local and provincial tax base, which in turn allows local



government to invest in other infrastructure and development activities. The DECM is also instrumental in this through their relationship with the local municipality and the implementation of their SLP mine community development projects. There are, however, also stakeholders that carry social and economic risks related to the Project such as farmers in the area that produce crops and rely on the underground water system. These stakeholders do not experience any direct socio-economic benefit from the Project and therefore more effort will be required from the mine to obtain and retain this group's support in the mine's social license to operate.

The potential cumulative negative impacts of mining on agricultural production and long-term food security are of specific concern but is an issue for the wider Mpumalanga area that falls outside the scope of this SIA. It is regarded as a public policy issue that needs to be addressed through clear spatial planning principles to protect arable land on a national and local level, including the demarcation of no-go areas and/or requirements for alternative mining methods such as underground mining in priority areas.



DIGBY WELLS  
ENVIRONMENTAL