

EXXARO COAL MPUMALANGA (PTY) LTD



POWERING POSSIBILITY

BELFAST COAL MINE, BELFAST EXPANSION PROJECT

SOCIAL IMPACT ASSESSMENT

December 2021



Prepared by:



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Submitted to:



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## DETAILS OF PROJECT

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Report Title	:	<b>Exxaro Coal Mpumalanga (Pty) Ltd Belfast Coal Mine, Expansion Project</b>
Author	:	Dr Neville Bews
Project Developer	:	Exxaro Coal Mpumalanga (Pty) Ltd
Environmental Consultant	:	<b>Nsovo Environmental Consulting</b>
Review Period	:	25 November 2020 – 21 December 2021
Status of Report	:	Third Draft Report

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## EXECUTIVE SUMMARY

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### INTRODUCTION

This summary serves only as a general overview as to what is covered within the report and should be read as such. Any claims made are clearly substantiated within the main body of the report and are linked to the appropriate references.

Dr Neville Bews & Associates was appointed by Nsovo Environmental Consulting to undertake a Social Impact Assessment for the proposed Belfast Expansion Project (BEP). The project falls under the Exxaro Belfast Mining Right (Ref No. MP 30/5/1/2/2/431 MR) which is located along the National Road 4 (N4), south of the town of Belfast in Mpumalanga Province, South Africa.

### PROJECT DESCRIPTION

In 2018, the Belfast Implementation Project (BIP) commenced with mining activities and the construction of the associated plant and infrastructure to process 3 Mtpa of Run of Mine with a life of mine of 17 years. First coal was produced at the processing plant during September 2019.

Subsequently, a desktop study was undertaken to evaluate the potential for expanding mining activities within the current Belfast mining rights area. The aim of such an operation would be to access high-quality coal for export, through both opencast and underground mining operations. These operations, referred to as Belfast Expansion Project, fall within the Exxaro Belfast Mining Rights area but outside of the current mining area.

### LOCATION

The project falls within the Emakhazeni Local Municipality, which falls under the Nkangala District Municipality within the province of Mpumalanga. At Statistics South Africa's, Census 2011 Main Place level, the project falls within Emakhazeni Non-Urban, Main Place 870003. eMakhazeni A, Main Place 870006, borders the project and incorporates the town of Belfast.

### POTENTIAL SOCIAL IMPACTS

The following potential social impact variables were identified in association with the project:

#### Health and social well-being

- Air quality
- Noise and vibration
- Hazard exposure

- Increase in crime
- Increased risk of HIV infections
- Influx of job seekers.

#### **Quality of the living environment (Liveability)**

- Annoyance factor, access, and disruption of daily living patterns
- Disruptions to social and community infrastructure
- Transformation of the sense of place
- Traffic.

#### **Economic**

- Job creation and skills development
- Local economic development.

#### **Cultural**

At a social level, it is likely that any cultural impacts would be associated with sensitive archaeological and/or heritage sites that may be found.

### **SHAFT AND CONVEYOR ALTERNATIVES**

Two open shaft options and various conveyer belt options are proposed. Although on a general basis no socially preferred option emerges, considered from a soil, land use and land capacity perspective, to “...support the objective of conserving as much arable and undisturbed land as possible and thus favour agricultural production continuity on the farm situated within the immediate vicinity”, Option 1 emerges as the preferred option due to the benefit of retaining arable land and is thus supported on a social basis. On similar grounds, due it posing less of an impact from a soil, land use and land capability perspective, conveyer belt Option 1 is also supported on a social basis.

However, it is noted in the Soil, Land Use and Land Capability Assessment, that the difference in the impact of the two shaft options is minor and that Option 1 is likely to impact significantly on the life of mine, thus making Option 2 the only viable option. Due to this, Option 2 is deemed acceptable from a social perspective.

### **DISCUSSION**

Although the project will lead to the creation of jobs over the medium term, it is also likely to result in a high risk to the environment over the longer term cumulative basis<sup>1</sup>. This will be

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<sup>1</sup> See for instance Environmental Monitoring Group, 2010; Kekana, 2018; Gray H, 2019; Laisani & Jegede, 2019; SAnews.gov.za, 2019; Vlavianos, 2019; West, 2019; Adesinal, Pikethl, Qhekwanal, Language, & Mkhathswall, 2020; Gilder & Rumble, 2020; Makoni, 2020; amongst many others.

exacerbated on a cumulative basis, considering the extent of development in the area. Based on the lack of scientific information currently available, it is rather difficult to make any accurate assessment of the social value and impact of the project. As Shongwe points out;

*“Although South Africa has advanced policies and regulations, designed to protect the environment and people living in mining communities, governance and implementation remains problematic and highly contentious. This, coupled with inadequate consultation and communication with communities, has led to a situation which is dominated by highly politicised agendas with little factual basis or stakeholder co-operation”* (Shongwe, 2017, p. 88).

Apart from this, the following extracts, from a recent report released by the Intergovernmental Panel on Climate Change (IPCC) highlight the urgency of reducing carbon dioxide (CO<sup>2</sup>) emissions along with other greenhouse gases in order to stabilise global temperatures.

*“Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years*

*Observed warming is driven by emissions from human activities, with greenhouse gas warming partly masked by aerosol cooling*

*Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes*

*Future emissions cause future additional warming, with total warming dominated by past and future CO<sub>2</sub> emissions”.*

A situation labelled by the UN Secretary-General, António Guterres, as nothing less than “a code red for humanity” requiring decisive and immediate action.

With this in mind, it is important that developers consider outcomes that reach beyond the operational life of the mine and leave a positive legacy; with some value being added to the lives of local communities (Franks, 2012, p. 8). If this could be achieved, it may mitigate somewhat against current environmental damage. However, despite the damage and associated health risks identified over several years in the area, there is little evidence of either the political or corporate will to address these concerns.

Regarding the legislative and policy fit of the project, it would be important that the six principles, as laid out in the **Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector** and listed below, are applied to the project.

- “1. Apply the law*
- 2. Use the best available biodiversity information*
- 3. Engage stakeholders thoroughly*

4. *Use best practice environmental impact assessment (EIA) to identify, assess and evaluate impacts on biodiversity*
5. *Apply the mitigation hierarchy in planning any mining-related activities and to develop robust environmental management programmes (EMP)*
6. *Ensure effective implementation of the EMP, including adaptive management”<sup>2</sup>.*

It is also evident from the Air Quality Impact and Climate Report (Kijani Green Energy, 2021, p. 35 & 39) that.

*“A moderate cumulative impact is anticipated from the indirect climate change impact of the project, as it is anticipated that the addition of carbon to the atmosphere resulting from the sale and subsequent combustion of the product of the mine will contribute to the total carbon emissions of the planet, regardless of where this combustion ultimately takes place.”*

And that.

*“There are no viable offset programs that would be able to offset the Scope 3 emissions of the project, especially as regards the eventual combustion of the product.”*

All this, however, needs to be seen against the background of the recently signed, **Just Energy Transition Partnership (COP26)**, which has the following three goals attached.

- Early retirement of coal plants,
- Building cleaner energy sources, and
- Support for coal-dependent regions.

Nicholas Kumleben, a senior analyst at GreenMantle (Kumleben, 2021), points out that “[t]he agreement is the most impressive thing to come out of the COP26 climate summit” and highlights the real concern that:

*“The transition away from coal threatens 120,000 jobs at heavily unionized mines and power plants, in a country that by some measures has the world’s highest unemployment rate and where one job often feeds a large family. But the energy transition will also require new energy sources and thus new jobs (though those rarely go to former coal workers.)”*

*“Moreover, South Africans will benefit greatly from the deal. The country’s coal-based electricity system provides unreliable power at eye-watering prices, stunting the country’s economic growth. At the local level, heavy pollution from coal mining*

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<sup>2</sup> Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute, 2013, p4.

*and coal power stations has disastrous effects on the environment and on public health: A leaked South African government study estimates that 5,000 people die each year from pollution in the nation's coal belt. A transition toward cheaper, decentralized renewable power, supported by natural gas, promises to provide a cheaper, cleaner, and more secure electricity supply.”*

It is against this background that the Department of Forestry, Fisheries and the Environment will need to consider the authorisation of the project. In an attempt to balance the transition from coal against the threat to job losses and damage to the environment and public health. The fact that the coal will be used for export purposes cannot exonerate the mine from the emissions that will eventually result in the burning of the coal and its contribution towards the international greenhouse gas footprint; which commences with extraction, transportation and ultimately burning. See for instance damage caused to Australia and Indonesia's reputation on climate change due to the export of coal (Readfearn, 2021).

## **IMPACT STATEMENT**

It is evident that the project will result in a number of job opportunities and will contribute towards the regional and national economy. Considering the signing of the Just Energy Transition Partnership (COP26) and support for coal-dependent regions, the project fits with governmental policy and is likely to be supported. Nevertheless, these contributions are likely to extend over a limited period and need to be assessed against any long term environmental damage that may occur as a result of the project.

What is of greatest concern are the cumulative affects associated with the various developments across the region. It is important to consider these effects on an interdisciplinary basis and to include such areas of specialisation as those covered by environmental economists, environmental scientists and health specialists, amongst others. The aim should be to scientifically assess the environmental health and stability of the area; to quantify the long-term cost of environmental damage to the area and the extent of health and safety hazards faced by communities across the region. Without such data, collected across the wider region over an extended period, it would be highly speculative and irresponsible to forward any opinion as to whether the project should proceed when considered on a cumulative basis, as any understanding of the social issues faced by communities across the region would need to be based on solid scientific evidence which currently is limited. Obtaining such broad based evidence is well beyond the scope of individual organisations and

enterprises and would need to be tackled at a national level and be incorporated into provincial and national policy and legislation to protect the health and livelihoods of citizens.



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## LIST OF ABBREVIATIONS

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<b>AMD</b>	Acid mine drainage
<b>BEP</b>	Belfast Expansion Project
<b>BIP</b>	Belfast Implementation Project
<b>B&amp;P</b>	Board and Pillar
<b>CTF</b>	Coal Transporters Forum
<b>COSATU</b>	Congress of South African Trade Unions
<b>CSI</b>	Corporate Social Investment
<b>DC31</b>	Nkangala District Municipality
<b>DMR</b>	Department of Minerals and Resources
<b>DRA</b>	DRA Projects SA (Pty) Ltd
<b>EIA</b>	Environmental Impact Assessment
<b>EMF</b>	Environmental Management Framework
<b>EMP</b>	Environmental Management Programme
<b>Exxaro</b>	Exxaro (Pty) Ltd
<b>GDP</b>	Gross Domestic Product
<b>HIV</b>	Human Immunodeficiency Virus
<b>IDP</b>	Integrated Development Plan
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>J&amp;W</b>	Jones & Wagner (Pty) Ltd
<b>kcal</b>	Kilocalorie
<b>kg</b>	Kilogram
<b>FoS</b>	Factor of Safety
<b>LDV</b>	Light Delivery Vehicle
<b>LoM</b>	Life of Mine
<b>LOS</b>	Loadout Station
<b>MP314</b>	Emakhazeni Local Municipality
<b>MRF</b>	Mine Residue Facility
<b>Mt</b>	Metric Ton
<b>N4</b>	National Road 4
<b>NBA</b>	Dr Neville Bews & Associates
<b>NDP</b>	National Development Plan

<b>NGO</b>	Non-governmental organisation
<b>NU</b>	Non-urban area
<b>RLT</b>	Rapid Load Terminal
<b>RBCT</b>	Richards Bay Coal Terminal
<b>RCE</b>	RCE Consultants (Pty) Ltd
<b>RoM</b>	Run of Mine
<b>SACPVP</b>	South African Council for the Property Valuers Profession
<b>SANRAL</b>	South African National Road Agency Limited
<b>SDF</b>	Spatial Development Framework
<b>SIA</b>	Social Impact Assessment
<b>SLP</b>	Social and Labour Plan
<b>Stats SA</b>	Statistics South Africa

**QUALIFICATIONS AND EXPERIENCE OF SPECIALIST**

<b>Social Specialist</b>	Dr Neville Bews & Associates – Neville Bews
<b>Contact Details</b>	<a href="mailto:bewsc@netactive.co.za">bewsc@netactive.co.za</a>
<b>Qualifications</b>	<p>University of South Africa: B.A. (Honours) – 1984</p> <p>Henley Management College, United Kingdom: The Henley Post-Graduate Certificate in Management – 1997</p> <p>Rand Afrikaans University: M.A. (cum laude) – 1999</p> <p>Rand Afrikaans University: D. Litt. et Phil. – 2000</p>
<b>Expertise to carry out the Social Impact Assessment.</b>	<p><b>Mining</b></p> <ul style="list-style-type: none"> <li>• Afrimat, Glen Douglas Dolomite Burning Project.</li> <li>• Afrimat, Lyttelton Dolomite Mine Lime Burning Project.</li> <li>• Gold Fields West Wits Project.</li> <li>• Grootegeluk Open Cast Coal Mine, Lephalale.</li> <li>• Limpopo Chrome Mine, Thabazimbi.</li> <li>• Leeuwpan Coal Mine, Delmas.</li> <li>• Paardekraal Project, Belfast.</li> <li>• Sekoko Wayland Iron Ore, Molemole.</li> <li>• Sishen Iron Ore Mine, Kathu Northern Cape.</li> <li>• Sishen South Project, Postmasburg, Northern Cape.</li> <li>• Vlakpoort Open Cast Mine, Thabazimbi, Limpopo.</li> </ul> <p><b>Infrastructure Pipelines</b></p> <ul style="list-style-type: none"> <li>• Mokolo and Crocodile River (West) Water Augmentation Project (MCWAP), (Grinaker LTA), Social Impact Assessment.</li> <li>• Social Monitoring of the Mokolo and Crocodile River (West) Water Augmentation Project.</li> <li>• Transnet New Multi-Product Pipeline (Commercial Farmers), Aveng (Africa) Group Limited.</li> <li>• Wilmar Vegetable Oil Pipeline, Richards Bay, Kwa Zulu-Natal.</li> </ul> <p><b>Power plants</b></p> <ul style="list-style-type: none"> <li>• Eskom’s Nuclear 1 Power Plant assessed with the SIA on behalf of Arcus GIBB Engineering &amp; Science.</li> <li>• Moatize Power Plant, Tete.</li> <li>• Ankerlig Transmission, Koeberg - Specialist input for the 2<sup>nd</sup> Supply Project.</li> <li>• Vale Moatize Power Plant Project, Mozambique.</li> </ul> <p><b>Substations, powerlines and grid infrastructure</b></p> <ul style="list-style-type: none"> <li>• Ubertas 88/11kV Substation, Eskom Holdings Limited.</li> <li>• Neptune-Poseidon 400 kV Power Line, Eskom Holdings Limited.</li> <li>• Maphutha 1 X 400 kV Witkop 170 km Powerline, Eskom Holdings Limited.</li> <li>• Foskor-Merensky 400 kV Line Deviation, Eskom Holdings Limited.</li> <li>• Secunda, Mulalo Main Transmission Substation and Power Line Integration Project, Eskom Holdings Limited.</li> <li>• Tubatse Strengthening Phase 1 Senakangwedi B Integration, Limpopo Province.</li> </ul> <p><b>Railways</b></p> <ul style="list-style-type: none"> <li>• Expansion of Railway Loops at Arthursview; Paul; Phokeng and Rooiheuwel Sidings in the Bojanala Platinum District Municipality in the North West Province.</li> <li>• Gautrain Rapid Rail Link.</li> </ul> <p><b>Roads</b></p>

	<ul style="list-style-type: none"> <li>• Gauteng Freeway Improvement Project (GFIP).</li> <li>• National Road 3: Keeversfontein to Warden (de Beers Pass Section).</li> <li>• N2 Wild Coast Toll Highway.</li> </ul> <p><b>Renewable Energy</b></p> <ul style="list-style-type: none"> <li>• Allepad PV 1, 2, 3 &amp; 4 Northern Cape Province. Addendum to the Social Impact Assessment – Scoping Report.</li> <li>• Aggeneys 1 X 100 MW PV Facility, Northern Cape Province.</li> <li>• Bloemhoek 1 Grid Connection and Infrastructure for the Aggeneys 1 Solar PV Facility.</li> <li>• Lephalale Solar Project near Lephalale, Limpopo.</li> <li>• Hyperion Solar PV Development 1, 2, 3 &amp; 4 and Associated Infrastructure, Northern Cape Province. Addendum to the Social Impact Assessment – Scoping Report.</li> <li>• Mierdam 3 Solar Photovoltaic (PV) Energy Facility.</li> <li>• Rondekop 325 MW Wind Farm Project, Northern Cape Provinces.</li> <li>• Umsobomvu Solar PV Facilities and Associated Grid Infrastructure.</li> <li>• Witberg Wind Energy Facility Amendments.</li> <li>• Establishment of 132 kV Grid Connection Infrastructure for the Hyperion Hybrid Facility Near Kathu, Northern Cape Province.</li> <li>• Social Impact Assessment of the installation of a Battery Energy Storage System (BESS) for the: <ul style="list-style-type: none"> <li>▪ Mierdam 3 Solar Photovoltaic (PV) Energy Facility.</li> <li>▪ Droogfontein 3 Solar Photovoltaic (PV) Energy Facility.</li> <li>▪ Dwarsrug Wind Energy Facility.</li> <li>▪ Loeriesfontein 3 Solar Photovoltaic (PV) Energy Facility.</li> <li>▪ Platsjambok East 3 Solar Photovoltaic (PV) Energy Facility. Oya 132 kV Power line near Matjiesfontein, Western and Northern Cape Province.</li> </ul> </li> <li>• Koup 1 and 2 Wind Energy Facilities, near Beaufort West, Western Cape Province.</li> <li>• Karee WEF, Battery Energy Storage System (BESS), Grid Connection and Associated Infrastructure, near Touws River in the Western Cape Province</li> <li>• Patatskloof WEF, and Associated Grid Infrastructure near Touws River in the Western Cape Province.</li> </ul> <p><b>Housing Development</b></p> <ul style="list-style-type: none"> <li>• Dingleton Resettlement Project at Sishen Iron Ore Mine.</li> <li>• Jozini Nodal Expansion Implementation Project.</li> <li>• Kennedy Road Housing Project, eThekweni Metropolitan Municipality.</li> <li>• Retirement Village on the Farm Sweet Vale No 15257 Margate, Ray Nkonyeni Municipality, KwaZulu-Natal Province.</li> <li>• Waterfall Wedge Housing and Business Development, Midrand, Gauteng.</li> </ul> <p><b>Social Research</b></p> <ul style="list-style-type: none"> <li>• Australia – Africa 2006 Sport Development Program as a research associated at the University of Johannesburg.</li> <li>• University of Johannesburg – Research into research outputs of the University.</li> </ul> <p><b>Social Services and Recreational Facilities</b></p>
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	<ul style="list-style-type: none"><li>• The Model Yacht Pond at Blue Lagoon, Stiebel Place, Durban DM/0003/10. Social Impact Assessment on the Infilling of this Yacht Pond for the eThekweni Municipality Strategic Project Unit.</li><li>• The United Nations Office on Drugs and Crime – Evaluation of a Centre for Violence Against Women in Upington.</li></ul> <p><b>Commercial Enterprises</b></p> <ul style="list-style-type: none"><li>• Cato Ridge Crematorium, KwaZulu-Natal Province.</li><li>• Redevelopment of a fuel service station in Munster, Ray Nkonyeni LM, Kwazulu-Natal Province.</li></ul> <p><b>Waste Management</b></p> <ul style="list-style-type: none"><li>• Athlone Refuse Transfer Station Area, City of Cape Town, Western Cape Province.</li></ul>
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## DECLARATION OF INDEPENDENCE

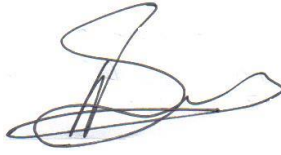
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I, Neville Bews, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that:

- I act as the independent specialist in this application;
  - I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;
  - I regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
  - 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 not, and will not engage in, conflicting interests in the undertaking of the activity;
  - I have no vested interest in the proposed activity proceeding;
  - 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;
  - I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public, and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
  - I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
  - all the particulars furnished by me in this specialist input/study are true and correct;
- and

- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

A handwritten signature in blue ink, appearing to be 'N. Bews', written over a light blue circular stamp.

Name of Specialist: Neville Bews

Date: 24 December 2021

## 1. INTRODUCTION

Dr Neville Bews & Associates was appointed by Nsovo Environmental Consulting to undertake a Social Impact Assessment for the proposed Belfast Expansion Project (BEP). The project falls under the Exxaro Belfast Mining Right (Ref No. MP 30/5/1/2/2/431 MR) which is located along the National Road 4 (N4), south of the town of Belfast in Mpumalanga Province, South Africa.

### 1.1. PURPOSE OF REPORT

The purpose of the report is to:

- Describe the social baseline conditions under which the proposed project will unfold;
- Identify the social impacts likely to be associated with the project;
- Assess these social impacts and propose appropriate optimisation and mitigation measures.

### 1.2. STRUCTURE OF THE REPORT

This specialist study is undertaken in compliance with Requirements of Appendix 6 – GN R326 EIA Regulations 2014, as amended on 7 April 2017. **Table 1** shows how the requirements of Appendix 6 have been fulfilled in this report.

**Table 1: Report content requirements in terms of EIA Regulations**

Requirements of Appendix 6 – GN R326 EIA Regulations 2014, as amended on 7 April 2017	Section of Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	
(a) details of-	
(i) the specialist who prepared the report; and	Page xv
(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page xviii
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1 & 1.3
(cA) an indication of the quality and age of base data used for the specialist report;	Section: 1.4.2
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4 ,6 & 7
(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 equipment and modelling used;	Section 1.3
(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;	Section 6 & 7
(g) an identification of any areas to be avoided, including buffers;	N/A
(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;	Section 2 Figure 1, 2, 3 & 4
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, <b>[including identified alternatives on the environment]</b> or activities;	Section: 6, 7, 8 & 9
(k) any mitigation measures for inclusion in the EMPr;	Section 7 Table 2
(l) any conditions for inclusion in the environmental authorisation;	N/A
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section: 7 & 8
(n) a reasoned opinion-	
(i) <b>[as to]</b> whether the proposed activity, activities or portions thereof should be authorised;	
(iA) regarding the acceptability of the proposed activity or activities; and	Section 8 9 & 10
(ii) 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;	
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A -No feedback has yet been received from the public participation process regarding the visual environment
(q) any other information requested by the competent authority.	N/A. No information regarding the SIA has been requested from the competent authority to date.
2) Where a government notice <i>gazetted</i> by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

### 1.3. APPROACH TO STUDY

Data was gathered using the following techniques.

#### 1.3.1. COLLECTION OF DATA

Data was gathered through:

- The project description prepared by Exxaro Coal Mpumalanga (Pty) Ltd;
- Statistics South Africa, Census 2011 and other relevant demographic data generated by Stats SA such as the Quarterly Labour Force Survey and Mid-year Population Estimates;
- Discussions with the project proponents and Environmental Impact Assessment Consultants;
- A literature review of various documents such as the relevant Municipal Integrated Development Plans (IDPs) and other specialist reports and documents;
- A broader literature scan.

#### 1.3.2. IMPACT ASSESSMENT TECHNIQUE

The assessment technique used to evaluate the social impacts was provided by Nsovo Environmental Consulting and is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations and is as follows:

##### **Status of the Impact**

The impacts are assessed as either having a:  
Negative effect (i.e. at a `cost' to the environment)  
Positive effect (i.e. a `benefit' to the environment) or  
Neutral effect on the environment.

##### **Extent of the Impact**

- (1) Site (site only)
- (2) Local (site boundary and immediate surrounds)
- (3) Regional (within the municipal area)
- (4) National or
- (5) International.

##### **Duration of the Impact**

The length that the impact will last for is described as either:

- (1) immediate (<1 year)
- (2) short term (1-5 years)
- (3) medium term (5-15 years)
- (4) long term (ceases after the operational life span of the project)
- (5) Permanent.

### **Magnitude of the Impact**

The intensity or severity of the impacts is indicated as either:

- (0) No impact
- (2) Minor
- (4) Low
- (6) Moderate (environmental functions altered but continue)
- (8) High (environmental functions temporarily cease) or
- (10) Very high / Unsure (environmental functions permanently cease).

### **Probability of Occurrence**

The likelihood of the impact occurring is indicated as either:

- (0) None (the impact will not occur)
- (1) improbable (probability exceptionally low due to design or experience)
- (2) low probability (unlikely to occur)
- (3) medium probability (distinct probability that the impact will occur)
- (4) high probability (most likely to occur) or
- (5) Definite.

### **Significance of the Impact**

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.  $S=(E+D+M)P$

#### **The significance ratings are given below**

(**<30**) low (i.e. where this impact would not have a direct influence on the decision to develop in the area)

(**30-60**) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated)

(**>60**) high (i.e. where the impact must have an influence on the decision process to develop in the area).

## **1.4. ASSUMPTIONS AND LIMITATIONS**

The following assumptions and limitations apply regarding this report.

### **1.4.1. ASSUMPTIONS**

It is assumed that the technical information provided by Exxaro Coal Mpumalanga (Pty) Ltd and Nsovo Environmental Consulting was credible and accurate at the time of compiling the report. It is also assumed that the data provided by the various specialists as used in this report are credible and accurate.

### **1.4.2. LIMITATIONS**

Most of the demographic data used in this report were sourced from Statistics South Africa and is based on data gathered during Census 2011. This data is outdated but where possible,

is supplemented with the latest Stats SA's survey data, such as the 2018 Mid-year population estimates and the latest Quarterly Labour Force Survey. The limitation of this is that this survey data is restricted to a provincial level and does not extend to a municipal and main place level.

The study was undertaken during the State of National Disaster declared in South Africa as a result of the COVID-19 pandemic. Accordingly, the need for social distancing and limiting unnecessary interpersonal contact and travel was respected throughout this study.

## **2. PROJECT DESCRIPTION**

The Exxaro Belfast Mining Right (Ref No. MP 30/5/1/2/2/431 MR) is situated in the Mpumalanga Province, located south of the town of Belfast along the N4 in the Nkangala district and Emakhazeni local municipalities. In 2018, the Belfast Implementation Project (BIP) commenced with mining activities and the construction of the associated plant and infrastructure to process 3 Mtpa of Run of Mine (RoM) with a life of mine (LoM) of 17 years. First coal was produced at the processing plant during September 2019. The mining rights area is illustrated **Figure 1**.

Subsequently, a desktop study was undertaken to evaluate the potential of expanding mining activities within the current Belfast mining right area. The aim of such an operation would be to access high-quality coal for export, through both opencast and underground mining operation. These operations, referred to as Belfast Expansion Project (BEP), fall within the Exxaro Belfast Mining Right area but outside of the current mining area. The current mining area, the BIP, and the area under consideration, the BEP, are compared in Figure 2.



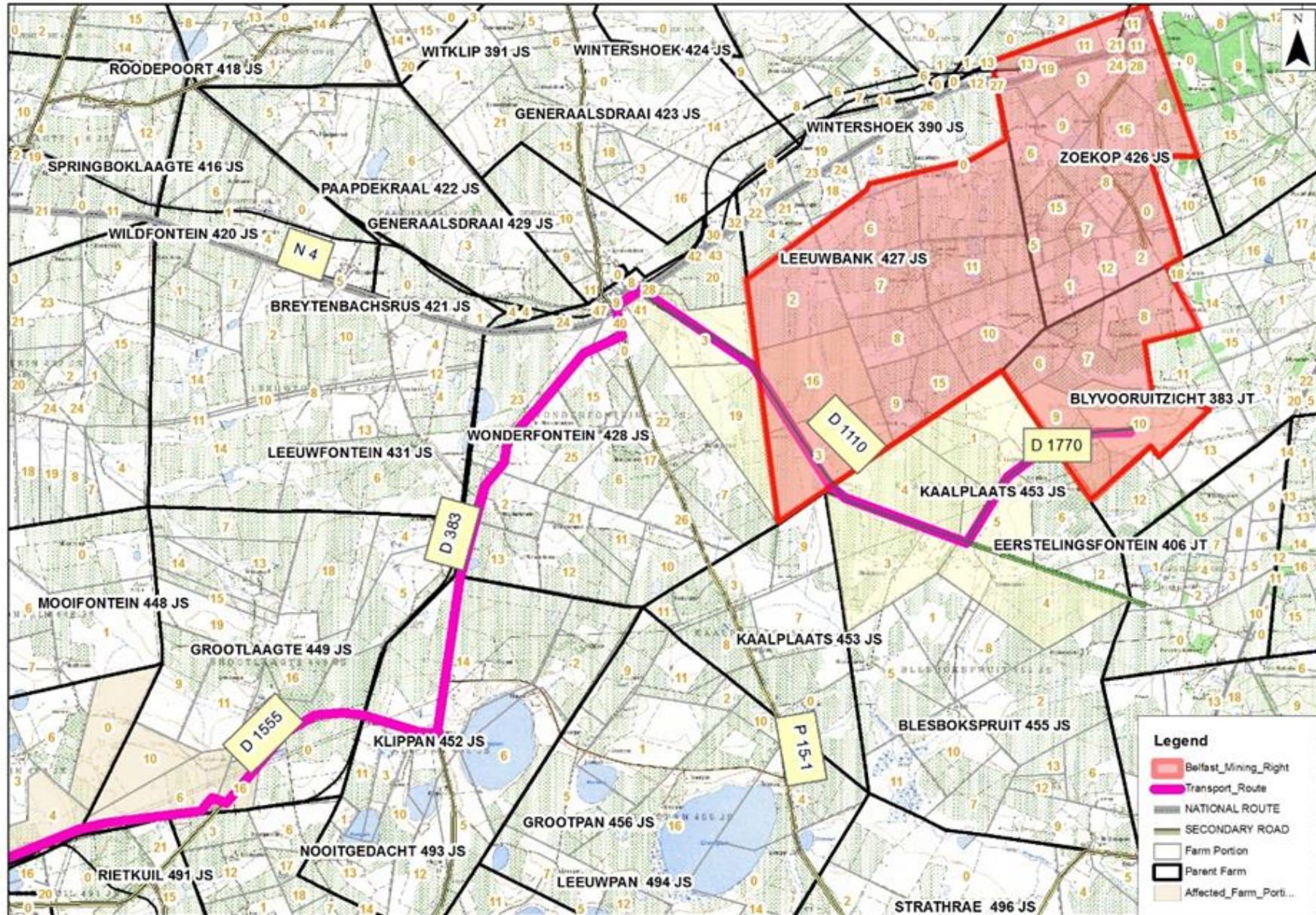
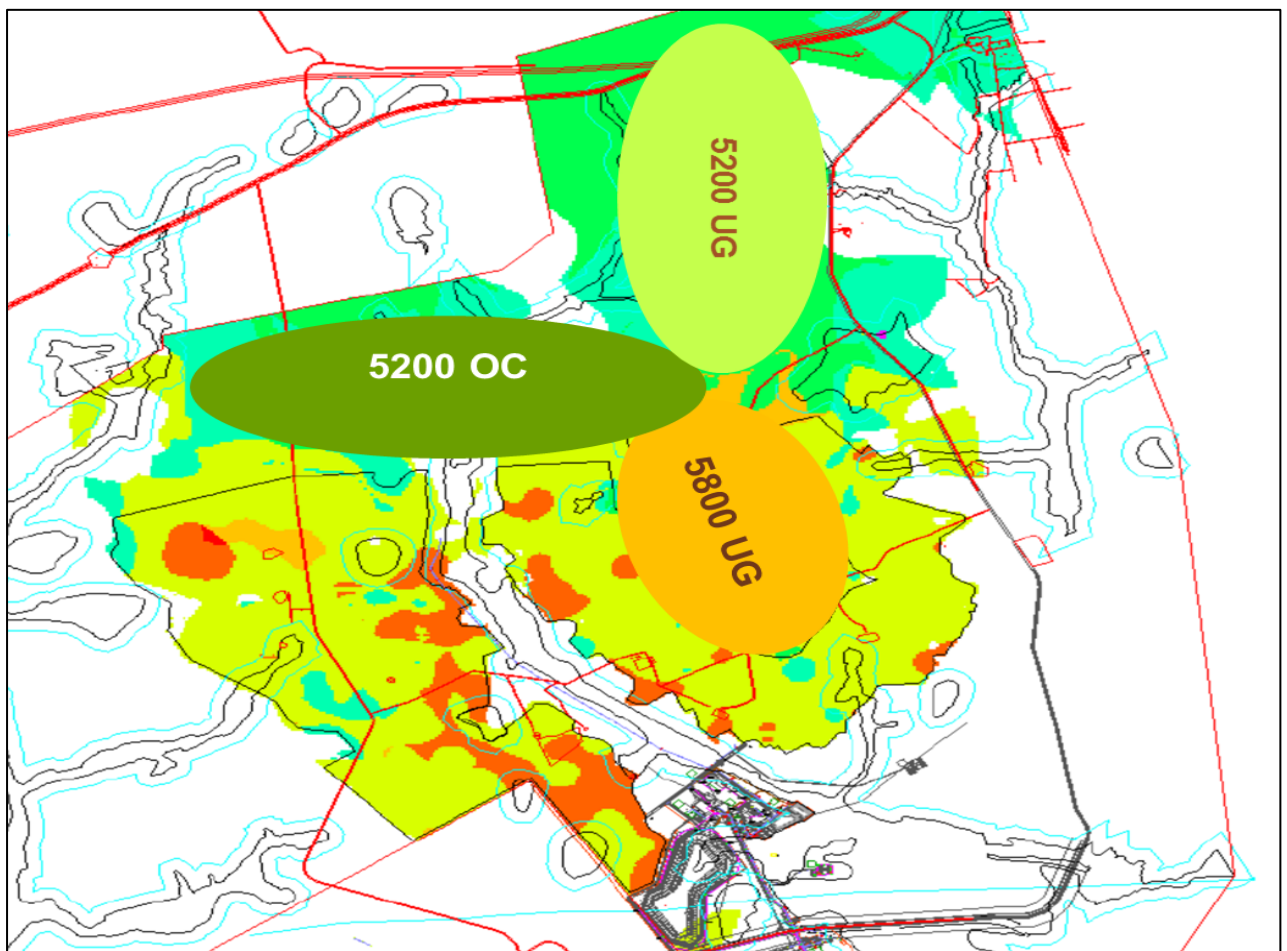


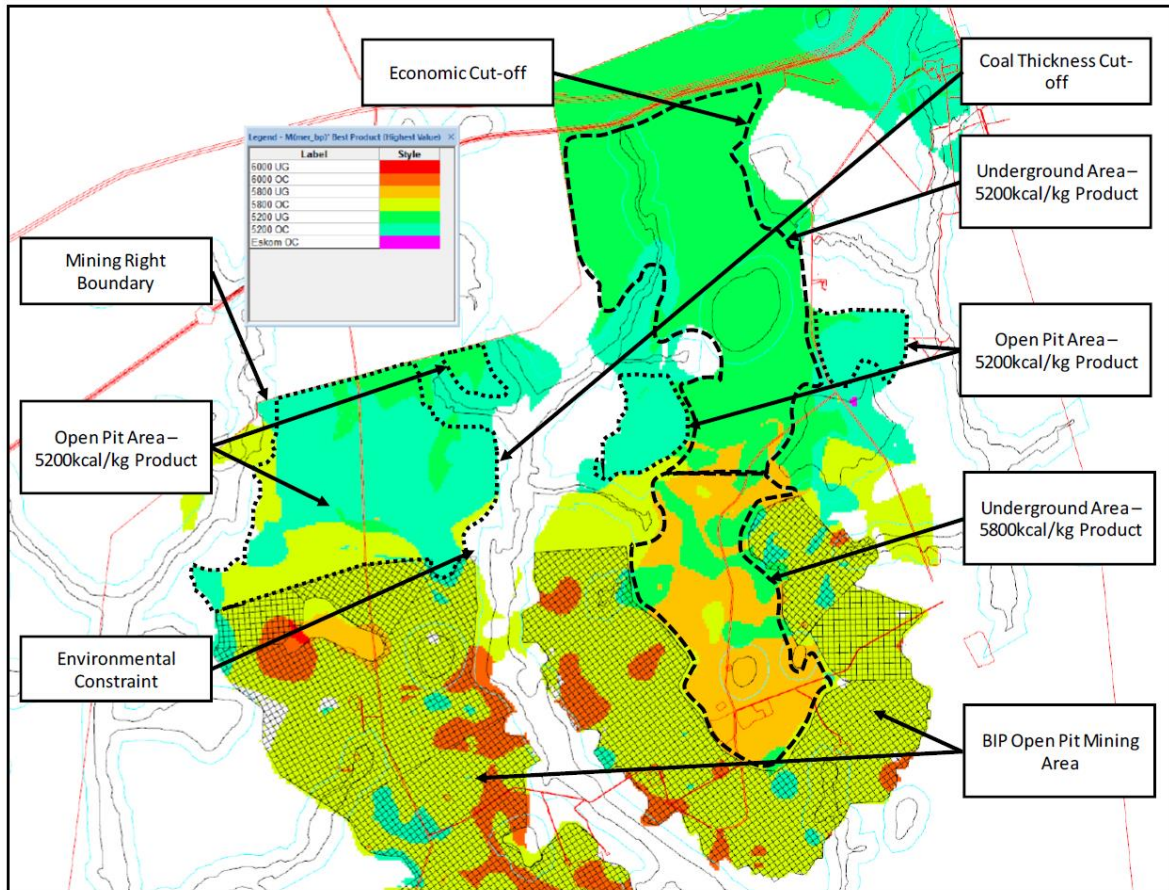
Figure 1: Mining Rights Area



The exploitation analysis of the Belfast Resource outside the current BIP layout area revealed, during the Concept Phase, that there is potential for a 5,200 kcal/kg (five thousand two hundred kilocalorie/kilogram) opencast and underground mining scenario as well as a 5,800 kcal/kg (five thousand eight hundred kilocalorie/kilogram) underground scenario. A potential of 39.7 Mt (thirty nine point seven million tonnes) of RoM can be additionally mined at a yield of 69% (sixty-nine percent) resulting in 27.4 Mt (twenty-seven point four million tonnes) of product. The opencast and underground mining areas are illustrated in **Figure 3**. The **BEP** mining areas with constraints, colour coded on best value product, concept phase, is illustrated in Figure 4.



**Figure 3: Opencast compared to underground mining (Concept Phase)**



**Figure 4: BEP Mining areas with constraints**

These layouts have since been updated for purposes of the application / design phase as shown in Figure 5 below indicating the proposed areas for Opencast and Underground Mining.

Exxaro Coal Mpumalanga (Pty) Ltd, Belfast Coal Mine Expansion Project

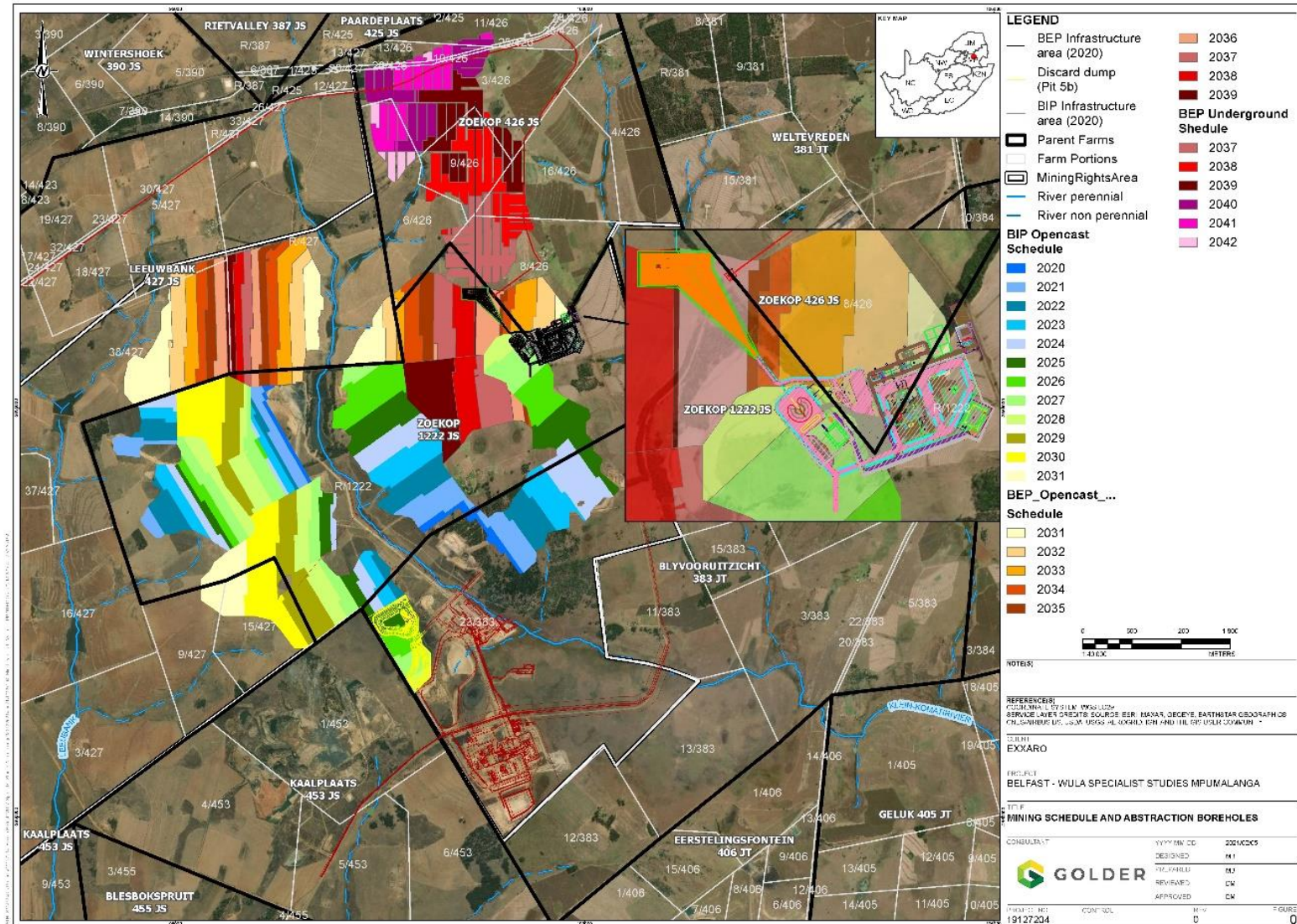


Figure 5: BEP Proposed Mining Pits

## 2.1. AFFECTED PROPERTIES

The following properties are affected by the mining operations.

Contact Name	Organisation / Business Name	Farm Name	Farm Portions
Andre Viljoen		Zoekop 426 JS	4
Werner Viljoen		Zoekop 426 JS	4
	Ferroland GrondTrust (Pty) Ltd		
Gert Lucas Roos		Leeuwbank 427 JS	4, 5, 6, 25, 26, RE
		Zoekop 426 JS	6, 9
Jan Hendrick Gerrits		Zoekop 426 JS	8
	Kiddiekat Trading 26 CC	Leeuwbank 427 JS	2
	Soekop Trust	Zoekop 426 JS	3, 16
	Zoekop Farmers trust	Zoekop 426 JS	11, 21, 24

The location of these properties is illustrated in **Figure 6**.

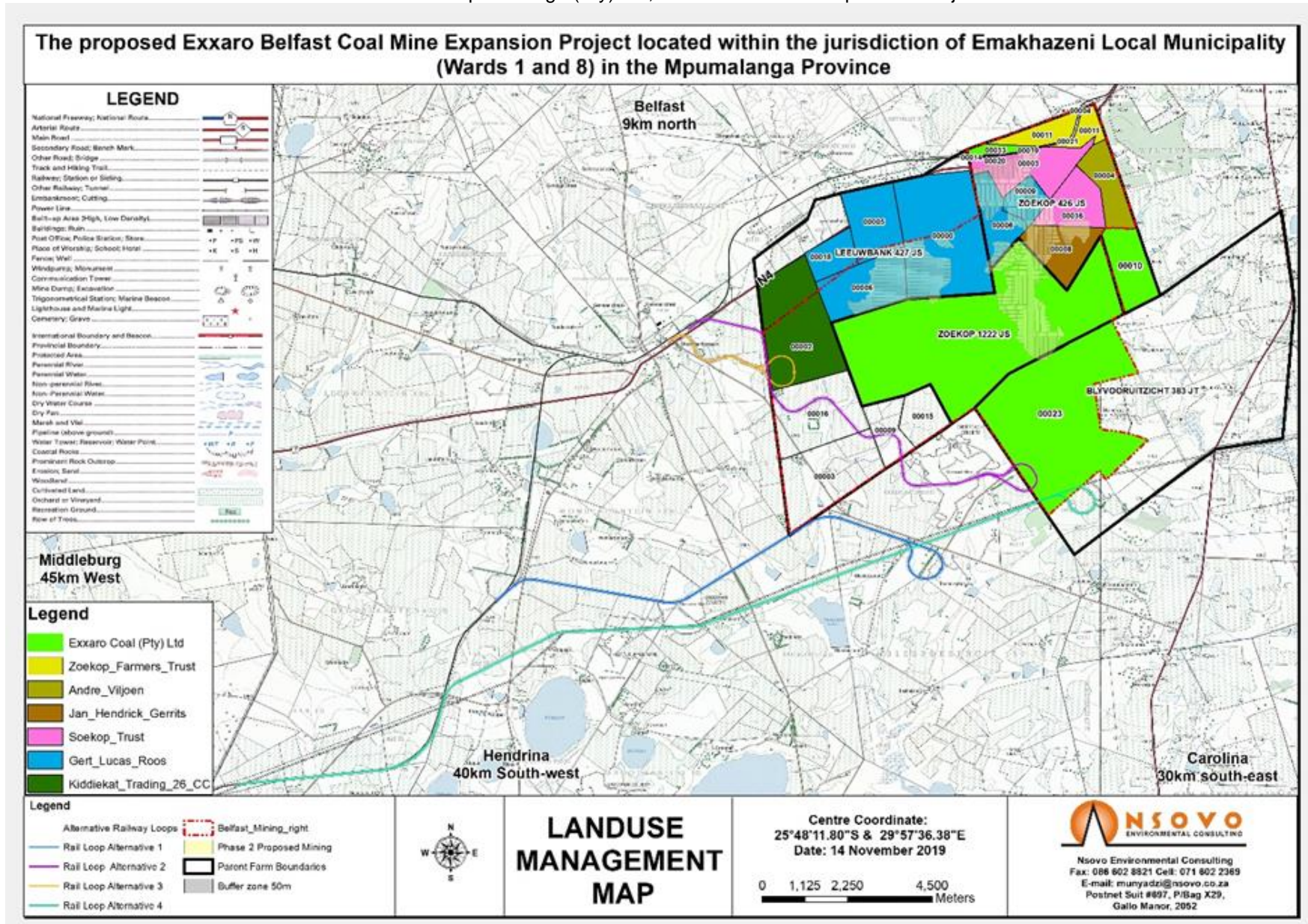


Figure 6: Land Management map

## **2.2. MINING METHOD**

Both open pit and underground mining activities are being considered for the Belfast Expansion Project.

### **2.2.1. OPEN PIT MINING**

For the open pit areas at BEP, a similar mining method will be employed as with BIP. The BIP site is currently using Strip Mining with a mixed hybrid of benching and doze-over.

Strip mining as a basis is used, as it has been proven as the method of choice for relatively shallow coal seams in the Witbank coal region. The reason it is so successful is that the waste is moved as short a distance as possible, minimizing the cost impact of the mining process.

### **2.2.2. UNDERGROUND MINING AND INFRASTRUCTURE**

For the identified underground areas at BEP, a traditional board and pillar (B&P) mining method was decided upon. The B&P method allows for medium to high extraction of underground coal seams while being able to navigate difficult and varying ground conditions. It also requires less initial capital investment than the longwall method, with smaller increments in production.

BVi Consulting Engineering Gauteng (Pty) Ltd has been appointed for the design of all civil infrastructure for the BEP underground mine, which includes the following:

- Earthworks / Platforms, including cut and fill embankments;
- Roads and traffic design, including LDV and haul roads;
- Storm water management, including clean and dirty water separation and pollution control dams;
- Cable ducts;
- Sewer system;
- Fencing.

## **2.3. MINE RESIDUE FACILITY**

A Trade-off was undertaken to decide on the location of the proposed Mine Residue Facility (MRF) which considered the following locations:

- A Greenfields site across the Klein Komati River on the Eastern side of the current MR;
- Adjoining the current facility; and
- Adjacent to the current facility over a backfilled opencast pit (Pit 5 – proposed).



The preferred go-forward solution selected comprises locating the MRF adjacent to the current facility on the footprint of the proposed pit 5. The footprint will be rehabilitated prior to implementation of the MRF.

The proposed layout of the MRF is dictated and constrained by:

- The extent and footprint of the proposed Pit 5 area;
- Existing and proposed roads to the south west and south;
- The existing wetland located along the eastern boundary and edge of the pit 5 footprint;
- The plant layout to the north east.

## **2.4. DESIGN PARAMETERS AND CRITERIA**

The design criteria for the new MRF are documented in the J&W technical note dated 02 November 2020 (Reference no. BCX-000003-ENG-EDC-0001) and briefly summarised below in the following sections.

### **2.4.1. LIFE OF MINE**

Deposition is expected to commence on the new MRF in year 2031 to end in year 2039. A total of 5.805 Mt (discard) will be placed on the MRF over the 9-year LoM period.

### **2.4.2. BARRIER SYSTEM (LINER REQUIREMENT)**

A waste classification for the discard has not been provided. However, coal discard usually classifies as Type 3 waste which requires a disposal facility for the waste to be constructed with a Class C liner as described in the National Norms and Standards for Disposal of Waste to Landfill as per Government Gazette No. R636 of 23 August 2013 (DEA,2013B).

The proposed MRF will be constructed on the footprint of Pit 5, which will be open cast mined and backfilled prior to construction of the proposed MRF. A risk-based (source-path-receptor) approach will therefore be adopted to confirm that an alternative to the Class C liner for the facility will be acceptable for the design. This entails that the facility will not be provided with a liner. Contaminated seepage from the MRF reports to the pit water make and will be managed by Exxaro as part of the pit water and decant management.

The risk-based approach requires a detailed geohydrological study to be undertaken, which must confirm that seepage from the MRF does not adversely impact existing underground water conditions.

### **2.4.3. GEOTECHNICAL DESIGN**

The stability assessment for the MRF will consider two conditions: (i) during construction (Temporary) and (ii) end-of-construction (Permanent). The permanent (static) condition will comply with Government Notice No. 632, which stipulates a minimum FoS of 1.5, unless valid technical reasons are provided for deviating. The assessment will be carried out for drained conditions using effective strength parameters.

### **2.4.4. WATER MANAGEMENT INFRASTRUCTURE**

The design of clean and dirty water management infrastructure relies on the prevailing topography for canal slopes, as well as the near surface geology and soil profiles for determining the canal cross sections. The canals will be developed to the conceptual level and the design will be based on the post mining topography.

## **3. LEGISLATION AND POLICY GUIDELINES**

The following legislation and policy documents are applicable.

### **National legislation and guidelines:**

- Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) (Constitution)
- The National Environmental Management Act (107 of 1998) (NEMA)
- National Development Plan (2030)
- National Integrated Resource Plan for South Africa (2010-2030)
- Strategic Infrastructure Projects (SIPs)
- Occupational Health and Safety Act (Act 85 of 1993)
- Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector (2013)
- Construction Regulations (2014)
- Guideline for Involving Social Assessment Specialists in EIA Processes (Barbour, 2007)
- Social Impact Assessment: Guidance document (2015)
- International Labour Office. Resource guide on gender issues in employment and labour market policies: working towards women's economic empowerment and gender equality.

### **Provincial and municipal policies:**

- Mpumalanga Annual Performance Plan, 2018/19 – 2019/2020

- Nkangala District Municipality, 2019/20 Draft Reviewed Integrated Development Plan
- eMakhazeni Local Municipality, IDP 2018/2019.

### **3.1. APPLICATION OF LEGISLATION AND POLICY GUIDELINES**

An overview of the more relevant legislation, policies and guidelines, as they relate to the project, is provided below.

#### **The Constitution of the Republic of South Africa (Act 108 of 1996)**

The Constitution is relevant in that it stipulates several basic rights enjoyed by South African citizens which, amongst others, include:

- **Section 24:** The right to an environment that is not harmful to their health or wellbeing and to have the environment protected for the benefit of present and future generations;
- **Section 25:** The right to property and no law may permit arbitrary deprivation of property, limited in that property may only be expropriated under a law of general application, for a public purpose and subject to compensation.

The project needs to comply with the provisions of the constitution, as indicated above.

#### **The National Environmental Management Act (107 of 1998) (NEMA)**

The preamble of Act 107 of 1998 indicates that:

*“everyone has the right to an environment that is not harmful to his or her health or well-being;*

*the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities;*

*inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices;*

*sustainable development requires the integration of social, economic and environmental factors in the planning implementation and evaluation of decisions to ensure that development serves present and future generations”.*

Chapter 1 of the Act emphasises that development must be socially, environmentally, and economically sustainable. The SIA considers the project in respect of the social sustainability of the social environment.

### **National Development Plan (2030)**

The National Development Plan (NDP) is a long-term National strategic plan with the aim of reducing inequality and eliminating poverty by 2030. The plan focuses on the following four broad objectives:

1. The establishment of overarching objectives to be achieved by 2030.
2. To find consensus on the key obstructions to the achievement of these objectives and to what needs to be accomplished in overcoming these obstacles.
3. To advance the long-term goals of the NDP through the establishment of a commonly shared long-term strategic framework against which future planning can occur.
4. To create a framework against which choices can be made as to how best to utilise limited resources.

The following core elements of a decent standard of living are identified in the NDP:

- Housing, water, electricity and sanitation
- Safe and reliable public transport
- Quality education and skills development
- Safety and security
- Quality health care
- Social protection
- Employment
- Recreation and leisure
- Clean environment
- Adequate nutrition.

The project is in accordance with the NDP with specific focus being placed on the Strategic Infrastructure Projects as indicated below.

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

The Government's Strategic Infrastructure Projects (SIPs) identifies the following five core functions:

1. To unlock opportunity

2. Transform the economic landscape
3. Create new jobs
4. Strengthen the delivery of basic services, and
5. Support the integration of African economies.

In this regard, a balanced approach is being fostered through encouraging an environmentally sympathetic economy, boosting energy security, promoting integrated municipal infrastructure investment, facilitating integrated urban development, accelerating skills development, investing in rural development, and enabling regional integration. In this regard, the following is applicable in respect of the management of water resources with the following priority being identified:

*“There is an urgent need for a coherent plan to ensure the protection of water resources and the environment in the Mpumalanga Highveld coalfields, upstream of the Vaal and Loskop dams, as well as in the Lephalale-Waterberg area. Given environmental pressures and development demands, current water allocations in the upper Vaal and Olifants River water-management areas urgently need to be revised.*

*Geographic areas where this is needed include:*

*Mpumalanga Highveld coalfields – a balance between environmental protection, agriculture, energy requirements and water resources. Olifants River (Limpopo/Mpumalanga) – careful consideration of the balance between mining, agriculture and nature conservation.*

*By 2030, a perspective on changing settlement patterns must consider the distribution of, and threats to, natural resources, and the spatial implications of the emergence of green 3 technologies and green economies. The Commission has mapped the spatial dimensions of these concerns. These include: biodiversity threats, particularly in the Western Cape; stressed water catchments; areas contributing disproportionately to greenhouse gas emissions and air pollution such as the Mpumalanga Highveld” (National Planning Commission, 2012, pp. 179, 181 & 262).*

### **Occupational Health and Safety Act (Act 85 of 1993)**

The purpose of this Act is:

*“To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the*

*protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; to provide for matters connected therewith.”*

The activities associated with the construction of the project will be subjected to the provisions of this Act and will influence the construction associated mitigation measures throughout this report.

### **Just Energy Transition Partnership (The Presidency, 2021)**

The signing of the Just Energy Transition Partnership at the U.N. Climate Change Conference, known as COP26, supports the following three goals.

- Early retirement of coal plants,
- Building cleaner energy sources, and
- Support for coal-dependent regions.

### **Construction Regulations (2014)**

These regulations apply to all persons involved in construction work and would need to be considered during the construction phase of the project.

### **Guideline for Involving Social Assessment Specialists in EIA Processes (Barbour, 2007)**

These guidelines direct the role of social assessment specialists in the Environmental Impact Assessment (EIA) process within the South African context.

### **Social Impact Assessment: Guidance document (2015) (Vanclay F. , Esteves, Aucamp, & Franks, 2015).**

This document encapsulates the core values of the international SIA community, providing a set of principles to guide SIA practitioners in incorporating the social element into environmental impact assessments.

### **International Labour Office (ILO). Resource guide on gender issues in employment and labour market policies: working towards women’s economic empowerment and gender equality (Otope, 2014):**

*“The objective of this resource guide is to strengthen the capacities of ILO constituents and development policy makers in the formulation of employment*

*policies. There is a well-known proclivity among many policy-makers and practitioners to treat employment as a “residual” of economic growth.”*

**Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector (2013).**

Aimed at the promotion of cross-sectoral interaction and cooperation in an effort to improve biodiversity conservation and management in the mining industry:

*“This guideline provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure. This Guideline does not exempt the user from complying with the relevant pieces of legislation and should be used as a guideline”.*

**Mpumalanga Spatial Development Framework – April 2019**

The need for the province to diversify the economy and balance the protection of biodiversity and resource utilisation is a priority highlighted in the provincial special development framework. In this respect, see Strategic Objective 4: Diversify Economy, under 3.3.2 Sustainable Concentration and Agglomeration; and Strategic Objective 1: Protection of Biodiversity and Resource Utilisation, under 3.3.3 Conservation and Resource Utilisation, where it is highlighted that:

**“Strategic Objective 4: Diversify Economy**

*The mining sector contributes 25% to Mpumalanga’s GVA; there are other sectors which are directly or indirectly dependent on mining such as manufacturing (specifically metal processing) and utilities (specifically power generation). The combined GVA of these three sectors is more than 40% of the provincial GVA. It is widely accepted that mining is not a sustainable source and it is depleting fast. The negative growth of both the mining and manufacturing sectors during the global recession indicates these sectors’ sensitivity towards external circumstances. Abouchakra et al. have identified a clear link between economic diversification and sustainable growth and showed how diversification could reduce a nation’s economic volatility and increase its real activity performance. Hence, there is a need for a gradual shift from mining oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy. It is pertinent to mention that the NSDF recognises that Mpumalanga’s Coal Mining and Coal Fired Power Plant region (mainly the Highveld area) will be under immense pressure for environmental considerations and as a result, the region will witness a possible*

*decline in demand of coal and large-scale employment. The NSDF proposes to diversify the regional economy and facilitate the gradual transition of economic activities in the region”.*

**“Strategic Objective 1: Protection of Biodiversity and Resource Utilisation**  
*Mpumalanga is a unique province as it has a wide range of biodiversity, mineral resources and good quality soils for agriculture. Mining, Agriculture and tourism are important sectors for the provincial economy. Interestingly, the areas with good quality soils and areas with extensive mineral resources often overlap and as a result the mining and agriculture sectors compete with each other for land and water resources. At times these two sectors encroach [on] areas demarcated for conservation of biodiversity and natural ecosystem.*

*Conservation plays a crucial role in the economy through job creation and ecotourism. For example, protected areas are an important drawcard for nature based tourism, supporting a tourism sector that contributes a growing 2.9% to the country’s economy. Protected areas are also a basis for jobs within both the tourism and wildlife sectors. Nature-based tourism in the Province hold[s] great potential to provide many more economic opportunities going into the future. The recent statistics places Mpumalanga in fourth position with regards to international tourist arrivals in 2015. Spatial planning should encourage sustainable, balanced growth and development within the carrying capacity of the area. This can be achieved through controlling all kind of man made development and conservation of agricultural and environmentally important land. Such conservation includes the preservation and efficient management of natural resources. To give effect to sustainable and balanced growth, efficient land use management as it could create a degree of sustainability [for] the province” (Mpumalanga Province, 2019, p. 19).*

Consequently, these are important consideration in the planning of mining developments within the province.

### **District and Local Municipal Integrated Development Plans**

Local municipalities are required, in accordance with The Municipal Systems Act (No.32) of 2000 to prepare Integrated Development Plans (IDPs). The IDP provides a framework against which municipal authorities manage development within their areas of jurisdiction.

The IDPs of the following municipalities are applicable in respect of the proposed project.



- Nkangala District Municipality (DC31);
  - Emakhazeni Local Municipality (MP314).

The Nkangala District Municipality Integrated Development Plan (IDP) indicates that:  
The district municipality's pre COVID-19 estimates are for:

*"140 000 additional jobs in Mining by 2020, and 200 000 jobs by 2030, not counting the downstream and side stream effects."*

Based on the claim that:

*"Nkangala is the economic hub of Mpumalanga and is rich in minerals and natural resources. The Districts' economy is dominated by electricity, manufacturing and mining".*

And that:

*"The NDM is cooperating with the mining sector to ensure that there is improvement in the impact of Social Labour Plans (SLP) and Corporate Social Investment (CSI) in the mining communities and labour sending areas. The mining sector should play a central role in ensuring the creation of secondary industries in mining towns".*

It is, however, recognised that coal mining is a diminishing resource in the district and that there is a need for:

*"...diversification of the economic industries from over reliance in mining is necessary for the future prosperity of the district."*

(Nkangala District Municipality, 2019, pp. 18, 36, 46, 99 & 104).

In the Emakhazeni Local Municipality 2018-2022 IDP, it is indicated that the municipality's alignment to the National Development Plan (NDP) includes the creation of jobs:

*"...in infrastructure development, agriculture, mining and beneficiation, manufacturing, the green economy and tourism".*

And the provision of:

*"...policy certainty to encourage long-term investment in mining and other sectors".*

But that:

*"The rise in mining applications for prospecting rights in the area, especially coal mining, adds extra pressure on environmental degradation and water quality issues.*

(Emakhazeni Local Municipality, 2018, pp. 39, 48 & 57).

These comments need to be considered in the light of the Mpumalanga Spatial Development Framework as described above.

### **3.2. PROJECT LEGISLATION AND POLICY FIT**

Considering the legislation and policy applicable to the project, there is an apparent contradiction between the legal and policy fit of the project regarding long-term economic sustainability. While the mining industry is a key driver of social and economic development within South Africa, so too is the biodiverse ecological infrastructure of the country. Both provide much needed jobs, grow the GDP and provide opportunities for international recognition and trade. A consortium of governmental departments, an industry-based employer organisation and NGOs have recognised the need to introduce a more sustainable approach in the management of the countries' resources, and have developed guidelines towards this end. In so doing, they point out that:

*“Sustaining the goods and services that flow from our ecosystems, and the benefits that these provide over the long term, will require limits in mining and other activities in certain areas. South Africa’s Constitution and the laws stemming from it recognise the vital role of both ecological and mineral resources in a development path built upon the socially just, environmentally sustainable and economically efficient use of these resources”* (Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute, 2013, p. vi).

The signing of the Just Energy Transition Partnership at the U.N. Climate Change Conference, however, supports the following three goals.

- Early retirement of coal plants,
- Building cleaner energy sources, and
- Support for coal-dependent regions.

With extremely high unemployment levels faced by the country it is important to ensure that the coal-dependent regions of the country do not exacerbate the current crises faced by South Africa. All of which will need to be kept in mind by the project developers throughout the planning, construction, operational and closure phases of the project, in order to ensure legislative and policy fit.

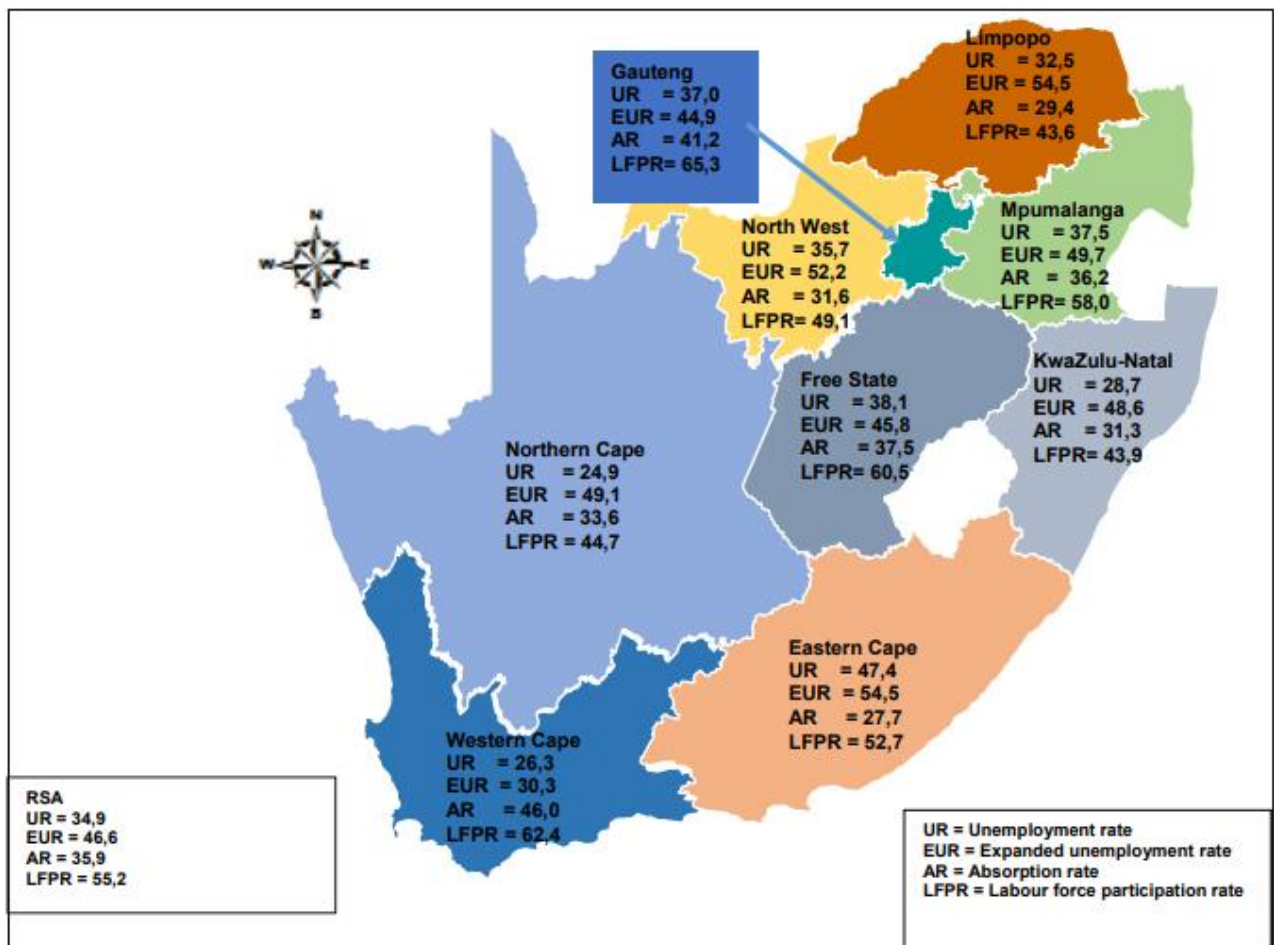
### **4. DESCRIPTION OF THE AFFECTED ENVIRONMENT**

The project is located within the eMakhazeni Local Municipality (MP314) which falls under the Nkangala District Municipality (DC31) within the province of Mpumalanga. At Statistics South Africa’s, Census 2011 Main Place level, the project falls within eMakhazeni Non-Urban (NU) Main Place 870003. eMakhazeni A Main Place 870006 borders the project and incorporates the town of Belfast. Accordingly, demographic data pertaining to all these areas are presented

below, commencing at the provincial level and progressing through the municipal to the main place levels

#### 4.1. PROVINCIAL

Considering this, in the 3<sup>rd</sup> Quarter of 2021, the official unemployment rate in the province was 37,5%, the expanded unemployment rate was 49,7% while the labour absorption rate was 36,2% and the labour force participation rate was 58,0%. A summary of the labour market indicators illustrated on a comparative basis across South Africa is provided in **Figure 7**.



Source: (Statistics South Africa, 2021, p. 15)

**Figure 7: Labour market indicators 3<sup>rd</sup> Quarter 2021**

Regarding households, the 2011 Census showed that there were 1 075 488 households in Mpumalanga with an average household size of 3,8. Of these households, 40,1% were female-headed, 83,8% occupied formal dwellings, and 59,5% either owned or were paying off their dwelling. Turning towards household services, 41,4% of households had flush toilets connected to the sewerage system; 42,4% had weekly refuse removal; 35,7% had water piped inside the dwelling, and 86,4% used electricity for lighting.

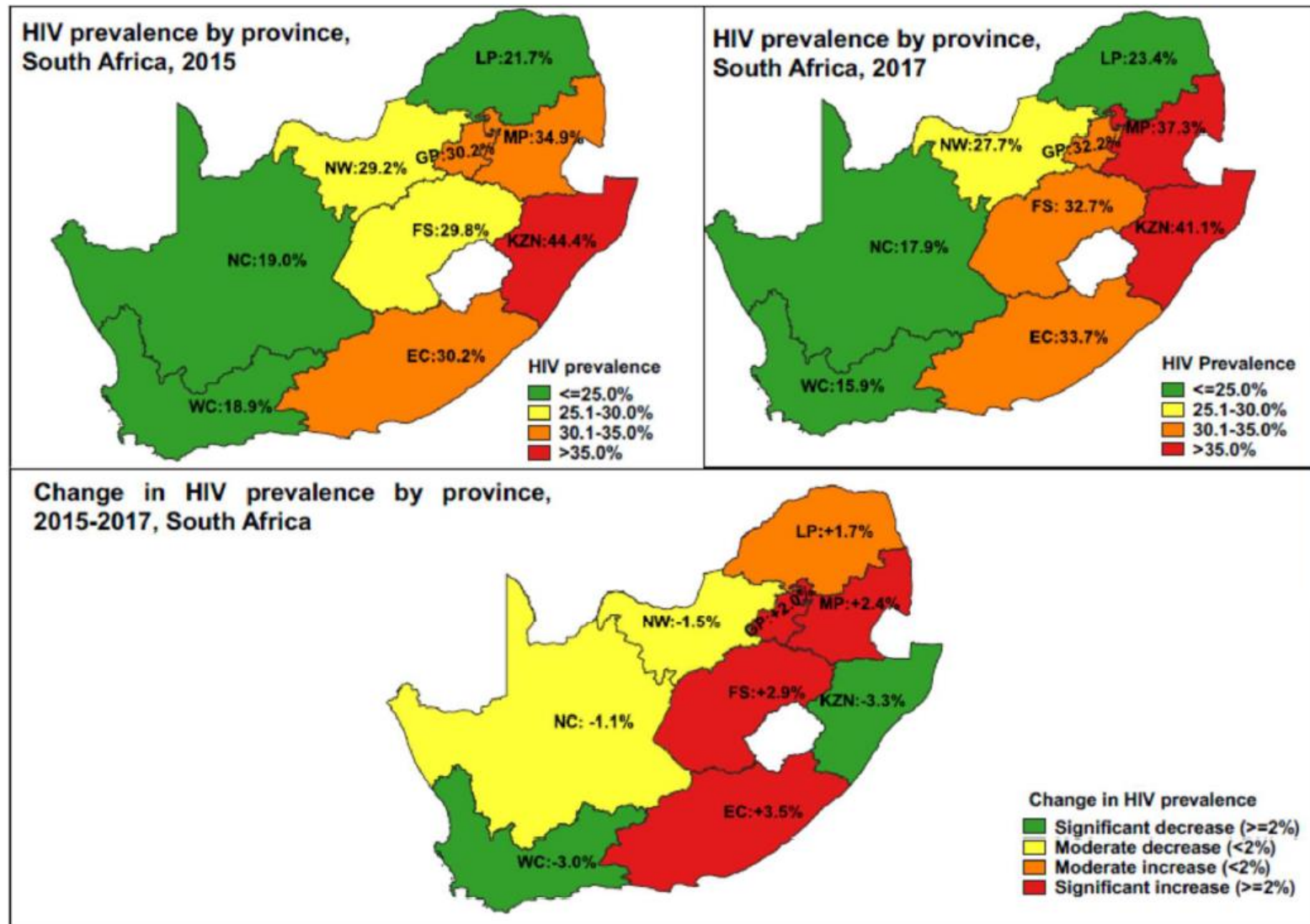
Regarding HIV prevalence, in 2017, Mpumalanga had an HIV prevalence rate of 37,3%. The lowest prevalence rate across South Africa, at 15,9%, was in the Western Cape Province, followed by the Northern Cape at 17.9%. At the same point, the highest level of HIV prevalence amongst antenatal women was in KwaZulu-Natal, with a prevalence rate of 41.1%, while the national rate stood at 30.7%. HIV prevalence across South Africa is illustrated in **Figure 8**.

Regarding the HIV prevalence rate across the district municipalities, the Gert Sibande district had the highest prevalence rate at 41,4% while the Nkangala district had the lowest rate at 31.4%. These prevalence rates are illustrated in Table 2.

**Table 2: Change in district HIV prevalence estimates - 2015-2017, Mpumalanga**

District	2012		2013		2014		2015		2017	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Ehlanzeni	35.1	32.3 - 38.0	37.6	34.2 - 41.1	39.2	35.8 - 42.7	38.5	35.0 - 42.2	40.4	37.1 - 43.8
Gert Sibande	40.5	35.8 - 45.3	40.8	36.1 - 45.6	36.1	32.0 - 40.4	38.6	33.7 - 43.7	41.4	38.2 - 44.7
Nkangala	32.1	27.4 - 37.3	34.4	29.5 - 39.6	30.0	26.7 - 33.5	25.1	21.2 - 29.5	31.4	28.5 - 34.5
Mpumalanga province	35.6	33.3 - 37.9	37.5	35.1 - 40.0	35.8	33.7 - 37.9	34.9	32.5 - 37.3	37.3	35.4 - 39.2

Source: (Woldesenbet, et al., 2019, p. 78)



Source: (Woldesenbet, et al., 2019, p. 25)

Figure 8: Change in provincial HIV prevalence estimates, 2015–2017

Attention is now turned towards the municipal and main place levels.

## **4.2. MUNICIPAL**

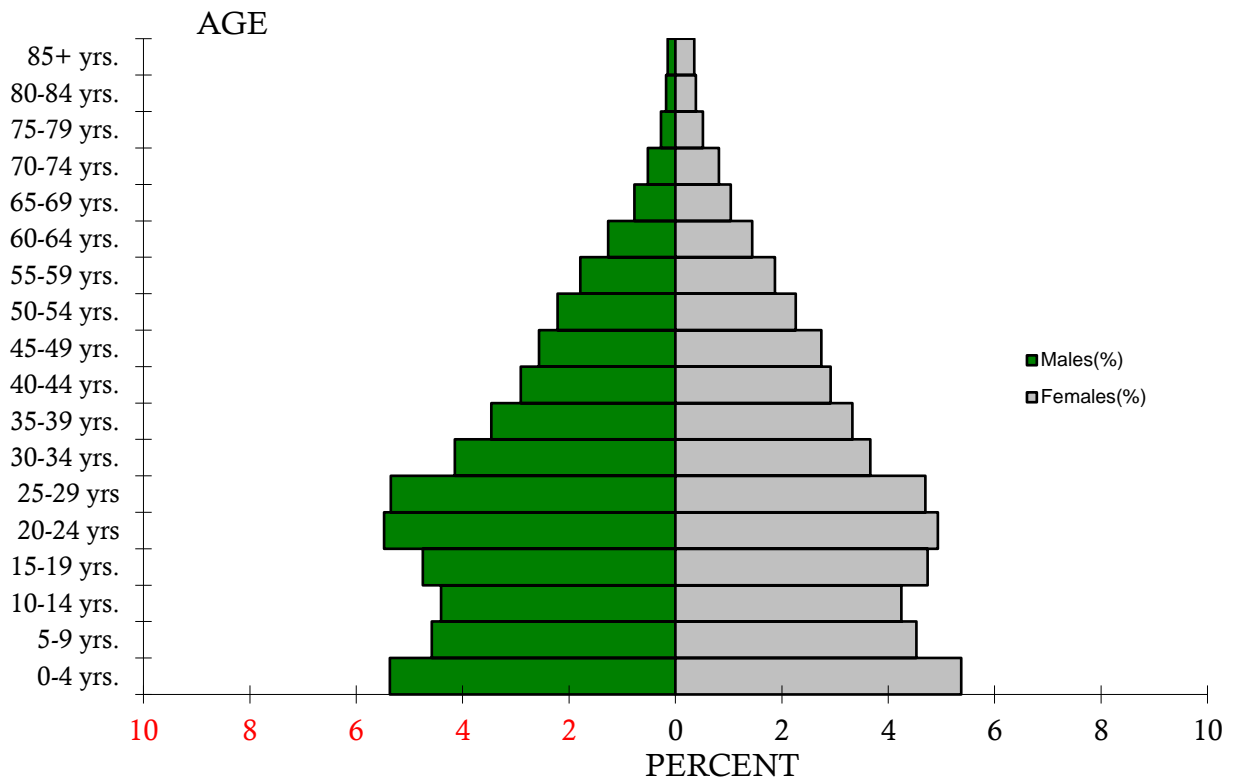
At the municipal level, the project is situated within the Nkangala district and Emakhazeni local municipalities.

**Nkangala District Municipality** is the smallest of the three district municipalities in Mpumalanga and accounts for 22% of the geographical area of the province. The head office of the district is in Middelburg and the area encompasses the following local municipalities:

- Victor Khanye
- Emakhazeni
- Steve Tshwete
- Emakhazeni
- Thembisile
- Hani and
- Dr JS Moroka.

On an economic level, Nkangala is rich in minerals and natural resources and is regarded as the economic hub of Mpumalanga, based on mining, manufacturing, energy, agriculture and tourism. The positioning of the district along the developing Maputo Corridor and its proximity to Gauteng also increases the area's potential for economic growth.

In 2011, the district municipality of Nkangala covered a geographical area of 16 758.25 km<sup>2</sup> and, with a population of 1 308 129 people, had a population density of 78,06 per km<sup>2</sup>. The population pyramid of Nkangala is illustrated in **Figure 9**, followed by the demographic data pertaining to the area.



Data source: (Statistics South Africa, 2011)

**Figure 9: Population pyramid Nkangala**

The following demographic data, as collected by Stats SA during Census 2011, applies to Nkangala District Municipality (DC31).

**Area**

16,758.25 km<sup>2</sup>

**Population**

1,308,129 (78.06 per km<sup>2</sup>)

**Households**

356,911 (21.30 per km<sup>2</sup>)

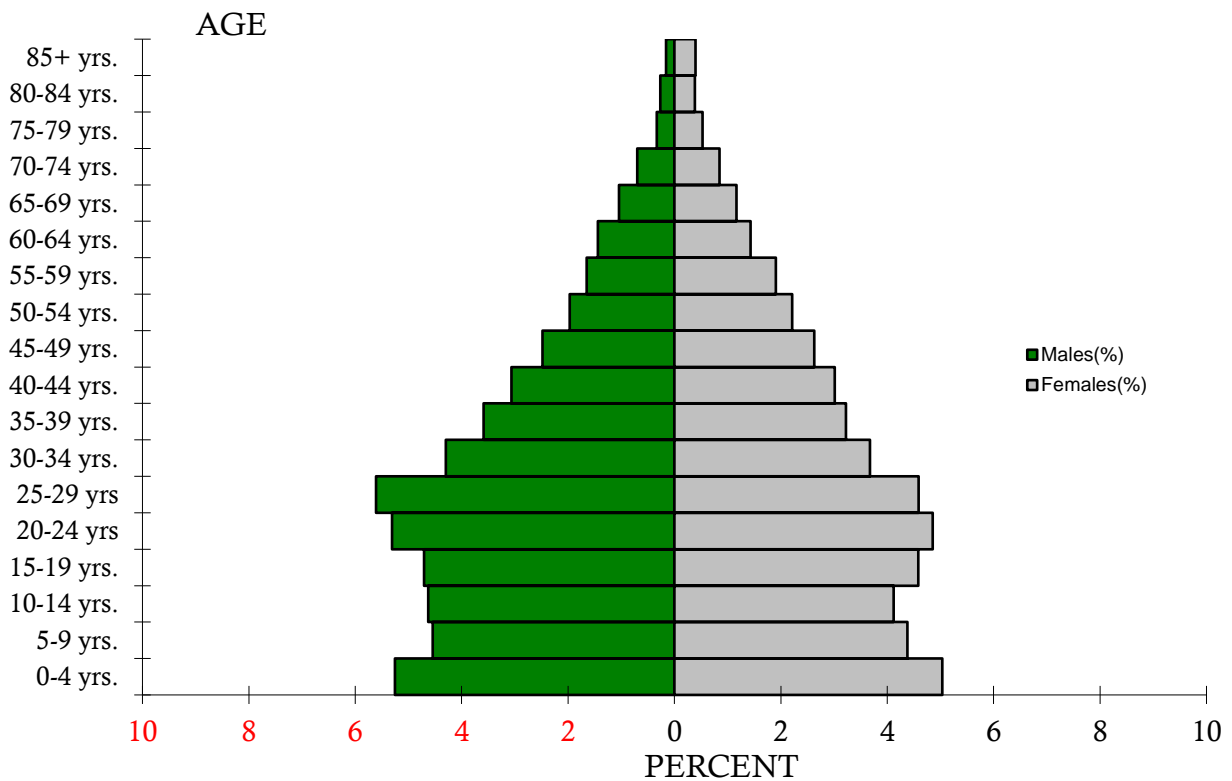
**Nkangala District Municipality (DC31)**

<b>Demographic Information</b>	<b>2016</b>	<b>2011</b>
<b>Population</b>	1 445 624	1 308 129
<b>Age Structure</b>		
Population under 15	27.3%	28.5%
Population 15 to 64	68.6%	66.5%
Population over 65	4.1%	5.0%
<b>Dependency Ratio</b>		
Per 100 (15-64)	45.8	50.4
<b>Sex Ratio</b>		
Males per 100 females	102.2	100.7
<b>Population Growth</b>		
Per annum	2.27%	n/a
<b>Labour Market</b>		
Unemployment rate (official)	n/a	30.0%
Youth unemployment rate (official) 15-34	n/a	39.6%
<b>Education (aged 20 +)</b>		
No schooling	9.0%	11.5%
Matric	35.0%	29.4%
Higher education	8.7%	10.2%
<b>Household Dynamics</b>		
Households	421 144	356 911
Average household size	3.4	3.5
Female-headed households	35.5%	36.2%
Formal dwellings	81.6%	82.8%
Housing owned	62.8%	58.9%
<b>Household Services</b>		
Flush toilet connected to sewerage	51.5%	48.7%
Weekly refuse removal	47.9%	48.3%
Piped water inside dwelling	39.3%	40.6%
Electricity for lighting	85.4%	85.7%



**Emakhazeni Local Municipality** is situated in close proximity of the City of Ekurhuleni, City of Johannesburg and City of Tshwane Metropolitan Municipalities and is strategically connected to these areas via the N4 and N12 freeways. The N4 freeway, in association with the railway line running adjacent to the freeway and connecting Gauteng with Mozambique, constitutes the Maputo Corridor. The southern region of the Emakhazeni Municipality forms part of what is referred to as the 'Energy Mecca of South Africa', due to the abundant coal reserves and the number of power stations found in the area. The towns of Emakhazeni and Middelburg are located within Emakhazeni and function as the main economic hubs of the region, with the economy being based on mining, power generation, steel, vanadium and chrome.

In 2011, Emakhazeni covered a geographical area of 4 735.59 km<sup>2</sup> and, with a population of 47 216 people, had a population density of 9,97 people per km<sup>2</sup>. Of this population, 28% were under 14 years of age; 66,2% were between 15 and 64 years, and 5,8% were over the age of 64. The population pyramid of the Emakhazeni is illustrated in **Figure 10**, followed by the demographic data pertaining to the municipality.



Source: (Statistics South Africa, 2011)

**Figure 10: Population pyramid Emakhazeni**

The following demographic data, as collected by Stats SA during Census 2011, applies to the Emakhazeni Local Municipality.

### **Emakhazeni Local Municipality MP314 from Census 2011**

#### **Area**

4,735.59 km<sup>2</sup>

#### **Population**

47,216 (9.97 per km<sup>2</sup>)

#### **Households**

13,722 (2.90 per km<sup>2</sup>)

### **Emakhazeni Local Municipality (MP314)**

<b>Demographic Information</b>	<b>2016</b>	<b>2011</b>
<b>Population</b>	48 149	47 216
<b>Age Structure</b>		
Population under 15	27.4%	28.0%
Population 15 to 64	67.8%	66.2%
Population over 65	4.8%	5.8%
<b>Dependency Ratio</b>		
Per 100 (15-64)	47.4	51.0
<b>Sex Ratio</b>		
Males per 100 females	105.4	104.2
<b>Population Growth</b>		
Per annum	0.44%	n/a
<b>Labour Market</b>		
Unemployment rate (official)	n/a	25.9%
Youth unemployment rate (official) 15-34	n/a	34.2%
<b>Education (aged 20 +)</b>		
No schooling	16.0%	15.0%
Matric	32.7%	28.6%
Higher education	5.1%	7.4%
<b>Household Dynamics</b>		
Households	14 633	13 722
Average household size	3.3	3.3
Female-headed households	36.6%	35.9%

Formal dwellings	80.4%	81.8%
Housing owned	56.6%	52.7%
<b>Household Services</b>		
Flush toilet connected to sewerage	75.2%	74.4%
Weekly refuse removal	56.3%	71.7%
Piped water inside dwelling	46.7%	55.0%
Electricity for lighting	83.1%	83.6%

At the main place level, the project is within the main place eMakhazeni Non-Urban (NU) which borders on the main place eMakhazeni A. While the former area, in which the project is located is more agricultural, with a population density of 2.24 per km<sup>2</sup>, the latter, eMakhazeni A, which incorporates the town of Belfast and has a population density of (57.05 per km<sup>2</sup>), is more urban. The demographic data of eMakhazeni NU Main Place 870003 and eMakhazeni A Main Place 870006 are presented below. This data is only available in respect of Census 2011.

#### **eMakhazeni NU Main Place 870003 from Census 2011**

##### **Area**

4,520.79 km<sup>2</sup>

##### **Population**

10,146 (2.24 per km<sup>2</sup>)

##### **Households**

2,948 (0.65 per km<sup>2</sup>)

##### **Gender**

###### **People Percentage**

Male 5,536 54.57%

Female 4,609 45.43%

##### **Population group**

###### **People Percentage**

Black African 9,442 93.05%

White 630 6.21%

Coloured 35 0.34%

Indian or Asian 27 0.27%

Other 13 0.13%

## First language

	People	Percentage
isiNdebele	4,285	42.24%
SiSwati	1,906	18.79%
isiZulu	1,124	11.08%
Afrikaans	612	6.03%
Sepedi	548	5.40%
Sesotho	449	4.43%
Xitsonga	446	4.40%
English	339	3.34%
Other	215	2.12%
Setswana	108	1.06%
isiXhosa	49	0.48%
Tshivenda	39	0.38%
Sign language	24	0.24%
Not applicable	2	

## Key Statistics 2011

Young (0-14)	26,7%
Working Age (15-64)	67%
Elderly (65+)	6,3%
Dependency ratio	49,2
Sex ratio	120,1
No schooling aged 20+	25,7%
Higher education aged 20+	3,2%
Matric aged 20+	18,3%
Average household size	3,4
Female-headed households	26,4%
Formal dwellings	67,8%
Housing owned/paying off	29,3%
Flush toilet connected to sewerage	32,9%
Weekly refuse removal	8,4%
Piped water inside the dwelling	32,7%
Electricity for lighting	55,6%

**eMakhazeni A Main Place 870006 from Census 2011**

**Area**

80.00 km<sup>2</sup>

**Population**

4,564 (57.05 per km<sup>2</sup>)

**Households**

1,134 (14.17 per km<sup>2</sup>)

**Gender**

**People Percentage**

Male 2,352 51.53%

Female 2,212 48.47%

**Population group**

**People Percentage**

White 2,350 51.50%

Black African 1,875 41.09%

Coloured 198 4.34%

Indian or Asian 118 2.59%

Other 22 0.48%

**First language**

**People Percentage**

Afrikaans 2,329 56.22%

isiZulu 519 12.53%

SiSwati 330 7.97%

English 285 6.88%

isiNdebele 222 5.36%

Sepedi 145 3.50%

Sesotho 99 2.39%

Xitsonga 94 2.27%

Other 45 1.09%

Setswana 37 0.89%

isiXhosa 21 0.51%

Tshivenda 14 0.34%

Sign language 3 0.07%

Not applicable 422

## Key Statistics 2011

Young (0-14)	22,1%
Working Age (15-64)	67,4%
Elderly (65+)	10,5%
Dependency ratio	48,4
Sex ratio	106,3
No schooling aged 20+	5,4%
Higher education aged 20+	18,2%
Matric aged 20+	34,3%
Average household size	3,5
Female-headed households	29,7%
Formal dwellings	86,4%
Housing owned/paying off	47,4%
Flush toilet connected to sewerage	81,1%
Weekly refuse removal	82,2%
Piped water inside the dwelling	80,4%
Electricity for lighting	85,1%

## 5. CONSULTATION PROCESS

The assessment took place during the height of the second wave of COVID-19, making it irresponsible to undertake a series of face-to-face and group interactions. However, over the last few years, there has been a high level of interaction amongst an array of competent environmentalists and proponents of economic development in the area. This interaction is within the public domain; forming a solid indication of public opinion regarding similar developments in the area, and is discussed below. Apart from this the Public Participation Process was used as a further source of data as were the various ongoing consultations between the mine and the communities.

### 5.1. ENVIRONMENTAL ACTIVISM IN MPUMALANGA

The Mpumalanga area has a relatively long history of activism that has risen in response to high levels of air and water pollution and subsequent environmental degradation and risk to human health in the area (Fourie, 2020). In 2019, Greenpeace identified the province as having the highest level of sulphur dioxide and nitrogen dioxide emissions in the world (Myllyvirta, 2019). A situation that presents a severe health hazard to the citizens of

Mpumalanga and violates their constitutional right to a healthy environment (Williams, 2020).

In this regard, the following organisations have been active in the area:

- Centre for Environmental Rights
- Greenpeace
- GroundWork
- Vukani Environmental Justice Movement in Action.

In contrast, the Congress of South African Trade Unions (COSATU) and the Coal Transporters Forum (CTF), have challenged the decommissioning of power stations and mine closures in the province. Both citing the risk this poses to businesses, jobs and the economies of mining towns in the province. COSATU has, however, recognised the delicate balance between environmental sustainability and unemployment with the Union's Parliamentary Coordinator, Matthews Parks, recently making the following statement in Parliament.

*“Both environmental and economic denialism are dangerous and should not be entertained. We think we can and must tackle climate change and unemployment simultaneously. All it requires is creativity, political will, planning and resources”* (Osborne, 2020).

Thus, underlying the need for a balanced and responsible approach to the situation from government, industry and environmental activists. A requirement that must be kept in mind throughout this report in an effort to ensure every citizen's “...right to an environment that is not harmful to their health or wellbeing and to have the environment protected for the benefit of present and future generations. While at the same time ensuring every citizens' right to participating in the economy and securing a reasonable employment.

## **6. IDENTIFICATION OF POTENTIAL IMPACTS**

The potential social impact variables identified in association with the project are in accordance with Vanclay's list of social impact variables clustered under the following main categories as adapted by Wong (Vanclay, 2002; Wong, 2013) and include:

1. Health and social well-being
2. Quality of the living environment (Liveability)
3. Economic
4. Cultural.

These categories are not exclusive and at times tend to overlap, as certain processes may have an impact within more than one category. Most of these impacts listed above will apply to the construction phase of the project and should occur over the short-term.

## 6.1. HEALTH AND SOCIAL WELL-BEING

The following issues related to the health and social well-being of the surrounding communities have been identified.

- Air quality
- Water quality
- Noise and vibration
- Hazard exposure
- Increase in crime
- Increased risk of HIV infections
- Influx of job seekers.

### 6.1.1. AIR QUALITY

The issue of air quality in Mpumalanga and the effect it has on the health and social well-being of local communities has, for some time, been of great concern due to the presence of coal fired power stations; coal mines; and industrial activity in the province, and this has been well documented (The Bench Marks Foundation, 2014) (Shongwe, 2017; Kekana, 2018; Gray H, 2019; Laisani & Jegede, 2019; SAnews.gov.za, 2019; Vlavianos, 2019; West, 2019; Adesinal, PikethI, Qhekwanal, Language, & Mkhathswall, 2020; Gilder & Rumble, 2020; Makoni, 2020) (South African Weather Services, 2020). In this regard the Minister of Environment, Forestry and Fisheries, Barbara Creecy. has acknowledged that “ ..*there are air quality challenges in the Mpumalanga Highveld Area*” (SAnews.gov.za, 2019) that need to be addressed. The impact of air quality has significant social implications in respect of human health, however the technicalities of the nature and extent of air quality fall outside the domain of expertise of the social specialisation and are best left to the air quality specialist. Accordingly, **air quality and climate change** is subject to a separate specialists study which found that:

*“Dust impacts from the proposed expansion are likely to be concentrated within the opencast pits and the immediate southwest of these facilities. Active mitigation and monitoring may be necessary to ensure no exceedance of South African Ambient Air Quality Standards.*

*Climate change impacts directly related to the project (Scope 1 and 2) are expected to be negligible while the Scope 3 impacts could have the potential to marginally, negatively impact South Africa’s overall attempts to decrease its carbon footprint over the coming two decades” (Kijani Green Energy, 2021, p. 42)*



### 6.1.2. WATER QUALITY

The impact of coal mining, in respect of water quality and acid mine drainage (AMD), has also been well documented as a negative environmental issue that needs to be addressed (Environmental Monitoring Group, 2010, pp. 9-15; Laisani & Jegede, 2019, p. 1590). In this regard, however, possible solutions are being considered that could assist in mitigating the extent of the problem by turning AMD into potable water (Creamer, 2020). Although there are attached social consequences, the technical issue of water quality, as with air quality, falls outside of the area of social specialisation and is addressed in the following reports, listed below with an indication of their salient findings:

The Hydrogeological specialist study for the Integrated Water Use Licence Application for Belfast Expansion Project (Golder Associates Africa (Pty) Ltd, 2021a, pp. 43-45) indicates that:

*“Results from the two groundwater models show that the highest impact will be on the wetlands of the central sub-catchment. This catchment will be extensively mined and the reduction in flow to the wetlands in this sub-catchment is expected to be 34%. The reduction in flow to the wetlands in the western catchment is 10% - 20% and the flow reduction to the wetlands in the eastern sub-catchment is less than 5%.”*

And suggests recommendations aimed at re-instating the hydrogeological function of the wetlands that would need to be closely followed by the mine.

It is pointed out in the Wetland Mitigation Strategy for Belfast Expansion Project (BEP) (Golder Associates Africa (Pty) Ltd, 2021b, p. 29) that:

*“There are several gaps in the current understanding of potential impacts on wetlands as a result of the BEP infrastructure and activities, which will need to be addressed via further studies, and in the full wetland rehabilitation plan.”*

In the conclusion of the Wetland Impact Assessment for the Belfast Expansion Project (Golder Associates Africa (Pty) Ltd, 2021c, pp. 28-29)

*“The key Project impacts with respect to the proposed mining activity are direct loss of wetland habitat, and degradation of remaining wetland habitat primarily as a result of interruption in hydrological and hydrogeological systems supporting those remaining wetlands. Significant (moderate-high) residual impacts remain on wetland ecosystems as a result of the direct loss of wetland habitat to the opencast mining footprint and infrastructure, as the outright loss of these habitats cannot be mitigated (i.e., avoided, minimised, rehabilitated). The implementation of a wetland rehabilitation and*

*management plan for the Project to give effect to the proposed wetland offset strategy that Golder has developed for Exxaro (see Golder, 2021a) will therefore be necessary to address significant residual impacts and ensure that any areas specifically set aside for biodiversity conservation (including on-site wetland offsets, and any off-site mitigation / offset areas) are protected and managed accordingly.”*

### **6.1.3. NOISE AND VIBRATION**

The noise and vibration is also likely to have an impact on the health and social well-being of local communities. In this regard, the noise and vibration specialist concluded that:

*“The potential noise intrusion from the mining activities can however be controlled by means of approved acoustic screening measures, state of the art equipment, proper noise management principles and compliance to the Noise Regulations, 1994 and the International Finance Corporation’s Environmental Health and Safety Guidelines. The proposed noise management plan must be in place during the construction and operational phases to identify any noise increase on a pro-active basis and to address the problem accordingly.*

*The proposed BEP Mine expansion project will be in line with the environmental noise standards and guidelines provided that all the noise mitigatory measures are in place and that the Noise Impact Management Plan (NIMP) and Noise Monitoring Plan (NMP) for BEP mine is adhered to” (dBAcoustics, 2021, p. 58).*

### **6.1.4. HAZARD EXPOSURE**

The use of heavy equipment and vehicles and an increase in vehicle traffic within the vicinity of the construction site will result in an increased risk to the personal safety of people and animals. Blasting activities and the transportation of coal during the operational phase of the project will also increase the risks to public safety. Of particular concern are increased hazards faced by pedestrians, cyclists and motorists with emphasis on vulnerable groups such as children and the elderly.

There is also a risk of fires brought about through construction workers lighting fires for cooking and warmth during cold periods. Successful implementation of the recommended mitigation measures will result in these risks remaining at acceptable levels.

Regarding the issue of blasting, the blast impact study indicated that:

*“The closest structures observed are the Farm Buildings/Structures, Gravel Road, Dam/Dam Wall and Ruins. Ground vibrations predicted for the pit areas ranged between*

*low and very high. The expected levels of ground vibration for some of these structures are high and will require specific mitigations in the way of adjusting charge mass per delay to reduce the levels of ground vibration. Ground vibration at structures and installations other than the identified problematic structures is well below any specific concern for inducing damage*". But points out that, "[t]here is no reason to believe that this operation cannot continue if attention is given to the recommendations made" (Blast Management and Consulting (PTY) Ltd, 2021, pp. 10-11).

#### **6.1.5. INCREASE IN CRIME**

The project falls within the Belfast Police Precinct, which had a total of 985 reported crimes in 2020<sup>3</sup>. An influx of people into the area in search of work could result in an increase in crime in the area. It is more likely that this risk would be higher during the construction phase and would be associated with opportunistic criminal activities. However, over the operational phase of the project, with most of the labour being locally sourced, the risk of any increase in criminal activities associated with the project is likely to be minimal. It is also likely that the cumulative effect on criminal activities in the area will be minimal, as the project is an extension of current operations in the area and, as such, is limited.

#### **6.1.6. INCREASED RISK OF HIV INFECTIONS**

The HIV prevalence rate amongst antenatal women in the Nkangala district is relatively high at 34,4% placing the district 15 places below the iLembe district; which has a prevalence rate of 45.9%. With such a high prevalence rate in the area, and considering that the bulk of the workforce will be locally recruited, it is unlikely that the project will result in any significant increase in the risk of HIV infections in the area. Notwithstanding this, however, it is recognised that sexually transmitted diseases tend to be spread by construction and transport workers (Singh & Malaviya, 1994; Ramjee & Gouws, 2002; Meintjes, Bowen, & Root, 2007; World Bank Group, 2016; Bowen, Dorrington, Distiller, Lake, & Besesar, 2008; Bowen P. , Govender, Edwards, & Cattell, 2016; Kikwasi & Lukwale, 2017; Bowen P. , Govender, Edwards, & Lake, 2018). Consequently, the risk of HIV infection would be highest during the construction phase of the project, as the construction workforce increases and materials and equipment are delivered to the site. However, because of the limited nature of the project; relatively small workforce and high prevalence level within the district, the risk of spreading HIV will remain limited across both the construction and operational phases of the project.

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<sup>3</sup> Crime Stats SA <https://www.crimestatssa.com/>

Despite this limited risk, it still remains important to note the high level of HIV infections in the area and to ensure that the company installs an HIV/AIDS workplace policy. The function of the policy is to provide at least a basic framework for company action to reduce the spread and manage the impacts of HIV/AIDS.

### **6.1.7. INFLUX OF JOB SEEKERS**

Although there is some possibility that the expansion of mining activities will result in an influx of job seekers, this is likely to be somewhat limited as the mine has been operational for some time and the majority of the labour force is to be recruited from amongst the local community.

## **6.2. QUALITY OF THE LIVING ENVIRONMENT (LIVEABILITY)**

The quality of the living environment of the surrounding communities is likely to be affected by the following issues related to the construction and operation of the project.

- Annoyance factor, access, and disruption of daily living patterns
- Disruptions to social and community infrastructure
- Transformation of the sense of place
- Traffic.

### **6.2.1. ANNOYANCE FACTOR, ACCESS, AND DISRUPTION OF DAILY LIVING PATTERNS**

The disruption of daily living patterns is most likely to be associated with construction activities related to irregular on site deliveries and the use of construction vehicles and equipment. Over the operational phase of the project, these disruptions are likely to subside somewhat as operational schedules and traffic patterns become more predictable.

### **6.2.2. DISRUPTIONS TO SOCIAL AND COMMUNITY INFRASTRUCTURE**

Mining activities, such as blasting and the transportation of coal, are likely to place some strain on surrounding infrastructure, such as roads and power lines. An Eskom power line running along the southern side of the B Project could be at some risk associated with flying debris generated during blasting activities. It is possible to reduce this risk by erecting a protective net barrier along the section of power line at risk.

### **6.2.3. TRANSFORMATION OF THE SENSE OF PLACE**

Sense of place is a social phenomenon encompassing a wide range of uniquely interpreted human experiences based on a range of criteria (Tuan, 1980; Blake, 2002; Derr, 2002; Stedman, 2003). These criteria may include the vista, geography, urban layout, flora and fauna, community, history and fragrance of a place amongst many others, and are uniquely

interpreted on an individual basis. Some individuals may embrace changes to the sense of place that others may reject and, for some, it may merely be a change in the demographics of an area that leaves them feeling threatened, vulnerable and insecure. Groups and group membership can help to reinforce the sense of place of an area and can also reinforce fears and suspicions associated with pending changes to the sense of place. A sense of place has much to do with unique individual perceptions attached to the location and is subjective by nature.

The visual impact assessment undertaken for the project assessed the visual impact of the project on residents, tourists and motorists in the area and found that:

*“The residents close to the mine may experience a moderate degree of visual intrusion by the proposed expansion of the mine.*

*The proposed new developments will only have an impact on tourists in near proximity to the mine, which will be along main transportation routes. The severity of the visual impact of the mining activities on tourists will be low, causing a low visual impact.*

*Motorists’ visual exposure to the new activities will be brief and the severity of visual impact will be low”* (Outline Landscape Architects cc, 2021, p. ii).

In addition the Terrestrial Ecology Assessment points out that:

*“Several negative impacts on terrestrial ecology associated with the proposed Project have been identified. Of these, the loss and modification of natural habitat resulting from vegetation clearing and earth works during construction is the primary impact of concern and will, prior to mitigation have a high impact significance. With successful mitigation, impact significance can be reduced to moderate for all proposed infrastructure components. Vegetation clearing and earth works, coupled with other general Project activities will also cause several additional impacts. These include: habitat fragmentation; the loss of flora and fauna species of conservation concern; the killing, injuring or disturbance of general fauna; and, the spread of alien invasive species. These can also be effectively mitigated through the application of the recommended management measures* (Hawkhead Consulting, 2021, p. 4).

From a soil, land use and land capability perspective it is indicated that:

*“The impact of the proposed Belfast Mine Expansion from a soil, land use and land capability are deemed high during the operational phase, and thus protection of the agricultural resources should be prioritised as far as practically possible. Areas of*

*highest agricultural potential, especially those areas that are managed as irrigated crop lands should be excluded from mining where feasible” (Zimpane Research Collaborative, 2021, p. 61).*

#### **6.2.4. TRAFFIC**

From a traffic perspective it was concluded that:

- “• *By comparing the operating conditions for the different scenarios, it was concluded that the proposed project will have an insignificant traffic impact on the surrounding road network, and*
- *The project's construction and operational phases, respectively, have a significance rating of 20 and 28. Based on this the project can be authorised from a traffic engineering viewpoint provided that current management of traffic be maintained”.*

For further details refer to the traffic report.

### **6.3. ECONOMIC**

It is likely that the project will result in the following economic benefits:

- Job creation and skills development
- Local economic development.

#### **6.3.1. JOB CREATION AND SKILLS DEVELOPMENT**

Over the construction phase, the project will lead to the creation of both direct and indirect jobs. The duration of construction is 24 months, which includes 4 months of detailed design and 16 months of manufacturing and construction (BVi Consulting Engineers Gauteng (Pty) Ltd, 2020, p. 65).

With regard to the operational phase of the project, it is indicated that.

*“In terms of the Underground resources, the estimated amount of people will be:*

- *Underground workers – 455*
- *Surface workers – 117*
- *Total workers – 572*

*It is assumed that the underground workers will work in two or three shifts, resulting in a maximum of  $455/2 + 117 = 345$  people on the mine during day shift (BVi Consulting Engineers Gauteng (Pty) Ltd, 2020, pp. 23-24).”*

The Belfast Coal – Social and Labour Plan (2018-2023) Ref: MP 30/5/1/2/2/431 MR lays out a Human Resources Development Plan to which the mine is committed and which, amongst other aspects, covers:

- Mentorship and coaching
- Busary and internship plan
- Women in mining.

### 6.3.2. LOCAL ECONOMIC DEVELOPMENT

The Capex estimated ceiling value of the project are as follows.

Description	Amount in Rands
<b><u>Direct Cost</u></b>	
Internal Infrastructure	190,698,367.06
Internal Services	133,241,302.21
External Services	11,094,000.00
<b>Indirect Cost</b>	
EPCM	38,914,760.31
Owners Team	25,943,173.54
Consultants	3,242,896.69
Contingency	100,783,624.95
<b>Nominal Estimate</b>	<b>503,918,124.77</b>

(BVi Consulting Engineers Gauteng (Pty) Ltd, 2020, p. 66)

The mine is also committed to community economic development which, amongst other areas, focuses on:

- The development of projects
  - The Belfast Enterprise Development Centre- An incubation centre
  - A community health programme (HIV / AIDS Programme) for the Mpumalanga (Belfast) region.
- Assistance with housing for employees.
- Preferential procurement for Historically Disadvantaged South African.

### 6.4. CULTURAL

At a social level, it is likely that any cultural impacts would be associated with sensitive archaeological and/or heritage sites that may be found. In this regard, a heritage study was undertaken in which it was indicated that.

*“The proposed BEP and associated infrastructure will not affect the identified heritage resources (see Table 3), as the resources are not within the vicinity of the proposed BEP. However, if heritage resources are discovered during construction the proposed activity should cease and the area be demarcated by a danger tape. A professional*

*archaeologist or MPHRA officer should be contacted immediately* (Vhubvo Consultancy cc, 2021, p. 31).

The Palaeontologist Consultant found that:

*“Based on the site survey and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils. There is a small chance that fossils may occur below ground in the shales of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr. As far as the palaeontology is concerned”* (Bamford, 2021, p. 19).

On the basis of these findings and advice, the impact of the project on the cultural environment will not be further considered.

## **7. IMPACT ASSESSMENT**

An analysis of the social impacts is undertaken below and is illustrated in **Table 3**.



Table 3: Impacts

Category of Impact	Description of Impact	Is Impact Positive or Negative	Level of Impact	Is Impact Reversible or Permanent	Level of Certainty About the Impact	Area Type Impacted	Name of Area	Size of Impacted Population	Public Awareness of Impacts	Public Perception of Impacts
Health & social well-being	Air quality	Negative	Mid	Reversible	Strong Certainty	Provincial	Mpumalanga	4 335 963 (56.6 per km <sup>2</sup> )	High	High Negative
Health & social well-being	Water quality	Negative	Mid	Reversible	Strong Certainty	Provincial	Mpumalanga	4 335 963 (56.6 per km <sup>2</sup> )	High	High Negative
Health & social well-being	Noise & vibration	Negative	Mid	Reversible	Strong Certainty	Site surrounds	eMakhazeni Non-Urban (NU) Main Place 870003	10 146 (2.24 per km <sup>2</sup> )	High	Mid Negative
Health & social well-being	Hazard exposure	Negative	Mid	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	47 216 (9.97 per km <sup>2</sup> )	High	Mid Negative
Health & social well-being	Increase in crime	Negative	Low	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	Mid	Mid Negative
Health & social well-being	Increased risk of HIV infections	Negative	Low	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	Low	Low Negative
Health & social well-being	Influx of job seekers	Negative	Low	Reversible	Strong Certainty	Site surrounds	eMakhazeni Non-Urban (NU) Main Place 870003	10 146 (2.24 per km <sup>2</sup> )	Mid	Low Negative
Quality of the living environment (Liveability)	Annoyance factor, access, and disruption of daily living patterns	Negative	Mid	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	High	Mid Negative
Quality of the living environment (Liveability)	Disruptions to social and community infrastructure	Negative	Low	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	Mid	Mid Negative
Quality of the living environment (Liveability)	Transformation of the sense of place	Negative	High	Permanent	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	High	High Negative
Quality of the living environment (Liveability)	Traffic	Negative	Low	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	High	Mid Negative
Economic	Job creation and skills development	Positive	Mid	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	High	High Positive
Economic	Local economic development	Positive	Mid	Reversible	Strong Certainty	Local municipality	eMakhazeni LM (MP314)	455 227 (169.7 per km <sup>2</sup> )	High	High Positive

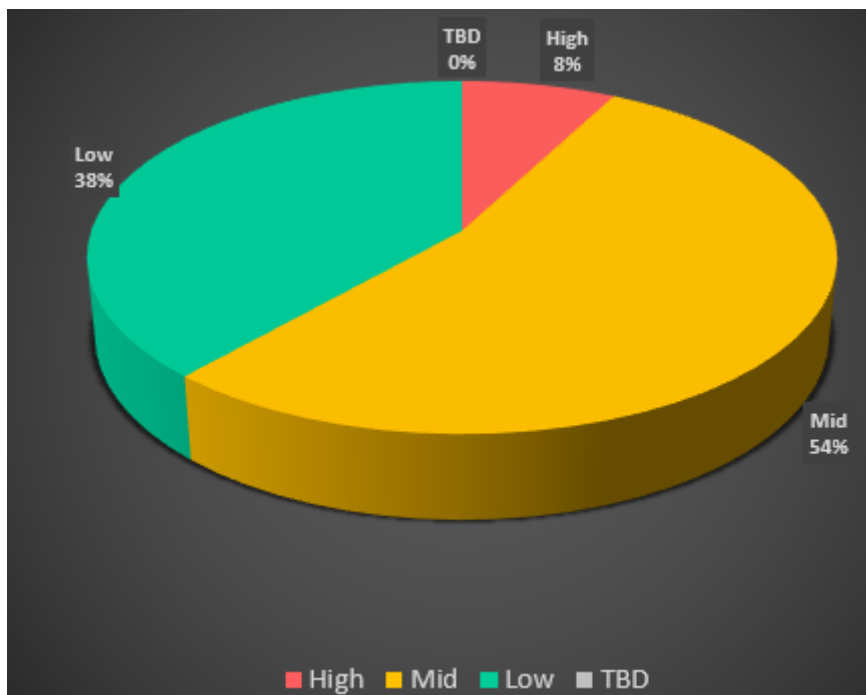
### 7.1. ANALYSIS OF IMPACT ASSESSMENT

Of the 13 impacts associated with the project, 2 are positive and 11 are negative, as illustrated in Table 4.

**Table 4: Breakdown of positive and negative impacts**

<b>Total Social Positive Impacts</b>
<b>2</b>
<b>Total Social Negative Impacts</b>
<b>11</b>

Thirty eight percent of impacts are rated as low, with 54% falling within the midrange, and 8% being rated as high. This data is illustrated in Figure 11.



**Figure 11: Breakdown by level of impact**

As Figure 12 illustrates, 12 impacts are considered to be reversible, with 1 considered as permanent.

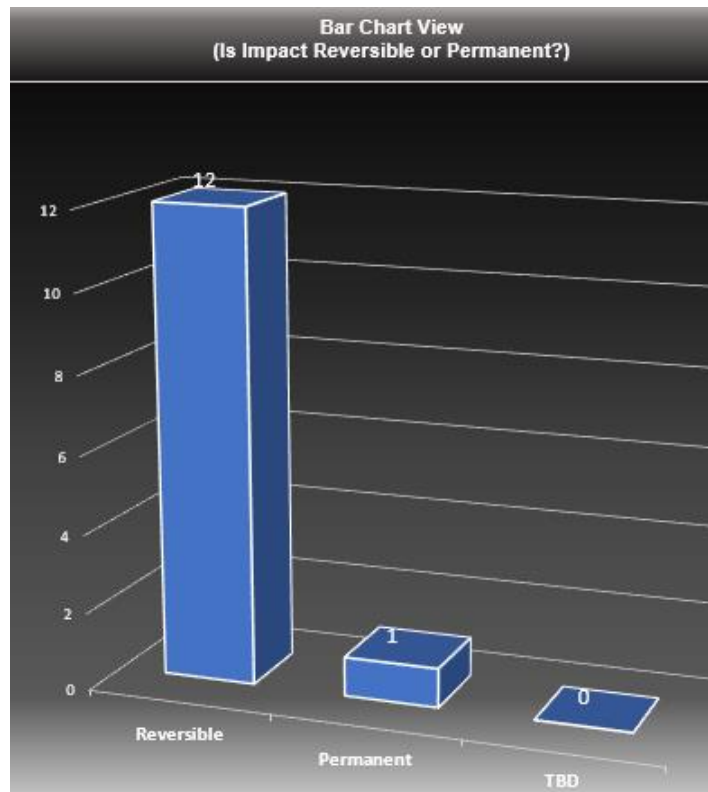


Figure 12: Reversibility of impact

All 13 impacts are assessed with a strong level of certainty, as illustrated in Figure 13.

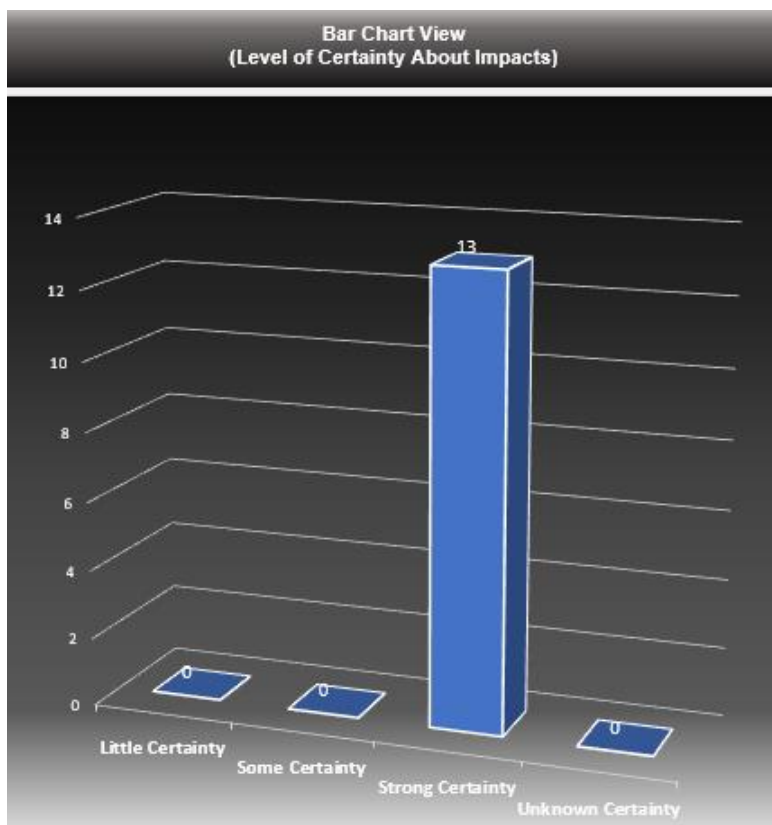
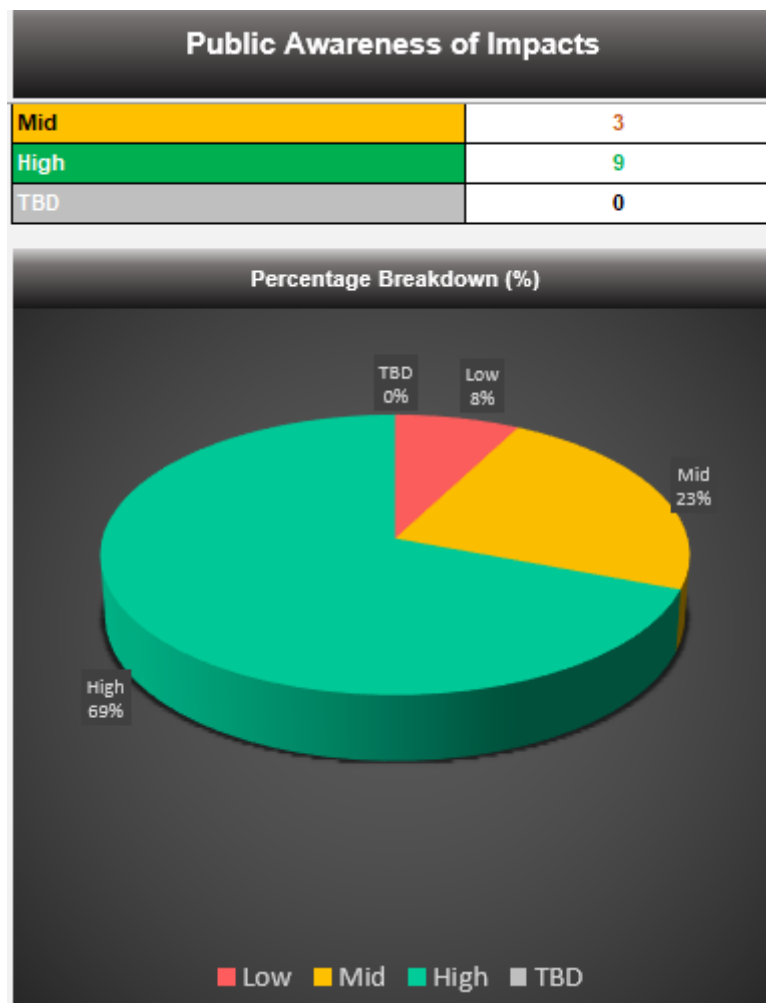


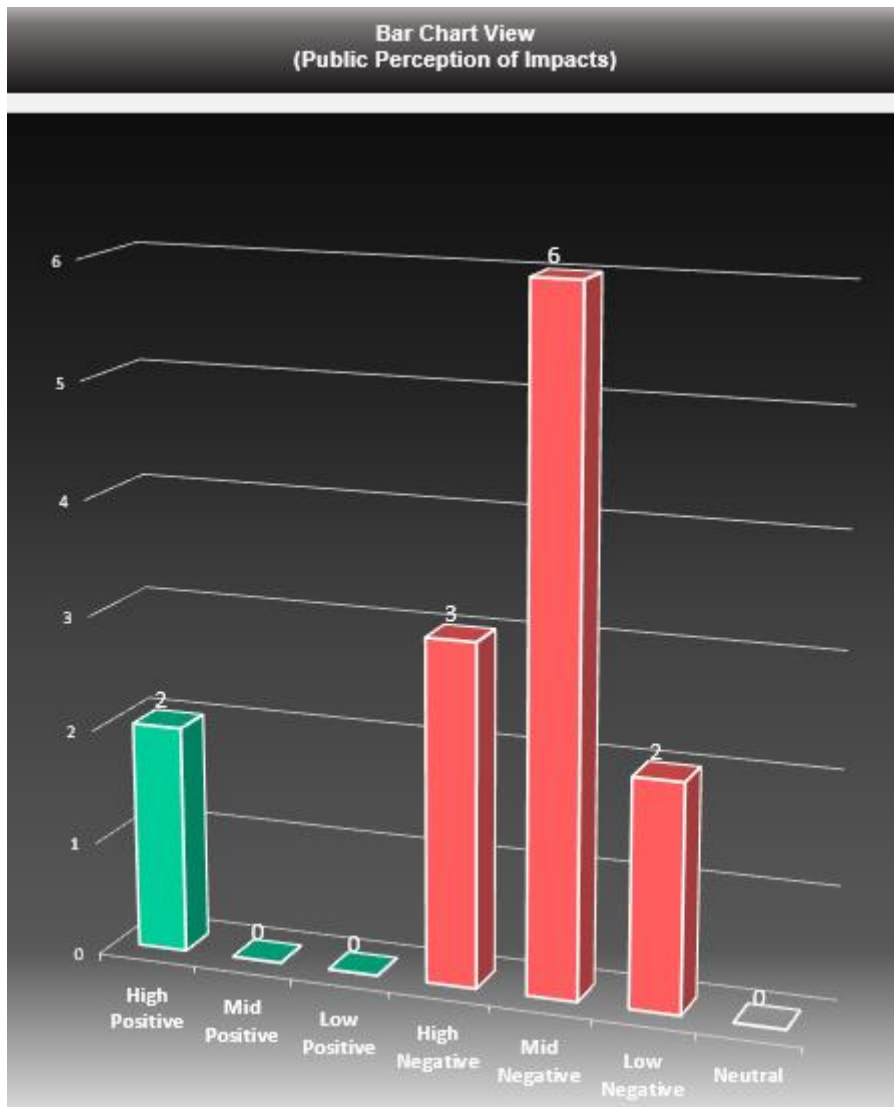
Figure 13: Level of certainty about impact

There is a high level of public awareness reading air quality; water quality; noise and vibration; hazard exposure; annoyance factors; transformation of the sense of place; traffic; job creation and skills development and local economic development. An increase in crime; influx of job seekers and disruption to social and community infrastructure is likely to elicit a mid level of public awareness. Although there is a high level of awareness regarding HIV infections in the area, the risk associated with the project, is likely to provoke a low level of public awareness due to the extent of HIV already in the area. The level of public awareness regarding the various impacts is illustrated in **Figure 14**.



**Figure 14: Public awareness of impacts**

Public perceptions regarding employment and business opportunities and the contribution towards the security of the National Grid are likely to be rated as high positive. The concern about crime, the loss of employment after construction, the transformation of a sense of place and corruption over the planning/development phase are likely to be rated as high negative. While the rest of the impacts are regarded as mid to low negative. Public perceptions of the impacts are illustrated in **Figure 15**.



**Figure 15: Public perceptions of impacts**

## 7.2. PLANNING AND DESIGN PHASE

It is evident that in certain respects, associated with national, provincial and municipal policy and legislation, the project fits with the intent to grow the economy over the short to medium-term and to create job opportunities. The urgency of economic development and job creation is all the more relevant under the current economic crisis; a situation aggravated by the COVID-19 pandemic.

On the other hand, the project clashes with an urgent need to arrest the current environmental degradation of the area and to increase the chances of future populations being able to enjoy their constitutional right to a clean and healthy environment. From a planning and design perspective, it is important to note these requirements and to incorporate these needs into the planning; design; construct; operational and decommissioning phases of the project. To achieve this, it is important to approach it on an interdisciplinary basis; to include all I&APs

from the planning stage; to retain an open channel of communications between all affected parties and to regularly monitor progress. It is also important to retain a flexible approach throughout the process and, where appropriate, to adjust the process in order to attain the best possible scenario in the broader national interest; taking the health and well-being of present and future citizens into account.

### **7.3. CONSTRUCTION PHASE**

Most of the impacts discussed above apply over the short-term to the construction phase of the project and include:

- Air quality
- Noise and vibration
- Hazard exposure
- Increase in crime
- Increased risk of HIV infections
- Influx of job seekers
- Annoyance factor, access, and disruption of daily living patterns
- Disruptions to social and community infrastructure
- Transformation of the sense of place
- Traffic
- Job creation and skills development
- Local economic development.

In this respect, the construction phase of the project is assessed with optimisation and mitigation measures being suggested in **Table 5**.

### **7.4. OPERATIONAL PHASE**

The social impacts that apply to the operational phase of the project are:

- Air quality
- Noise and vibration
- Hazard exposure
- Increase in crime
- Increased risk of HIV infections
- Influx of job seekers
- Annoyance factor, access, and disruption of daily living patterns
- Disruptions to social and community infrastructure
- Transformation of the sense of place

- Traffic
- Job creation and skills development
- Local economic development.

The impacts associated with the operational phase of the project are assessed with suggested mitigation and optimisation measures being presented in **Table 5**.

## **7.5. DECOMMISSIONING PHASE**

It is estimated that the

*“ ...design life of the underground mine and associated infrastructure is approximately 6-9 years [while] ...[t]he anticipated mining timeframe for the Open Pit section is commencement in 2031 and the Underground section is planned for 2037 to early completion in 2042.*

### ***BEP Open Pit Mining Areas – estimated timeline:***

*Period 1 – 2031*

*Period 9 – 2039” (BVi Consulting Engineers Gauteng (Pty) Ltd, 2020, p. 19).*

Considering the length of time between writing this report and actually decommissioning, which will probably extend beyond 2042, thus amounting to over 21 years, it would be quite meaningless to attach assessment criteria to the decommission phase of the project. As, at the point of decommissioning, it is most likely that the social dynamics of both the country and the regional area surrounding the project will be significantly different. Nevertheless, it is most important to recognise the devastating effects that mine closure will have on those communities reliant on a mine based income, both direct and indirect, and to consider the following mitigation measures.

### **Decommissioning mitigation measures**

- Ensure that a retrenchment package is in place.
- Ensure that staff have been trained in a manner that would provide them with saleable skills within the job market.
- Consider the possibility of repurposing existing mine infrastructure in partnership with affected communities.
- Ensure that the site is responsibly rehabilitated and left in a safe condition.

## **7.6. ASSESSMENT OF ‘NO GO’ ALTERNATIVE**

The ‘no go’ alternative would mean that the social environment is not affected as the status quo would remain. On a negative front, it would also mean that all positive aspects associated with the project would not materialise with no job creation and no revenue streams into the

local economy. Consequently, there are both positive and negative impacts associated with the 'no go' alternative that are extremely difficult to assess. The loss of job opportunities and revenue stream is likely to last over the medium term while the environmental, health and sustainable livelihood damage that the project may cause is likely to extend over the long term.

The social benefit of mining, in this case particularly coal mining, is extremely difficult; if not impossible to quantify. This is largely due to the number of variables that need to be considered and the dynamics of these variables as they unfold over time. In addition, there is little scientific evidence on which to evaluate the benefits of coal production, in terms of job creation and economic growth, against the environmental damage resulting in health issues and the loss of resources and subsequent damage to sustainable livelihoods (Shongwe, 2017). Consequently, it would be irresponsible to attempt to attach assessment criteria to the 'no-go' alternative, as any attempt to do so would be based on speculation and would be highly subjective, based on little or no scientific evidence.

## **7.7. CUMULATIVE IMPACTS**

It is clear that coal mining, electricity generation and industrial activities have, over the years, had a severe cumulative impact in the region with concerns being raised across an array of impacts that include.

- Air pollution and dust
- Economic concerns (procurement; infrastructure; housing and agriculture)
- Human health impacts
- Infrastructure particularly road transportation and housing
- Safety risks
- Social and cultural concerns
- Soil pollution
- Water quality.

The nature of these cumulative impacts is that it is difficult to disaggregate the impact of one operation from the many others in the area, thus making it difficult to address in a specifically focused study. In order to better understand the cumulative affects across the region it would be necessary to undertake a far broader study, stretched over a longer period, if any justice is to be done to the issues faced by communities across the area. Anything less is somewhat speculative and of limited use, particularly in a region so adversely affected by unplanned development over such a long period. In this regard The Bench Marks Foundation (2014, p. xiv & xvi) points out that:



*“Generally, coal mining stresses the environment during the extraction, beneficiation and transportation of coal to a power station. Human beings are also negatively affected in the coal fuel chain through exposure to harmful pollutants, and injuries and fatalities”.*

And calls for

*“ ... a proper scientific epidemiological study in the coal mining areas of the country to determine the full health impact of mining on the workers inside the workplace and communities near mines in terms of both respiratory and other health problems identified in this study.”*

Only based on a much deeper understanding of the actual situation can there be any meaningful assessment of the cumulative effects of developments across the region. The cumulative impacts are assessed in **Table 5** on a provisional basis.

## **7.8. ASSESSMENT IN ACCORDANCE WITH NSOVO’S ASSESSMENT CRITERIA**

The impacts are assessed below according to the methodology and rating matrix provided by NSOVO Environmental.

**Table 5: Impact assessment and mitigation measures<sup>4</sup>**

Environmental Parameter	Impacts	Before Mitigation							Recommended Mitigation Measures to be included in the EMPR	After Mitigation						
		Status	Extent	Duration	Magnitude	Probability	Significance	Significance Rating		Status	Extent	Duration	Magnitude	Probability	Significance	Significance Rating
<b>Construction Phase</b>																
Health and social well-being	Air quality	Neg	3	2	6	4	44	M	Where appropriate, apply dust suppression measures on a regular basis. Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.  Follow the mitigation measures suggested by the air quality specialist.  Put in place a monitoring system to monitor health risks throughout the life of the Project.  Appoint a community liaison officer to deal with complaints and grievances from the public.	Neg	3	2	4	4	36	M
	Noise and vibration	Neg	3	2	6	4	44	M	Maintain all vehicles and construction machinery to ensure the noise levels do not cause unnecessary and avoidable nuisance to the workforce and local communities.  Noise attenuation structures should be employed to minimise operational noise levels in areas where this is identified as problematic.  Blasting activities should be undertaken at specific agreed upon times to minimise disturbances.  Follow the mitigation measures suggested by the noise and vibration quality specialist.	Neg	3	2	4	4	36	M
	Hazard exposure	Neg	3	2	6	4	44	M	During construction, the sites should be fenced off to prevent access.	Neg	3	2	4	4	36	M

<sup>4</sup> For description of assessment technique, see 1.3.2 Impact assessment technique on pages 3-4.

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									<p>Fencing should be inspected on a regular basis and properly maintained by the contractor.</p> <p>Ensure that the appropriate warning signs are erected on all boundary fences cautioning against entering the construction area.</p> <p>Ensure all construction equipment and vehicles are properly maintained at all times.</p> <p>Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly.</p> <p>Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds and completely extinguishing fires before leaving them unattended, are strictly adhered to.</p> <p>Make staff aware of the dangers of runaway fire during regular tool box talks.</p>						
Increase in crime	Neg	3	2	2	2	14	L	<p>All workers should carry identification cards and wear identifiable clothing.</p> <p>Fence off the construction site and control access to the site.</p> <p>Appoint an independent security company to monitor the site.</p> <p>Encourage local people to report any suspicious activity associated with the construction site to the security company.</p> <p>If applicable, liaise with the Community Policing Forums within the vicinity of the mine.</p>	Neg	3	2	2	2	14	L
Increased risk of HIV infections	Neg	3	2	2	2	14	L	<p>Ensure that an onsite HIV and AIDS policy is in place and that construction workers are exposed to a health and</p>	Neg	3	2	2	2	14	L

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									<p>HIV/AIDS awareness educational programme within the first month of construction.</p> <p>Provide voluntary and free counselling, free testing and condom distribution services to the workforce.</p> <p>Where feasible extend the HIV/AIDS programme into the community with a specific focus on schools and youth clubs.</p>							
	Influx of job seekers	Neg	3	2	2	3	21	L	<p>Communicate, through Community Leaders and Ward Councillors, the situation regarding job opportunities created by the project.</p> <p>Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work.</p> <p>Draw up a recruitment policy in conjunction with Community Leaders and Ward Councillors and ensure compliance with this policy.</p> <p>Ensure that all discarded construction material that can be used to build informal structures is properly disposed of after construction.</p> <p>Ensure that any temporary accommodation used to house construction workers is completely dismantled and properly disposed of after use.</p> <p>Cooperate with local authorities to ensure all legislation preventing illegal settlement is enforced at all times.</p>	Neg	3	2	2	2	14	L
<b>Quality of the living environment (Liveability)</b>	Annoyance factor, access, and disruption of daily living patterns	Neg	3	2	6	4	44	M	<p>Ensure that, at all times, people have access to their properties as well as to social facilities.</p> <p>All vehicles must be roadworthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues.</p> <p>Heavy vehicles should be inspected regularly to ensure their road worthiness.</p>	Neg	3	2	4	4	36	M

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										The developer and contractors must ensure that the roads utilised for construction activities are either maintained in the present condition or repaired if damaged due to construction activities.							
	Disruptions to social and community infrastructure	Neg	3	2	4	3	27	L	Regularly monitor the effect that the construction activities are having on public infrastructure and immediately report any damage to infrastructure to the appropriate authority.	Neg	3	2	4	2	18	L	
	Transformation of the sense of place	Neg	3	5	6	5	70	H	Apply the mitigation measures suggested by the visual impact specialist.  The mitigation measures recommended in the Heritage Impact Assessment should be followed.	Neg	3	5	4	5	60	H	
	Traffic	See assessed in the traffic report						Implement the mitigation measures suggested by the traffic specialist.	See assessed in the traffic report								
Economic	Job creation and skills development	Pos	3	2	6	5	55	M	Wherever feasible, local residents should be recruited to fill semi and unskilled jobs.  Women should be given equal employment opportunities and encouraged to apply for positions.  A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction.	Pos	3	2	6	5	55	M	
	Local economic development	Pos	4	2	6	4	48	M	A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.  Implement a monitoring system to ensure that Exxaro and other contractors honour the local SMME recruitment preference policy.	Pos	4	2	6	4	48	M	
<b>Operational Phase</b>																	
Health and social well-being	Air quality	Neg	3	4	6	4	52	M	Where appropriate, apply dust suppression measures on a regular basis. Ensure that vehicles used to transport coal are fitted with tarpaulins or covers.  Follow the mitigation measures suggested by the air quality specialist.	Neg	3	4	4	4	44	M	

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									Put in place a monitoring system to monitor health risks throughout the life of the project. Appoint a community liaison officer to deal with complaints and grievances from the public.							
Noise and vibration	Neg	3	4	6	4	52	M	Maintain all vehicles and construction machinery to ensure the noise levels do not cause unnecessary and avoidable nuisance to the workforce and local communities. Noise attenuation structures should be employed to minimise operational noise levels in areas where this is identified as problematic. Blasting activities should be undertaken at specific agreed upon times to minimise disturbances. Follow the mitigation measures suggested by the noise and vibration quality specialist.	Neg	3	4	4	4	44	M	
Hazard exposure	Neg	3	4	6	4	52	M	Ensure that the appropriate warning signs are erected on all boundary fences, cautioning against entering the area. Ensure all operational equipment and vehicles are properly maintained at all times. Ensure that operators and drivers are properly trained and make them aware of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly.	Neg	3	4	4	4	44	M	
Increase in crime	Neg	3	2	2	2	14	L	All workers should carry identification cards and wear identifiable clothing. Encourage local people to report any suspicious activity associated with the mine to the security company. If applicable, liaise with the Community Policing Forums within the vicinity of the mine.	Neg	3	2	2	2	14	L	
Increased risk of HIV infections	Neg	3	2	2	2	14	L	Ensure that an onsite HIV and AIDS policy is in place and that construction workers are exposed to a health and HIV/AIDS awareness educational programme.	Neg	3	2	2	2	14	L	

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									Provide voluntary and free counselling, free testing and condom distribution services to the workforce.  Where feasible extend the HIV/AIDS programme into the community with a specific focus on schools and youth clubs.							
	Influx of job seekers	Neg	3	2	2	2	14	L	Communicate, through Community Leaders and Ward Councillors, the situation regarding job opportunities created by the project.  Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work.  Draw up a recruitment policy in conjunction with Community Leaders and Ward Councillors and ensure compliance with this policy.  Cooperate with local authorities to ensure all legislation preventing illegal settlement is enforced at all times.	Neg	3	2	2	2	14	L
Quality of the living environment (Liveability)	Annoyance factor, access, and disruption of daily living patterns	Neg	3	2	6	4	44	M	All vehicles must be roadworthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues.  Heavy vehicles should be inspected regularly to ensure their road worthiness.	Neg	3	2	4	4	36	M
	Disruptions to social and community infrastructure	Neg	3	4	4	3	33	M	Regularly monitor the effect that operational activities are having on public infrastructure and immediately report any damage to infrastructure to the appropriate authority.	Neg	3	4	4	2	22	L
	Transformation of the sense of place	Neg	3	5	6	5	70	H	Apply the mitigation measures suggested by the visual impact specialist.  The mitigation measures recommended in the Heritage Impact Assessment should be followed.	Neg	3	5	4	5	60	H
	Traffic	Neg	See assessed in the traffic report					Implement the mitigation measures suggested by the traffic specialist.	See assessed in the traffic report							
Economic	Job creation and skills development	Pos	3	4	6	5	65	H	Wherever feasible, local residents should be recruited to fill semi and unskilled jobs.  Women should be given equal employment opportunities and encouraged to apply for positions.	Pos	3	4	6	5	65	H





## 8. SHAFT AND CONVEYOR ALTERNATIVES

Two open shaft options and various conveyor belt options are proposed. Although on a general basis no socially preferred option emerges, considered from a soil, land use and land capacity perspective, to “...support the objective of conserving as much arable and undisturbed land as possible and thus favour agricultural production continuity on the farm situated within the immediate vicinity”, Option 1 emerges as the preferred option due to the benefit of retaining arable land and is thus supported on a social basis. On similar grounds, due to it posing less of an impact from a soil, land use and land capability perspective, conveyor belt Option 1 is also supported on a social basis.

However, it is noted in the Soil, Land Use and Land Capability Assessment, that the difference in the impact of the two shaft options is minor and that Option 1 is likely to impact significantly on the life of mine, thus making Option 2 the only viable option. Due to this, Option 2 is deemed acceptable from a social perspective.

## 9. DISCUSSION

Although the project will lead to the creation of jobs over the medium term, it is also likely to result in a high risk to the environment over the longer term cumulative basis<sup>5</sup>. This will be exacerbated on a cumulative basis, considering the extent of development in the area. Based on the lack of scientific information currently available, it is rather difficult to make any accurate assessment of the social value and impact of the project. As Shongwe points out;

*“Although South Africa has advanced policies and regulations, designed to protect the environment and people living in mining communities, governance and implementation remains problematic and highly contentious. This, coupled with inadequate consultation and communication with communities, has led to a situation which is dominated by highly politicised agendas with little factual basis or stakeholder co-operation”* (Shongwe, 2017, p. 88).

Apart from this, the following extracts, from a recent report released by the Intergovernmental Panel on Climate Change (IPCC) highlight the urgency of reducing carbon dioxide (CO<sub>2</sub>) emissions along with other greenhouse gases in order to stabilise global temperatures.

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<sup>5</sup> See for instance Environmental Monitoring Group, 2010; Kekana, 2018; Gray H, 2019; Laisani & Jegede, 2019; SAnews.gov.za, 2019; Vlavianos, 2019; West, 2019; Adesinal, Pikethl, Qhekwanal, Language, & Mkhathswall, 2020; Gilder & Rumble, 2020; Makoni, 2020; amongst many others.

*“Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years*

*Observed warming is driven by emissions from human activities, with greenhouse gas warming partly masked by aerosol cooling*

*Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes*

*Future emissions cause future additional warming, with total warming dominated by past and future CO<sub>2</sub> emissions”.*

A situation labelled by the UN Secretary-General, António Guterres, as nothing less than "a code red for humanity" requiring decisive and immediate action.

With this in mind, it is important that developers consider outcomes that reach beyond the operational life of the mine and leave a positive legacy; with some value being added to the lives of local communities (Franks, 2012, p. 8). If this could be achieved, it may mitigate somewhat against current environmental damage. However, despite the damage and associated health risks identified over several years in the area, there is little evidence of either the political or corporate will to address these concerns.

Regarding the legislative and policy fit of the project, it would be important that the six principles, as laid out in the **Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector** and listed below, are applied to the project.

*“1. Apply the law*

*2. Use the best available biodiversity information*

*3. Engage stakeholders thoroughly*

*4. Use best practice environmental impact assessment (EIA) to identify, assess and evaluate impacts on biodiversity*

*5. Apply the mitigation hierarchy in planning any mining-related activities and to develop robust environmental management programmes (EMP)*

*6. Ensure effective implementation of the EMP, including adaptive management”<sup>6</sup>.*

It is also evident from the Air Quality Impact and Climate Report (Kijani Green Energy, 2021, p. 35 & 39) that.

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<sup>6</sup> Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute, 2013, p4.

*“A moderate cumulative impact is anticipated from the indirect climate change impact of the project, as it is anticipated that the addition of carbon to the atmosphere resulting from the sale and subsequent combustion of the product of the mine will contribute to the total carbon emissions of the planet, regardless of where this combustion ultimately takes place.”*

And that.

*“There are no viable offset programs that would be able to offset the Scope 3 emissions of the project, especially as regards the eventual combustion of the product.”*

All this, however, needs to be seen against the background of the recently signed, **Just Energy Transition Partnership (COP26)**, which has the following three goals attached.

- Early retirement of coal plants,
- Building cleaner energy sources, and
- Support for coal-dependent regions.

Nicholas Kumleben, a senior analyst at GreenMantle (Kumleben, 2021), points out that *“[t]he agreement is the most impressive thing to come out of the COP26 climate summit”* and highlights the real concern that:

*“The transition away from coal threatens 120,000 jobs at heavily unionized mines and power plants, in a country that by some measures has the world’s highest unemployment rate and where one job often feeds a large family. But the energy transition will also require new energy sources and thus new jobs (though those rarely go to former coal workers.)”*

*“Moreover, South Africans will benefit greatly from the deal. The country’s coal-based electricity system provides unreliable power at eye-watering prices, stunting the country’s economic growth. At the local level, heavy pollution from coal mining and coal power stations has disastrous effects on the environment and on public health: A leaked South African government study estimates that 5,000 people die each year from pollution in the nation’s coal belt. A transition toward cheaper, decentralized renewable power, supported by natural gas, promises to provide a cheaper, cleaner, and more secure electricity supply.”*

It is against this background that the Department of Forestry, Fisheries and the Environment will need to consider the authorisation of the project. In an attempt to balance the transition from coal against the threat to job losses and damage to the environment and public health.

The fact that the coal will be used for export purposes cannot exonerate the mine from the emissions that will eventually result in the burning of the coal and its contribution towards the international greenhouse gas footprint; which commences with extraction, transportation and ultimately burning. See for instance damage caused to Australia and Indonesia's reputation on climate change due to the export of coal (Readfearn, 2021).

## **10. IMPACT STATEMENT**

It is evident that the project will result in a number of job opportunities and will contribute towards the regional and national economy. Considering the signing of the Just Energy Transition Partnership (COP26) and support for coal-dependent regions, the project fits with governmental policy and is likely to be supported. Nevertheless, these contributions are likely to extend over a limited period and need to be assessed against any long term environmental damage that may occur as a result of the project.

What is of greatest concern are the cumulative affects associated with the various developments across the region. It is important to consider these effects on an interdisciplinary basis and to include such areas of specialisation as those covered by environmental economists, environmental scientists and health specialists, amongst others. The aim should be to scientifically assess the environmental health and stability of the area; to quantify the long-term cost of environmental damage to the area and the extent of health and safety hazards faced by communities across the region. Without such data, collected across the wider region over an extended period, it would be highly speculative and irresponsible to forward any opinion as to whether the project should proceed when considered on a cumulative basis, as any understanding of the social issues faced by communities across the region would need to be based on solid scientific evidence which currently is limited. Obtaining such broad based evidence is well beyond the scope of individual organisations and enterprises and would need to be tackled at a national level and be incorporated into provincial and national policy and legislation to protect the health and livelihoods of citizens.

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