NGT INFRACO

Infrastructure | Built Environment | Conservation

PROJECT TITLE:

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF EXXARO DORSTFONTEIN WEST EXPANSION PROJECT WITHIN THE JURISDICTION OF EMALAHLENI LOCAL MUNICIPALITY, NKANGALA DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE, SOUTH AFRICA

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Socio-Economic Impact Assessment Study for the Proposed Exxaro DMC Mine Expansion Programme within Emalahleni Local Municipality, Nkangala District Municipality, Mpumalanga, South Africa.

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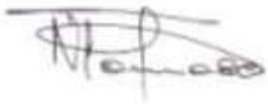
ACKNOWLEDGEMENT OF RECEIPT

CLIENT:	**NSOVO ENVIRONMENTAL CONSULTANTS**
CONTACT PERSON	Mr. Rofhiwa Magodi
TELL NUMBER	011 041 3689
CELL PHONE NUMBER	061 438 4440
E-MAIL ADDRESS:	rofhiwa@nsovo.co.za

CONSULTANT	**NGT INFRACO (PTY) LTD**
AUTHORS	Mr Nkosinathi Tomose
RESEARCH	Mr. Yanga Kolisi, Ms. Mbalenhle Mabele and Ms Kuni Mosweu
REVIEW AND QUALITY CONTROL (INTERNAL)	Mr. Robby Jaya
TELEPHONE NUMBER	011 888 0209
CELL PHONE NUMBER	083 948 0651
E-MAIL ADDRESS:	Nkosinathi@ngtinfraco.co.za / ngtholdings@gmail.com

CONTACT PERSON:	Head of Research, Corporate Affairs & Business Development
SIGNATURE:	

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DECLARATION OF INDEPENDENCE

Mr Nkosinathi Tomose, for NGT Infraco have compiled this report. The views expressed in this report are entirely those of the authors and no other interest was displayed during the decision-making process for the project.

CONSULTANT:	**NGT Infraco**
SPECIALIST NAME	Mr. Nkosinathi Tomose
QUALIFICATIONS	• Master of Science – Rock Art Studies (Archaeology and Heritage) • BSc Honours - Archaeology • BA Geography and Archaeology • Candidate Master of Architecture – Sustainable and Energy Efficient Cities (Major electives – Environmental Impact Assessment and Sustainability Reporting)
YEARS OF EXPERIENCE IN THE INDUSTRY	13 Years
SIGNATURE	

CLIENT APPROVAL

CLIENT:	**NSOVO ENVIRONMENTAL CONSULTANTS**
NAME	Mr. Rofhiwa Magodi
DESIGNATION	Environmental Impact Assessment Consultant
SIGNATURE (HAND SIGNATURE)	

EXECUTIVE SUMMARY

NGT Infraco has been appointed by Nsovo to conduct a SEIA study for the proposed extension of the existing Discard Dump Extension and the construction of a conveyor belt for the transportation of coal from the DCM West to the DCM East on Portion 1 of the Farm Boschpoort 211 IR in Emalahleni Local Municipality (ELM) within Nkangala District Municipality (NDM) in Mpumalanga Province (MP), South Africa.

In terms of the South African Biomes, the receiving environment falls within Grassland Biome in the Highveld. In terms of industries, the ELM is characterised by a number of industries which include: mining (e.g. a total of 51 mines have been identified within ELM), energy production (e.g. a total of 11 power stations have been identified within the ELM), metal industry, farming (both subsistence and commercial farming) and social services most concentrated at Emalahleni (formerly known as Witbank) Central Business District (CBD). Coal is the most abundant resources due to a large number of coal fields found throughout most of MP and predominantly within NDM. The name of Emalahleni means a "place of coal". ELM and its economy are growing rapidly based on coal mining industry which is the dominant industry in the receiving environment. This growth is also influenced by other associated activities such as power generation and the metal industry which combined with coal industry and associated industries that support these activities and social services are attracting an inflow of migrants to the ELM. Independent businesses such as trucking, manufacturing and special goods and services, real estate amongst others business that have also developed in EML as a direct and industry influence by the coal mining industry which the current project forms part of. However, such growth and development of the ELM is not without its own challenges; for example, according to the South African Cities Network (SACN) "…. growth in industry and population has far outpaced Emalahleni's ability to absorb the population or to provide basic services and housing. In addition, the city suffers from water and air pollution problems" (SACN, 2014). These challenges are further compounded by the municipality's current internal governance difficulties to provide the much-needed services. It is from this context that we should understand the proposed development and its positive and negative socio-economic impacts. The proposed development activities within the receiving environment include:

- The extension of the existing Discard Dump which has become necessary due to the life of the current discard dump coming to an end in 2022. The discard dump extension will cater for both slurry and discard coal and is expected to provide for the life of mine (*Figure 1*).

- The construction of a conveyer belt from Dorstfontein West, which will be linked to the conveyor systems at Dorstfontein East to ensure that coal is conveyed from Dorstfontein West to Dorstfontein East where the coal will be loaded into trains and thereafter transported to Richards Bay Terminal.

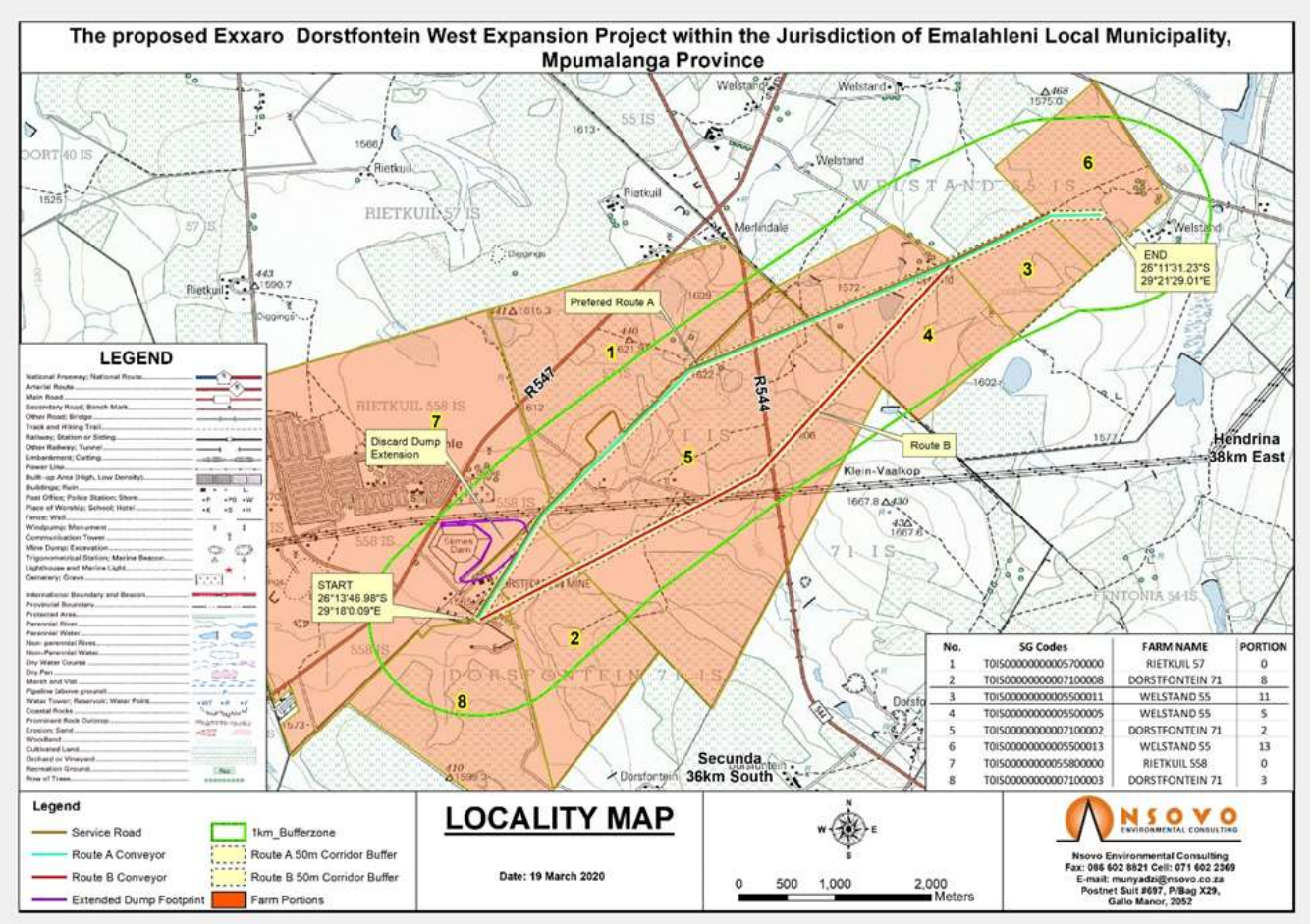

Figure 1- Proposed project footprint

The current SEIA study is conducted independently and forms part of the EIAR process conducted by Nsovo in terms of National Environment Management Act (NEMA) No. 107 of 1998 and the 2014 Environmental Impact Assessment (EIA) Regulations (as amended). The standard NGT Infraco SEIA entails the development of a Baseline Socio-Economic Profile of the receiving environment. The Baseline Socio-Economic Profile assessed amongst other forms of data, previous studies conducted in and around the proposed study area or the receiving environment. The baseline outlines the socio-economic conditions of the receiving environment prior to development taking place. Based on the information obtained from the Baseline Socio-Economic Profile, the site survey and identified Socio-Economic receptors, the SEIA study then assesses potential positive and negative impacts associated

with a proposed project within the receiving environment by considering impacts before construction, during the project construction phase, operation phase, closure and rehabilitation phase of the project.

On conclusion of impact assessments and impact ratings, conclusions are drawn on key project positive impacts and negative impacts that have been identified. Recommendations are also made, and this involves developing strategies and recommendations to the project proponent on how to enhance the positive Socio-Economic Impacts associated with the project. The aim of this is to develop a project that will be mutually beneficial to all stakeholders affected by the development as well as the project proponent. The recommendations also include mitigation measures that should be practical, cost-effective and implementable to by the project proponent, aimed at reducing or minimising the negative Socio-Economic Impacts that will result from the construction and operational phases of the project.

The site survey was conducted on Friday, the 24th of May 2019 by Mr. Nkosinathi Tomose (Principal Consultant on the Project (and, Head of Research, Corporate Affairs & Business Development - NGT)) and Miss. Kuni Mosweu (Environmental and Sustainability Officer- NGT Infraco). The survey was deemed necessary for the specialists to familiarise themselves with the receiving environment, and it was conducted on foot, while a vehicle was used to access the proposed development area. Photographic material of the receiving environment was also taken as part of the survey to give context to site conditions. After conducting a Baseline Socio-Economic Profile of the study area, assessing potential impacts associated with the project from planning, construction, operation, closure and rehabilitation the following conclusions and recommendation are made regarding the proposed development:

Conclusions:

- It is concluded that the significance of the Positive Socio-Economic benefits associated with the proposed development exceed the significance of the Negative Socio-Economic impacts**.** Below is the list of **Positive Socio-Economic Benefits**:
    - The proposed mine expansion and prolonged life of the mine will result in sustainable jobs at the mine and will increase employment opportunities over the medium and long term. These include skilled, semi-skilled and under skilled labour which could consist of locals (in and around the mining area) as well as regional and national communities. Based on information provided in the Mining Works Programme, the proposed project will certainly

require both skilled and unskilled labour; therefore, it is expected to yield positive spinoffs for the locals, the province and the country at large. From the existing mine works programme, the proposed project will generate approximately 50 jobs, both skilled and unskilled labour and approximately 10 more jobs for operationalisation of the project.

- The mine is already a socio-economic anchor within the immediate communities and more so for the country. The proposed project's planned infrastructure, excluding the actual mine investment, will further stimulate the local economy, given that total expenditure of R120,000,000.00 is budgeted for the proposed project's planned infrastructure which translates to 0,003% of Emalahleni's Gross Geographic Production (GGP) calculated at 40,5 billion.
- Though not based on empirical data derived from a Traffic Impact Assessment study, the proposed conveyor belt will undoubtedly result in reduced traffic volumes on the road from trucks transporting coal from the DCM West to the DCM East as well as from vehicles and trucks on the roads i.e., the R547 and R544.
- The proposed existing Discard Dump Extension is situated in an area that is already disturbed and is also located in proximity to already existing mining infrastructure .i.e. the Slimes Dam, therefore it will not have an impact on the agricultural activities and livestock grazing.
- The proposed expansion of the existing discard dump will result in better management of the waste produced by the mine within a controlled environment. This measure will minimise the Negative Socio-Economic Impact on the ecological support services and the environment in general.

However, there will always be Negative Socio-Economic consequences associated a large capital project such as this one regardless of the efforts by the project proponent to minimise them. It is concluded that, the identified Negative Socio-Economic consequences associated with this project have been identified as short to medium term impacts and is expected to cease or decrease during the operational phase of the project i.e. these are impacts mostly associated with the construction phase of the project. Below is the list of **Negative Socio-Economic Impacts**:

- Proposed development is located in an area characterised by a variety of agricultural activities which include among others: maize and soya beans cultivated fields and grazing fields for livestock i.e. cattle and goats. The proposed conveyor belt and discard dump will impact on these ecological support services:

- There will be reduced agricultural land for both crop and livestock farmers as the result of the conveyor belt and service road for maintenance and special purpose vehicles.
- As such there will be a loss in agricultural potential arable land and grazing fields, but these impacts are localised and will not threaten the local, regional, provincial and national food security.
- Direct impacts associated with farming from a localised perspective include:
  - ❖ Loss of agricultural land and consequently a negative impact on local farmer's annual agricultural yields. However, these impacts are minimal and are only associated with the planning and construction phase of the project. They will cease with the operational phase of the project as farmers will have already adapted to changing landscape by either exploring new lands within their properties or finding alternative forms of agriculture that would result in high yields within their farms such as pivot farming methods or controlled stock grazing methods.
  - ❖ The local livestock, which is dominantly cattle and goat from the nearby community of Thubelihle Township, uses the area north and south of proposed Route A of the proposed conveyor belt and service road. South of this Route the community can access water from the tributary for livestock. Constructing the proposed conveyor belt on Route A will negatively impact on the community and their livestock as they will not be able to access water bodies. The result is reduced agricultural fields during the project construction phase, but these impacts will cease with the operational phase of the project. The conveyor belt will prohibit the herders and their cattle's from accessing the water bodies for their cattle to drink. Consideration of Route Alternative A for the conveyor belt would imply that the cattle herders would have to access the R547 south of the mine operations in an area with no traffic lights to cross the road, which might result in roads fatalities i.e., livestock vs. vehicles vs. trucks collisions.

- Water bodies form the second group of ecological support services that will be impacted. These include surface water bodies; for example, the construction of the proposed infrastructure will transform the landscape and alter the water catchment of the receiving environment. Direct consequences will include:

- Altered catchment, tributaries, wetlands and small dam due to water diversions to accommodate the planned conveyor belt and service road.

- .

Based on the above it is concluded that the proposed expansion of the Dorstfontein West Mine will result to minimum negative impacts on water bodies in the study area. But these impacts are insignificant as compared to the positive once and mitigation measures have been put in place.

Recommendations:

When all is considered, the socio-economic benefits of the proposed project far outweigh the negative impacts; therefore, from a socio-economic point of view, there is no impediment to granting the EA to Exxaro as it will mostly have a positive socio-economic impact on the receiving environment. This should be dependent on the adherence and implementation of the following recommendations:

- Route B of the proposed conveyor belt should be selected as the preferred route as it will have less impacts on agricultural-cultivated fields (it traverses the least agricultural-cultivated fields as compared to Route A). This route will not pose access restrictions for local farmer's cattle to the tributary that traverses the site from west to east as is the case with Route A for the conveyor belt.
- From a socio-economic perspective, proposed extension of the existing discard dump will not have any negative socio-economic (e.g. impact on agricultural activities and livestock grazing) or environmental effects; it is situated in an area that is already disturbed therefore it will not have an impact on agricultural activities and livestock grazing.
- The proposed development should leverage the opportunity for economic upliftment by ensuring that at least or a minimum of 30% of the project construction value is allocated to local procurement for industries in Mpumalanga Province so that the project has a more direct multiplier effect in terms of the local economy of the region. If the project requires high skilled labour for construction, the main contractor must ensure that they procure some of its goods and services locally to benefit the local economy and result to increased local employment where possible. This condition must be aligned with the mine's Socio-Economic Development Plan and Social Labour Plan.
- Projects of this nature often fail or get delayed due to poor communication between the project proponent and I&APs who would want to inform the project. It is recommended that the mine should develop a clear and concise two-way communication strategy, with its community or stakeholder liaison officer communicating the plan with mine stakeholders. Mpumalanga is a volatile landscape where community representation in such a project is

always contested and negotiated. The two-way communication strategy would assist the mine to ensure that it keeps its stakeholders informed about the project at all times and avoid a potential strikes or labour or community unrest. This will include, among other things:

- Having a grievances procedure in place that is accessible to everyone.
- Contributing to skills development through their corporate governance and Corporate Social Responsibility (CSR) initiatives with the main focus on female empowerment.
- Having plans in place to avoid the displacement of the nearby farming community.
- Developing water recycling/ purifying technologies that will allow the mine to produce and maintain its operational water.

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LIST OF ABBREVIATIONS

ACRONYMS	DESCRIPTION
AUTHORITIES	
NGT	Nurture, Grow, Treasure
SARHA	South African National Heritage Resources Agency
DMR	Department of mineral Resources
DWS	Department of Water and Sanitation
DISCIPLINE	
SEIA	Socio-Economic Impact Assessment
DCM	Dorstfontein Mining Complex
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ELM	Emalahleni Local Municipality
EMPr	Environmental Management Programme
IDPs	Integrated Development Plans
MP	Mpumalanga Province
NDM	Nkangala District Municipality
RQC	Review and Quality Control
LEGAL	
NEMA	National Environmental Management Act
NWA	National Water Act
NEMWA	National Environmental Management Waste Act
NEMAQA	National Environmental Management: Air Quality Act
NHRA	National Heritage Resources Act
CARA	Conservation of Agriculture Resources Act
PAIA	Promotion to Access to Information Act
MHSA	Mine Health and Safety Act

1. INTRODUCTION

1.1. Project Background

Exxaro Coal Central (Pty) Ltd ("Exxaro) 's Dorstfontein West Mine previously mined 2 Seam and is now mining 4 Seam via bord and pillar underground mining method on the western portion of their mining rights and is intending to expand the existing discard dump facility and to construct a conveyor belt at the Dorstfontein West Mine (DCM) which is located within the jurisdiction of Emalahleni Local Municipality in the Mpumalanga Province. The Life of mine is projected to be until 2042 whilst the existing discard dump is coming to the end of its life in 2022 .Subsequently, Exxaro proposes to undertake the following activities:

- Expansion of the existing discard dump which is coming to the end of its life a by 2022; and
- The construction of a conveyor belt and associated service road, from DCM West which will be linked to the conveyor systems at DCM East to ensure that coal is conveyed from DCM West to DCM East where the coal will be loaded into trains and thereafter transported to Richards Bay Terminal; Infraco has been appointed by Nsovo Environmental Consulting as an independent socio-economic consultant on the project to provide a socio-economic study for the project aiming to assess and propose mitigation measures for the mitigation of negative socio-economic impacts within the receiving environment as well as strategies on how the mine should enhance its positive socio-economic benefits associated with the proposed mining activities and its associated infrastructure.

1.2. Terms of Reference and Scope of Work

NGT Infraco has been appointed by Nsovo Environmental Consulting as an independent socio-economic consultant on the project to provide to provide a socio-economic study for the proposed mine expansion programme at Exxaro Dorstfontein West which includes: Exxaro Dorstfontein West existing Discard Dump Extension and service road and conveyor belts for transportation of coal from west to east. The aim is to assess socio-economic impacts associated with the proposed development and to propose mitigation measures for the mitigation of negative socio-economic impacts and strategies on how the mine should enhance its positive socio-economic benefits associated with the proposed project. The SEIA informs the EIA process and provide inputs on the EMPr on how the socio-economic impacts associated with the proposed development should be managed and mitigated. The following informed the terms of reference for the appointment of NGT Infraco as the socio-economic consultant on the project:

- Assessment of socio-economic impacts, both negative and positive, associated with the project in the following stages of the project:
    - Socio-economic impacts associated with the pre-construction phase of the project,
    - Socio-economic impacts related to construction phase of the project,
    - Socio-economic impacts related to the operation phase of the project.
    - Assessment of project "Multiplier Effect" in the economy of ELM and spill-over to the District Municipality and regional GDP
- Provision of specialist opinion on the potential socio-economic benefits that could be derived by the developer should it implement project recommendation and the benefits of the project to the immediate community and the community of ELM at large
- Compilation of a Socio-Economic Impact Assessment (SEIA) detailing all study findings, conclusions, and recommendations.

1.3. Project Location

The proposed DCM West expansion project is located on Portion 1 of the farm Boschpoort 211 IR within ELM, NDM, Mpumalanga Province, South Africa (*Figure 2*). It is approximately 8km from Kriel (situated in the south-west), 20km north-east of Delmas, 33km south-west of the town of Ogies which connects to Richards Bay Terminal. The receiving environment is ensconced between the following towns of ELM: Ogies (north-west), Hendrina (north-east), Kriel (south-west) and Bethal (south-east) (*Figure 3*). The R547 road is from Kriel to the town of Emalahleni is found from the south-west, west, and north of the study area. The proposed development area is situated south of the busy intersection of R547 and R544 which traverse through the site mid-way to the south and covers approximately 151 hectares in extent.

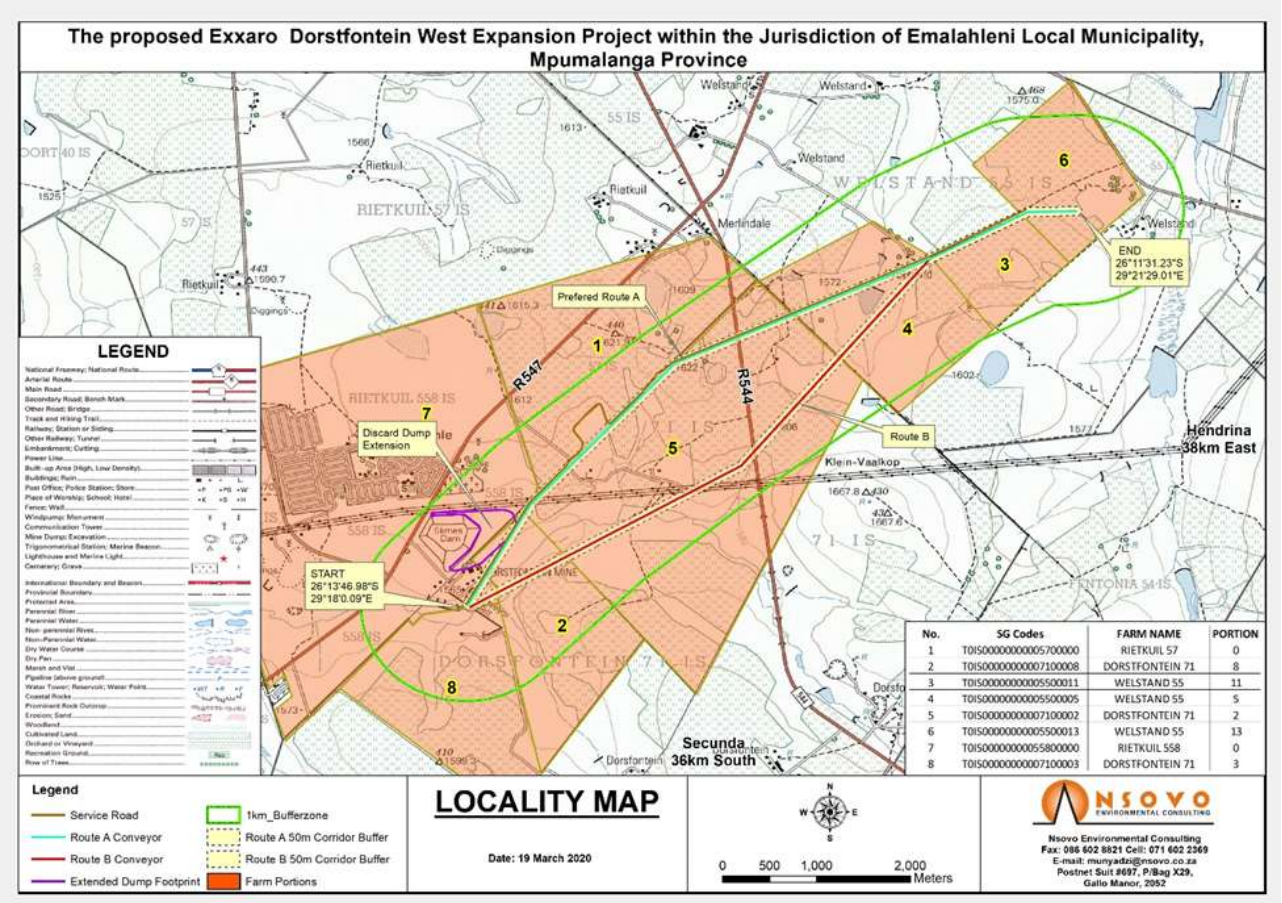


Figure 2- Location of the study area showing the properties of Exxaro (Source: Nsovo)

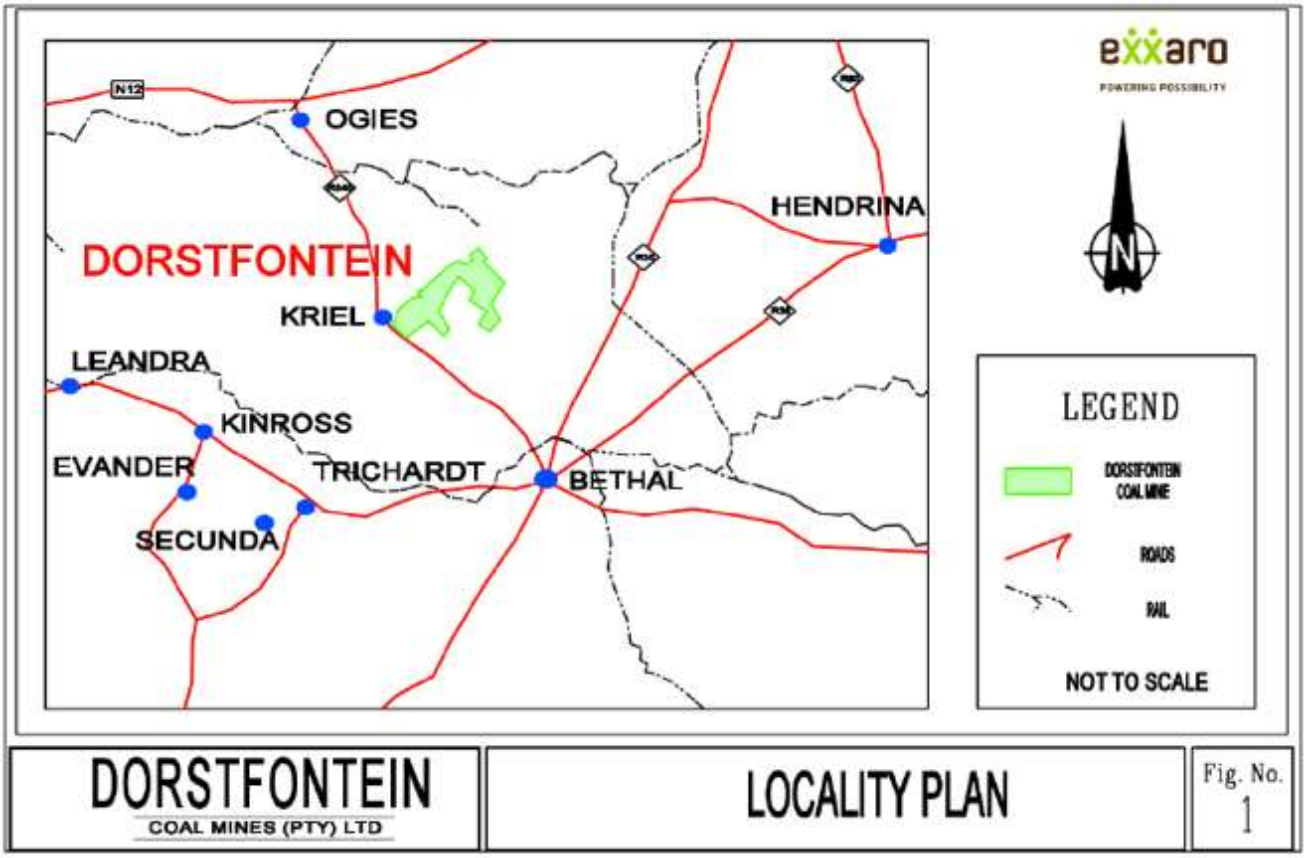
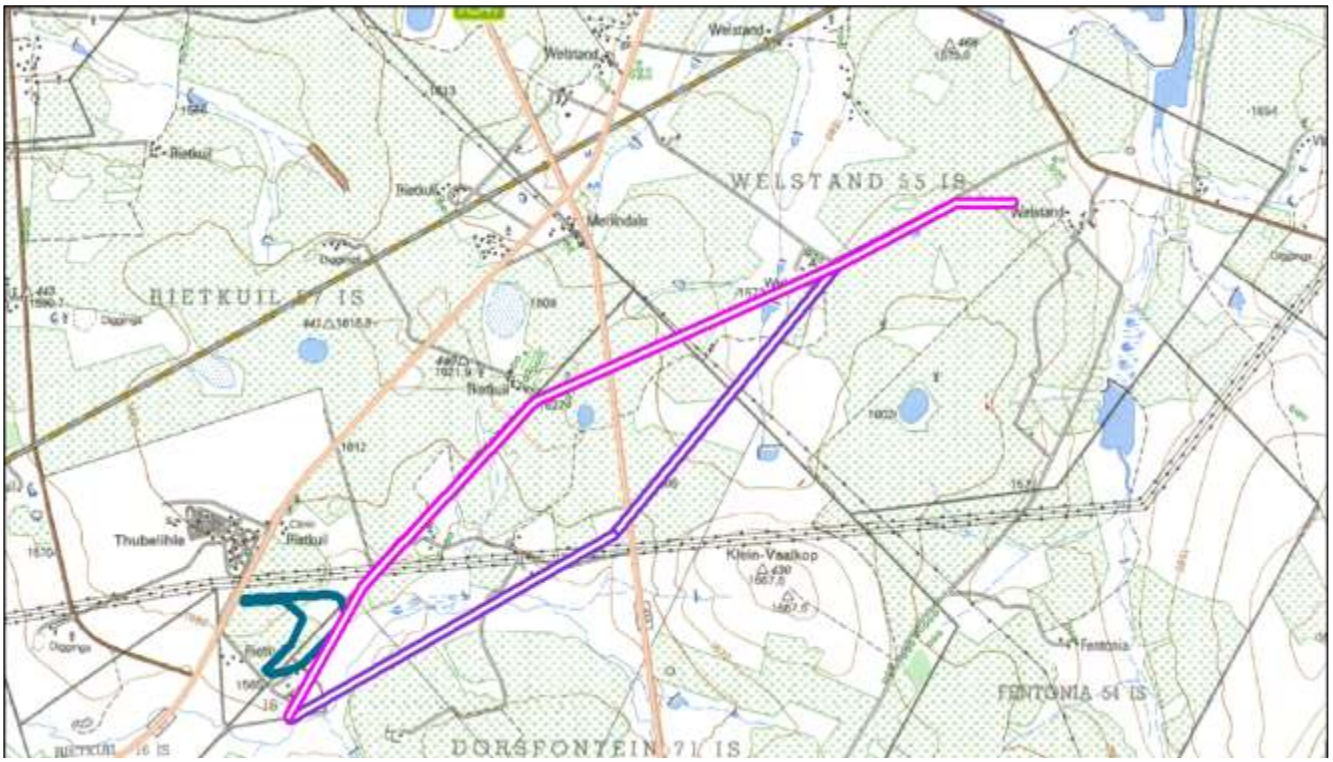


Figure 3- Location of the receiving environment in relation to towns of ELM

1.4. Description of Site Conditions

The proposed development area/receiving environment is situated within the East Highveld Grassland Biome which is characterised by transformed landscape through agriculture, mining and human settlement. A number of ecological support services are found within and immediately outside the proposed development areas and this include:

- Wetland Environment The environment includes perennial water bodies that include tributaries of Steenkoolspruit, pans and few farm dams (also see *Figure 5*);
- Terrestrial Environment;
- Agriculture (*Figure 5-7*); and



Proposed Dorstfontein West Pillar extraction mining, extension of the existing Discard Dump Extension and construction of a conveyer linking DCM West and DCM East

Date: 17 March 2020

Figure 4- Map showing the proposed development infrastructure

Figure 5- Cultivated land

Figure 6-Cultivated fields at Site 3

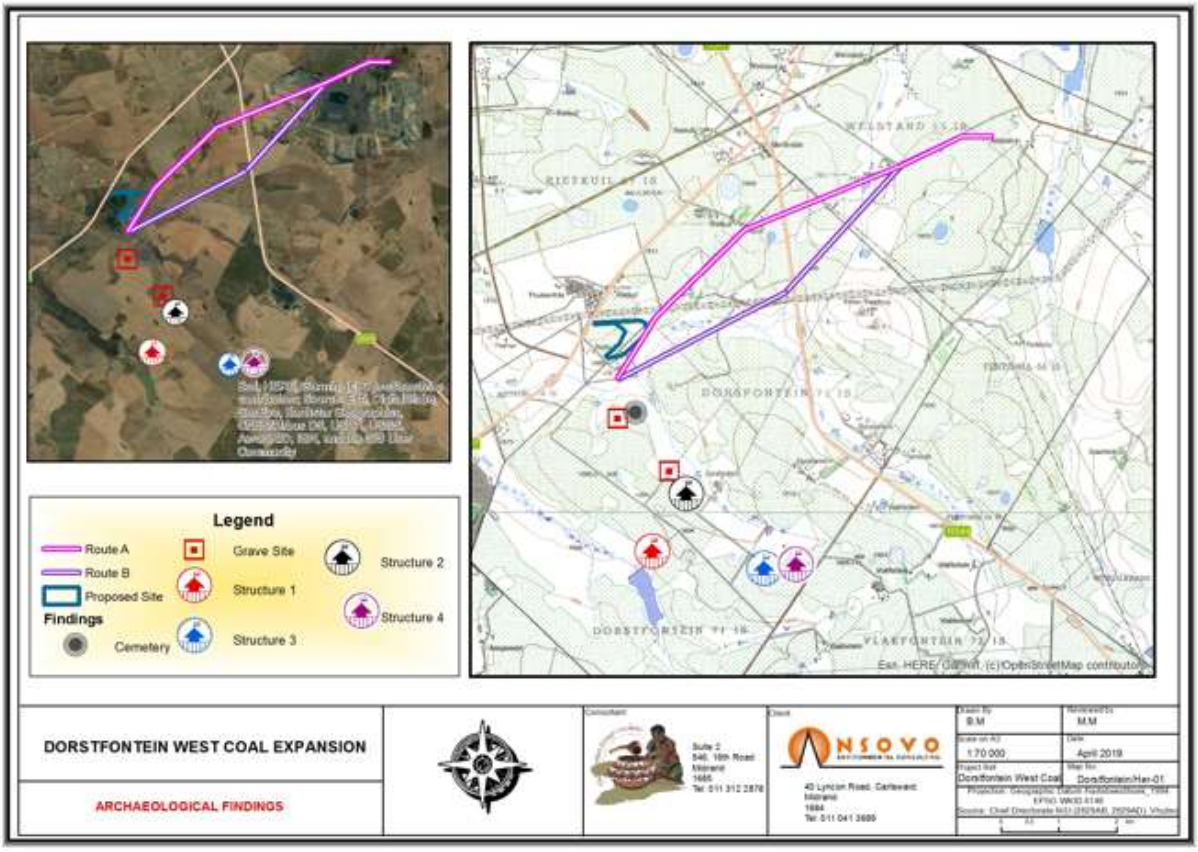


Figure 7-Map showing some of the identified graves in the receiving environment. The red arrow points to 15 graves identified as part of socio-economic study survey. Note! The graves will not be impacted

Figure 8-Thubelihle cemetery site

Several farm roads and mine access criss-cross the receiving environment, the conveyor belt will cross the R544 (*Figure 7*). In terms power infrastructure, there are Eskom transmission (*Figure 9*) and distribution powerlines (*Figure 10-11*) that traverse the study area from west to east (*e.g. Figure 5 and Figure 6*). The coal mines and power stations also surround the study area Ga-Nala, previously known as Kriel, is approximately 8 km to the South-West of the current operations, while Thubelihle is approximately 5.5 km South-West (*Figures 12-13*) and Dorstfontein West is approximately 5 km South-West of Dorstfontein East. Existing mine processing plants define the mine complex, and an existing discard dump which will be extended.

Figure 9- Eskom Transmission Powerlines along proposed Route A conveyor belt

Figure 10- Distribution line to Dorstfontein farm labours compounds.

Figure 11- Transmission line to Dorstfontein West shaft and main mine plant

Figure 12- Distance view of Thubelihle

Figure 13-Thubelihle township from Thubelihle cemetery site

Figure 14-Trucks to and from Kriel along the R547

In terms of mining activities, the Dorstfontein Mining Complex (DMC) is one of six of Exxaro Coal Central (Pty) Ltd (Exxaro's) Mining Complexes, this complex comprises of Dorstfontein West which is an underground colliery, Dorstfontein East which is an opencast operation and Rietkuil (Vhakoni) a Prospecting Right. Dorstfontein West produces 74Kt Run of Mine (ROM) per month on average and washes coal to produce a 5 800kcal/kg inland product, while raw is mixed with DCME product. Dorstfontein East produces 180Kt ROM per month and washes coal to produce 4 800kcal/kg and 5 300kcal/kg export products. Both operations have on-site washing plants and a strong resources base. The mine infrastructure includes the mine shaft and mine plant (*Figure 15*), crusher plant and coal stockpile (*Figure 16*).

Figure 15-Dorstfontein West mine infrastructure and shaft

Figure 16-Coal stockpile

1.5 Legal Framework and Guidelines

The DCM currently operates under the existing approved EMPr for its mining operation (Reference Number: **MP 30/5/1/2/2/51MR**) under the MPRDA) and an existing WUL, License Number: 04/B11B/ACGIJ/957, issued under the NWA. In terms of the environmental management process; the proposed project triggers some listed activities in terms of Listing Notice 1 and 2 of EIA Regulations 2014, as amended (*Table 1*). These include:

1.5.1. Environmental Regulations Triggered

Table 1: Activities applicable to the project in terms of environmental management process but have the bearing of the current BSEIA.

Legislation	Regulation/Section of the Act	Triggered Listed Activities
National Environmental Management Act, 1998 (Act, No. 107 of 1998)	Government Notices R.983 of the EIA regulations as Amended	Listing Notice 1: Activities , 12, , 19, 28 (II) and 48
National Environmental Management Act, 1998 (Act, No. 107 of 1998)	Government Notices R984 of the EIA regulations as amended	Listing Notice 2: Activity 6 and 27
National Environmental Management: Waste Act, 2008 (Act, No. 59 of 2008)	Government Notice R921 under NEM: WA	Category B7 and 10
National Water Act, 1998 (Act, No. 36 of 1998)	Section 21	Activities: C, I, and G

1.5.2. The Constitution of Republic of South Africa

In terms of Section 24 of the Constitution of the Republic of South Africa (108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into overall project management to fulfil the requirements of Section 24 of the Constitution. This project involves infrastructure that will discard mine operations by-products, as well as transportation of coal resources which both have a potential to negatively impact the environment through black and grey water leaching from the existing discard dumps which will be extended as well as pollutants from the dumps and conveyor belt.

1.5.3. National Environmental Management Act (Act No. 107 of 1998)

The NEMA, No. 107 (as amended), contains a set of principles in Chapter 2 that govern environmental management. These principles were adhered to and taken into consideration during the Impact Assessment Phase for the construction, operation, and decommissioning phases of a project. GNR 982 - 985 are the specific regulations that should be taken into consideration. The environment is defined in the NEMA as the following. “Environment “means the surroundings within which humans exist and that are made up of:

- The land, water and atmosphere of the earth;

- Micro-organisms, plant and animal life;
- Any part or combination of (i) or (ii) and the interrelationship among and between them; and;
- The physical, chemical, aesthetic and cultural, properties and conditions of the foregoing that influence human health and wellbeing.

It is from this perspective that it's necessary to conclude an SEIA to assess how the project may negatively or positively impact of the receiving environment i.e. the biophysical, physical/natural and social and cultural environment.

1.5.4. Environmental Impact Assessment Regulations, Amended in 2017

The EIA Regulations (GNR 982) were promulgated in terms of Sections 24 of the NEMA, to manage the process, methodologies and requirements for the undertaking of an EIA. The EIA regulations were published on 4 December 2014 and came into effect on 8 December 2014, and further amended in 2017. Subsequent amendments to the EIA Regulations on the date of publication of this report will be taken into cognizance during the EIA process. The GNR 982 stipulates that the applicant for a development listed under GNR 983, 984 or 985 must appoint an independent EAP to manage the EIA process. It defines two broad categories of EIA, namely a basic assessment and a full EIA. A basic assessment is generally intended for smaller scale projects, or activities whose impacts are well understood and can be easily managed.

1.5.5. National Environmental Management Waste Act (Act No. 59 of 2008)

The National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM: WA) was implemented on 1 July 2009 and Section 20 of the Environment Conservation Act (Act No. 73 of 1989), under which waste management was previously governed, was repealed. The main objectives of the NEM: WA is to:

Reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; and to provide for:

- *National norms and standards for regulating the management of waste by all spheres of government;*
- *Specific waste management measures;*
- *The licensing and control of waste management activities;*
- *The remediation of contaminated land; to provide for the national waste information system; and*
- *Compliance and enforcement.*

The objectives of NEM: WA involve the protection of health, wellbeing and the environment by providing reasonable measures for the minimization of natural resource consumption, avoiding and minimizing the generation of waste, reducing, recycling and recovering waste, and treating and safely disposal of waste as a last resort.

In terms of the NEM: WA, all waste management activities must be licensed. According to Section 44 of the Act, the licensing procedure must be integrated with an EIA process in accordance with the Regulations GNR 982 printed in terms of the NEMA. Government Notice 719, which was implemented on 3 July 2009, removed all waste management activities from the EIA regulations GNR 386 and GNR 387, resulting in new NEMA listed activities namely GNR 544 and GNR 545 which were further amended to form GNR 983, 984, and 985. GNR 718 listed the waste management activities that require licensing. On 29 November 2013, GNR 718 was repealed and replaced by a new list of waste activities under GNR 921. A distinction is made between Category (A) waste management activities, which require a basic assessment, and Category (B) activities, which require a full EIA, and Category C waste management activities which do not require a waste management license but compliance with relevant requirements or standards. On 24 July 2015, the waste management activities were further amended in GNR 633, which included the establishment or reclamation of a residue stockpile or residue deposit resulting from prospecting or mining activities as a listed activity.

The proposed existing Discard Dump Extension is necessitated by the end of life of the current one in 2022, will require the implementation NEM: WA which will have to include the waste reduction and reuse plan. Equally important is the mitigation of any potential spillages or leaching of this water to natural water bodies which would in turn impact negatively of the ecological support services such as terrestrial and aquatic ecology and the life they support in terms of both flora and fauna. For example, impact on water bodies may impact on the flora of the receiving environment with consequence to grazing fields and cultivated fields dependent on water and other wild fauna species that are dependent of the receiving environment water bodies.

1.5.6. National Environmental Management: Air Quality Act (Act No. 39 of 2008)

The National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA) was implemented on 24 February 2005 and reforms the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable

economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GNR 893 in Governmental Gazette 37054, in terms of section 21(1) (b) of the NEM: AQA thereby repealing the previous list of activities which were promulgated on 31 March 2010.

In the mine proposed developments which include:

-
- The existing Discard Dump Extension and
- Construction and of conveyor belt and service road

All the listed activities will contribute to the air pollution both in the construction processes and on its main/daily functionalities. The Discard Dump Extension can cause smell or generate methane gas, which is explosive and contributes to the greenhouse effect and emits particulates that can spread in the direction of prevailing winds to the nearby communities causing respiratory diseases if not well managed. The conveyor belt, since its main function will be transporting coal from the DCM west to east, coal can release particles that can have an impact on air quality by polluting the air.

1.5.7. National Heritage Resources Act (Act No. 25 of 1999)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999) (NHRA). The enforcing authority for this act is the South African National Heritage Resources Agency (SAHRA). In terms of the Act, historically important features such as graves, trees, archaeology and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed. The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. Should a permit be required for the damage or removal of specific heritage resources, Exxaro will submit a separate application for these activities to the SAHRA for approval, should these resources be potentially damaged or removed. The activities identified in the Act requiring a notification from SAHRA include:

Section 38

- *(a): "The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*
- *(c): Any development or other activity which will change the character of a site*
    - *exceeding 5 000 m² in extent; or*
    - *Involving three or more existing Erven or subdivisions thereof; or*
    - *Involving three or more Erven or divisions thereof which have been consolidated within the past 5 years; or*
    - *The costs of which will exceed a sum in terms of regulations by SAHRA or a provincial heritage resource authority.*

1.5.8. National Water Act (Act No. 36 of 1998)

The NWA is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof. This act provides for fundamental reformation of legislation relating to water resource use. The preamble to the NWA recognizes that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The purpose of the NWA is stated in Section 2 and enforced by the DWS. The Act presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. As this Act is founded on, the principle the government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, an industry (including mines) can only be entitled to use water if the use is permissible under the NWA. To effective implement mining operations and the proposed infrastructure, water is required. The receiving environment also has agricultural land and communities – therefore, the issue of water and water allocation between the mine and the surround communities should be given a special consideration so that there are no competing values and interest when it comes to water abstraction by the mine whilst also not negatively impacting on other water users in the broader study area. Therefore, the issue of allocation is important and should be addressed.

1.5.9. Conservation of Agriculture Resources Act (Act no. 243 of 1983)

The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of soil, water resources and vegetation and to combat weeds and invader plants. The Act makes provision for

control measures to be applied in order to achieve the objectives of the Act, these measures relate to inter alia:

- Cultivation of virgin soil;
- Utilization/protection of wetlands, marshes, water sponges, water courses/sources; The regulating of the flow pattern of run-off water;
- The utilization and protection of vegetation;
- The grazing capacity of veld and the number and type of animals;
- The control of weeds and invader plants; and
- The restoration or reclamation of eroded land or land, which is disturbed or denuded.

The surface area is owned by Exxaro but is primarily used for agriculture. Exxaro will take cognisance of the proposed project (conveyor belt) and its impacts on agriculture land with regards to water flow patterns, protection of vegetation and control of alien vegetation encroachment. The end land use of the project will be discussed with relevant stakeholders to ensure that the rehabilitation of the disturbed areas is reinstated to the desired use at closure of the mine.

1.5.10. Promotion to Access to Information Act (Act no. 2 of 2000)

The Promotion of Access to Information Act (Act No. 2 of 2000) (PAIA) recognizes that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right. The purpose of the Act is to promote transparency and an accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights.

1.5.11. The Mine Health and Safety Act (Act no. 29 of 1996)

The Mine Health and Safety Act (Act No. 29 of 1996) (MHSA) aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa. The main objectives of the act and subsequent amendments are:

- Protection of the health and safety of all persons at the mines;
- Require employers and employees to identify hazards and eliminate, control and minimize the risks relating to health and safety at the mines;
- Give effect to the public international law obligations of the Republic that concern health and safety at all mines;
- Provide for employee participation in matters of health and safety through health and safety representatives and the health and safety committees at the mines;
- Provide for effective monitoring of health and safety conditions at the mines;

- Provide for enforcement of health and safety measures at the mines;
- Provide for investigations and inquiries to improve health and safety at mines; and
- To promote:
    - Training in health and safety in the mining industry; and
    - Training in health and safety in the mining industry; and
    - Co-operation and consultation on health and safety between the State, employers, employees and their representatives.

The proposed project will be located within the mining lease area and Exxaro will therefore need to ensure that employees, contractors, sub-contractors and visiting personnel, adhere to this Act and subsequent amendment regulations on site. This is especially pertinent during the construction phase of the pillar extraction which will undertake on the 4 seam.

1.5.12. Provincial and Municipal Bylaws

The proposed project is located within the mining lease area and Exxaro will, therefore, need to ensure that employees, contractors, sub-contractors and visiting personnel, adhere to this Act, and subsequent amendments of the Regulations on site. This is especially pertinent during the construction phase of the conveyor belt and the extension of the existing Discard Dump Facility.

1.6 Limitations and Assumptions

There are no limitations made about the project. The assumption is that the project will be sustainable and contribute to address of socio-economic challenges in Mpumalanga Province such as high levels of unemployment through the creation of sustainable employment opportunities.

2. METHODOLOGY

2.1. Approach to the Study

Mr. Nkosinathi Tomose (Head of Research, Corporate Strategy & Business Development) is responsible for the compilation of the current SEIA report. He has been assisted by assisted by Mr. Yanga Kolisi, Ms. Mbalenhle Mabele and Ms. Kuni Mosweu. The Review and Quality Control (RQC) process involved reviewing the First Draft BSEIA (Revision 01) the RQC has been completed by Mr. Robby Jaya. The RQC is a standard process at NGT Infraco; in the case that the Principal Consultant on the project is responsible for the report another consultant must undertake the RQC process.

2.2. Step I – Desktop Study

Background information search for the proposed development took place following the receipt of appointment letter from the client. This involved the review of the municipal developmental toolkits such as Integrated Development Plans (IDPs), Local Economic Development (LED) frameworks, Spatial development Frameworks (SDFs), Census data, previous environmental studies and specialist studies such as wetland study, agricultural study and heritage study all completed as part of the EIA process for the proposed development project. Assessment of legislation that informs and regulate social and socio-economic impact studies; the process involved:

- Assessing the relevance of such legislation to current development.
- Assessment the proposed development area through Google Earth to determine human settlements, roads and railway infrastructure in relation to the site as well as the site condition from an aerial perspective.
- Assessing to location the proposed development area in relation to the surrounding landscape.

2.3. Step II – Physical Survey

The physical survey of the proposed development area was conducted on Friday 24 May 2019. The survey was conducted by Mr. Nkosinathi Tomose and Ms. Kuni Mosweu on foot and the site was accessed using a car. The aim of the survey was to identify socio-economic impacts and resources within the proposed development area and gather primary data using a camera to take photos of the affected environment and the identified sites.

2.4. Step III – Report Writing

The final step involves the compilation of the report using desktop research as well as the physical survey results and compilation of a socio-economic baseline of Emalahleni Local Municipality area

covering population size and trends, demographics of the area for example age, gender. Determining how much of the population have access to services for example housing, water, electricity and sanitation. Furthermore, looking at the social amenities as well as economic indicators of the area for the conclusion of the final report – Impact Significance Rating Methodology is applied (Chapter 2.5.)

2.5. Impact Significance Rating Methodology

The assessment methodology used was taken from NGT Holdings recommended methodology for the EIA which has been adapted to suit the needs of the current SEIA study. A number of criteria are used to determine the significance of an impact. These criteria and their ratings are listed below. Assessment rating tables were used to identify direct and indirect impacts associated with the project in four stages and proposed mitigation measures to mitigate against impacts in each stage of the project.

2.5.1. Status of the impact

The impacts are assessed as either having a:

Impact	Definition	Rating
Positive effect	Impact will a benefit to the socio-economic	1
Neutral effect	Impact will have a neutral effect to the socio-economic	2
Negative effect	Impact will be at a cost to the socio-economic	3

2.5.2. Extent of the impact

Extent intends to assess the footprint of the impact. The larger the footprint, the higher the impact rating will be. The table below provides the descriptors and criteria for assessment (*Table 2*).

Table 2: Criteria for the assessment of the extent of the impact

Extent Descriptor	Definition	Rating
Site	Impact footprint remains within the boundary of the site.	1
Local	Impact footprint extends beyond the boundary of the site to the adjacent surrounding areas.	2
Regional	Impact footprint includes the greater surrounds and may include an entire municipal or provincial jurisdiction.	3
National	The scale of the impact is applicable to the Republic of South Africa.	4
Global	The impact has global implications	5

2.5.3. Duration of the impact

The duration of the impact is the period of time the impact will manifest on the receiving environment (*Table. 3*). Importantly, the concept of reversibility is reflected in the duration rating. The longer the impact endures, the less likely it is to be reversible.

Table 3: Criteria for the rating of the duration of an impact

Duration Descriptor	Definition	Rating
Immediate (<1 year)	The impact endures for only as long as the construction or the decommissioning period of the project activity. This implies that the impact is fully reversible.	1
Short term	The impact continues to manifest for a period of between 1-5 years beyond construction or decommissioning. The impact is still reversible.	2
Medium term	The impact continues between 5-15 years beyond the construction or decommissioning phase. The impact is still reversible with relevant and applicable mitigation and management actions.	3

Long term	The impact ceases after the operational life span of the project.	4
Permanent	The impact will continue indefinitely and is not reversible.	5

2.5.4. Magnitude of the Impact

The concept of the potential magnitude of an impact is the acknowledgement at the outset of the project of the potential significance of the impact on the receiving environment. For example, construction of the proposed infrastructure has a potential to impact negatively on the vegetation potential in the receiving environment, this potential intensity must be accommodated within the significance rating. Within potential intensity, the concept of irreplaceable loss is taken into account. Irreplaceable loss may relate to losses of entire faunal or floral species at an extent greater than regional, or the permanent loss of significant environmental resources. Potential magnitude provides a measure for comparing significance across different specialist assessments.

Table 4: Criteria for impact rating magnitude of the impact.

Magnitude of the impact	**Definition of negative impact**	**Rating**
None	Where there is no impact to the natural, cultural, social and economic functions	0
Minor	Where the impact affects the environment in such a way that natural, cultural, social and economic functions and processes are hardly affected	2
Low	Where the impact affects the environment in such a way that natural, cultural, social and economic functions and processes are slightly affected	4
Moderate	Where the affected environment is altered but natural, cultural, social and economic functions and processes continue albeit in a modified way	6
High	Where environmental, cultural, social and economic functions or processes are altered to the extent that it will temporarily cease	8

Very High/Unsure	Where environmental, cultural, social and economic functions or processes are altered to the extent that it will permanently cease).	10

2.5.5. Probability of occurrence

This is the likelihood of the impact potential intensity manifesting and it is not the likelihood of the activity occurring. If an impact is unlikely to manifest, then the likelihood rating will reduce the overall significance. Table 6 below provides the rating methodology for likelihood.

Table 5- Criteria for the rating of the likelihood of the impact occurring

Likelihood Descriptor	**Definition**	**Rating**
None	The impact will not occur	0
Improbable	The possibility of the impact occurring is very low due to design or experience	1
Low Probability	The possibility of the impact occurring is unlikely with a less than 10% chance of occurring.	2
Medium Probability	The impact has a distinct probability that the impact will occur with a 10% to 40% chance of occurring.	3
Highly Probability	It is most likely that the impact will occur and there is a 41% to 75% chance of occurrence.	4
Definite	More than a 75% chance of occurrence. The impact will occur regularly.	5

2.5.7. Significance Assessment

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

Table 6: Significance rating formulas.

Score	Rating	Implications for Decision-making
< 30	Low	Where this impact would not have a direct influence on the decision to develop in the area
30 – 60	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated
> 60	High	Where the impact must have an influence on the decision process to develop in the area

Table 7: Impact Rating table with impact mitigation

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact	No						
	Yes						
Corrective Actions							

3. BASELINE STUDY

This Section describes the socio-economic environment in which the proposed development is situated. The description provided in this section is based on publicly available and secondary information, as well as primary data.

3.1. Area of Influence (AoI)

The socio-economic baseline is focused on local level i.e., within the Emalahleni Local Municipality (ELM) where the Exxaro Dorstfontein Coal Mine is situated. This is because it is expected that although the proposed development will result in macro-economic benefits at a national level, the primary socio-economic impacts of the development will be experienced at a district level (Nkangala) and local level (ELM). As such the socio-economic area of influence has been divided into the Direct Area of influence and the Indirect Area of Influence, these are described below.

3.1.1. Area of Direct Influence

The Area of Direct Influence (ADI) includes the Project footprint and related facilities as well as the associated effects of the Project on the receiving environment.

This encompasses:

- Existing Discard Dump Extension and
- Construction of a conveyor belt and service road from DCM west to DCM east

In the context of this study, the ADI further includes areas around the site which are likely to be affected by the proposed development activities during the pre-construction, construction and operation phases. The effects can be positive or negative, short or long term or permanent, as well as direct and in-direct. These areas include the settlements located in close proximity to the project site namely, the Exxaro Dorstfontein Coal Mine East and West such as the farmsteads located north of Route A of the conveyor belt.

3.1.2. Indirect Area of Influence

The Area of Indirect Area of Influence (IAI), includes areas within a wider radius of the proposed project site which may be affected by the project, this include surrounding areas i.e. Thubelihle and Kriel Area, Ogies, Bethal and the remainder of ELM; a 50km radius is often established for such IAI.

3.2. Demographics Profile

The ELM 2018/19 final IDP demographic profile indicates that according to StatsSA (Community Survey 2016 – CS2016), Emalahleni's population has increased from 395 466 in 2011 to 455 228 people in 2016. It is the 3rd largest population in the province and 31.5% of the total population of Nkangala District Municipality (NDM) in 2016. Population grew by 59 762 in the relevant period and recorded a population growth rate of 3.2% per annum between 2011 and 2016. The population for 2030 is estimated at more or less 707 530 people given the historic population growth per annum. According to SACN, the growth in ELM is directly linked to the flourishing coal mining industry and the associated social and services sector that have develop to support the mining industry (SACN, 2014). The other attributing factor in the case of ELM could also be directly linked to the construction of Kusile Eskom Power Station situated west of Phola Township.

3.2.1 Population Trends

Below is the population growth for ELM which is mainly as the result of in mining and other businesses within the municipality (*Figure. 19*).

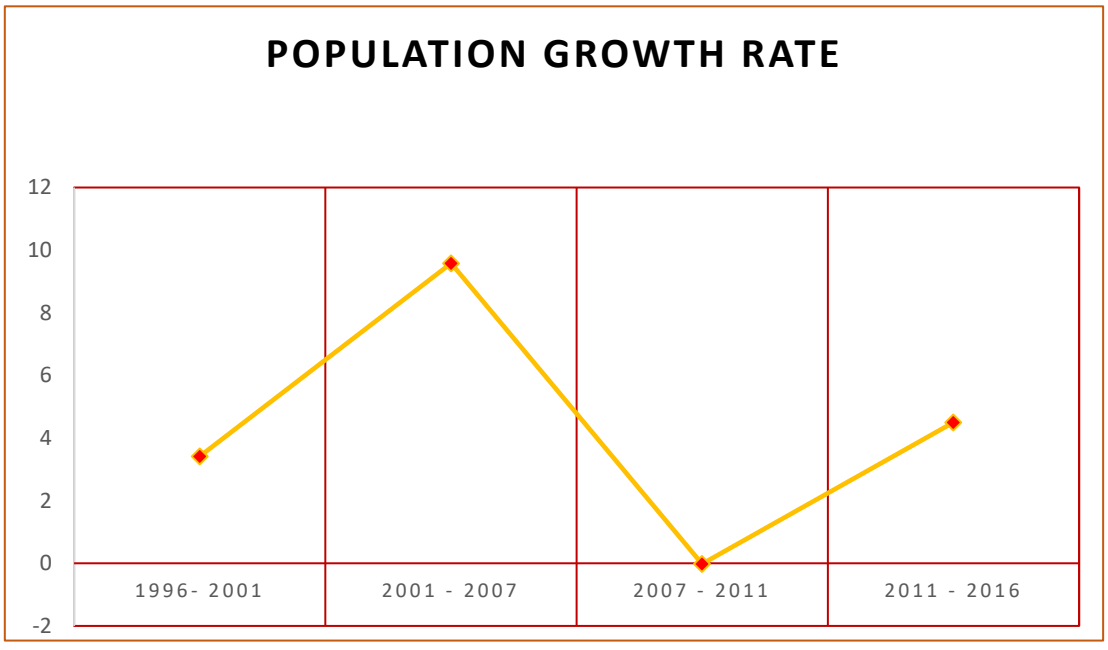


Figure 17: Population Growth Rate (Source: 2018/19 IDP)

3.2.2 Population by Ethnicity Group of Emalahleni

ELM is composed of all racial groups as illustrated in *Figure. 3* below; it has a population of 391,982 Black Africans, which shows an increase since 2011; 5 450 Coloureds; Indians or Asians constitute 3 762 of the population and White constitutes a total 54 033 of the total population. The graph below

shows an increase in both African/Black and Indian/Asian and decrease in both Coloured and White population since 2011 (*Figure 20*).

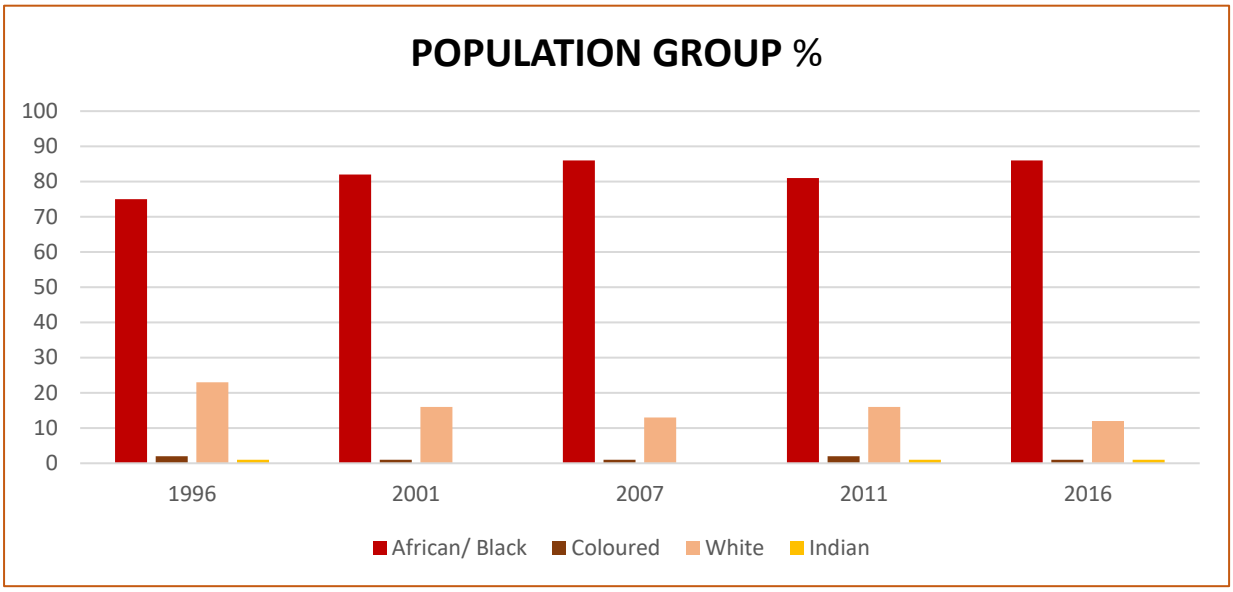


Figure 18: Population by Racial Distribution (Source: 2018/19 IDP)

3.2.3 Gender Distribution

The age and gender structure of the population is a key determinant of population change and dynamics (*Figure 21*). The shape of the age distribution is an indication of both current and future needs regarding educational provision for younger children, health care for the whole population and vulnerable groups such as the elderly and children, employment opportunities for those in the economic age groups, and provision of social security services such as pension and assistance to those in need. The age and sex structure of smaller geographic areas are even more important to understand given the sensitivity of small areas to patterns of population dynamics such as migration and fertility. From the figure we see a steady growth in gender and sex ration from 2001 to 2016.

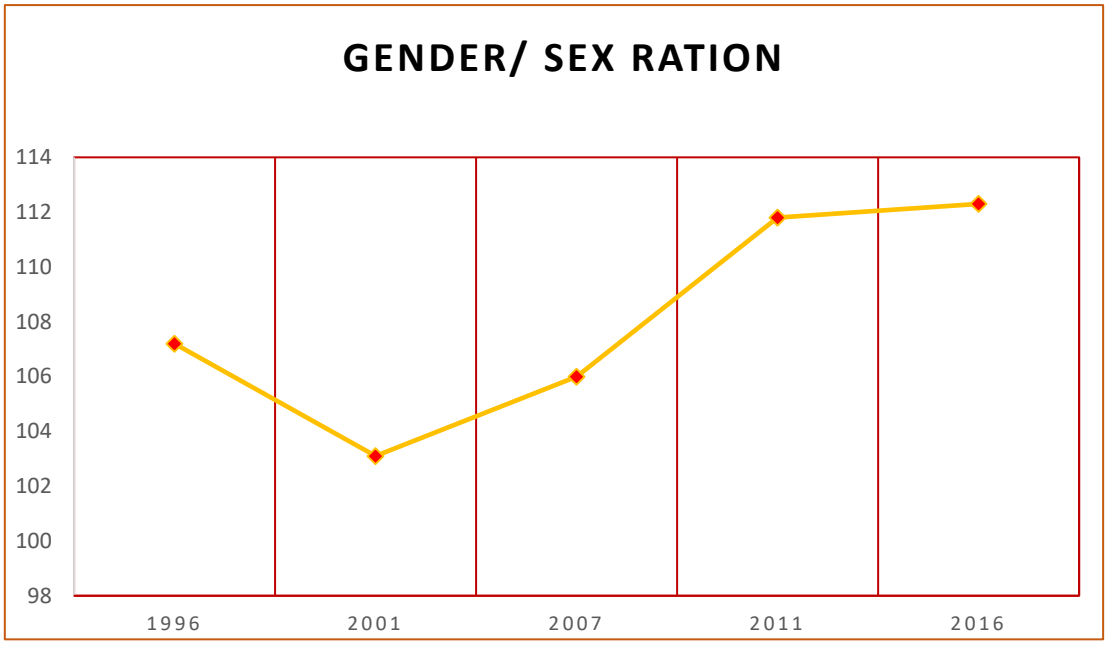


Figure 19: Sex Ration 1996-2016 (Source: 2018/19 IDP)

3.3. Socio-Economic Profile

This section gives an overview of the existing socio-economic environment in and around the proposed development area.

3.3.1 Education

Educational attainment is a key indicator of socio-economic development in any given society or community. To evaluate long term provision of education, it is important to disaggregate educational attainment for persons older than 20 years. According to the 2016 CS of StatsSA, the population in Emalahleni aged 20+ completed grade 12; it increased from 117 021 in 2011 to 146 952 in 2016 (i.e. an increase of 29 931); this translates to an increase of 25.6% in the relevant period (*Figure 22*). This is an indicator of good socio-economic development of Emalahleni. Figure 7 below represent the ELM education attainment from 1996 to 2016, the chart roughly indicates the education trends that the municipality have been experiencing.

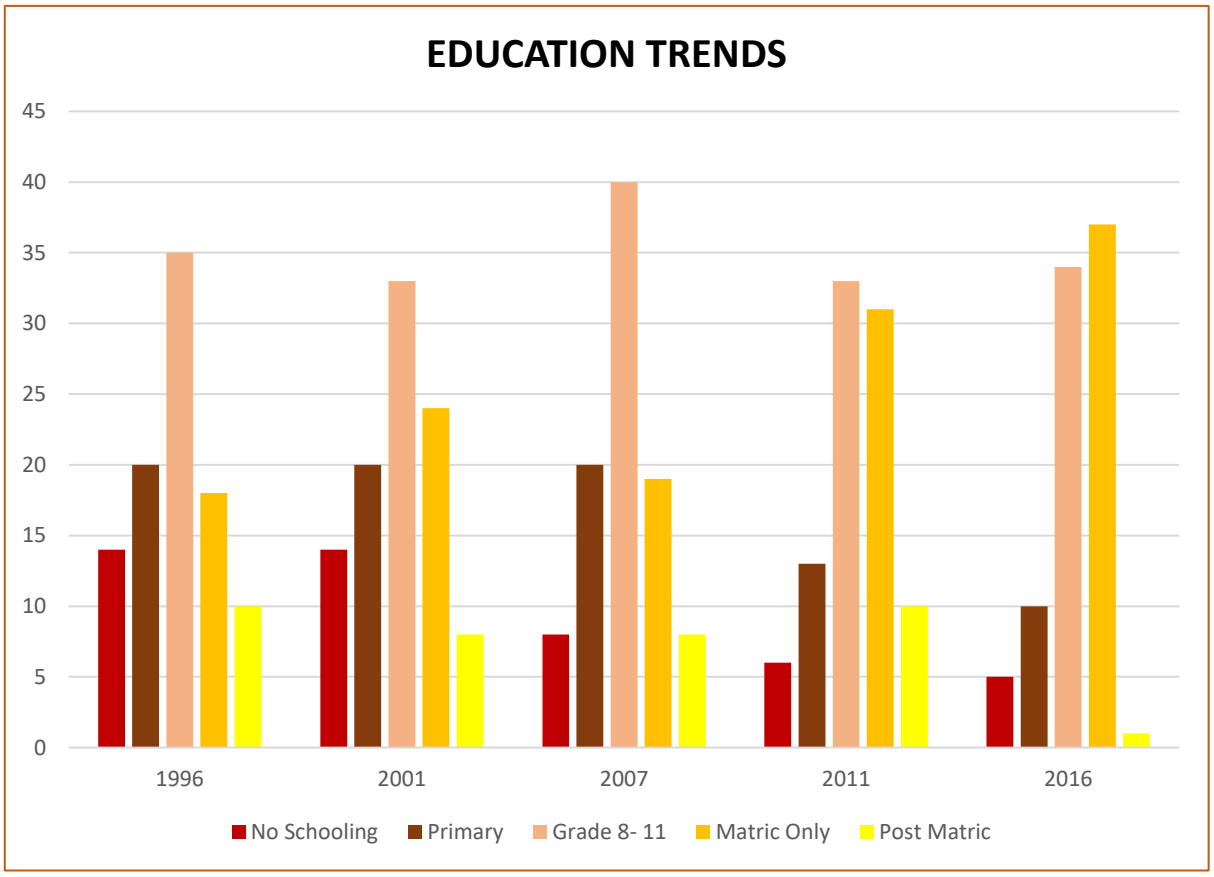


Figure 20: Emalahleni Education trends 1996-2016 (Source: 2018/19 IDP).

3.3.2 People Living in Poverty and Inequality

The share of the population in ELM is below the so-called lower-bound poverty line (of StatsSA) declined/improved the last couple of years to 21% in 2015. The lower-bound poverty line is R575 per capita per month. According to the 2016 Community Survey of StatsSA, the so-called poverty headcount (multi-dimensionally) of ELM deteriorated from 8.0% in 2011 to 10.9% in 2016 and is the second highest in the province. The so-called poverty intensity also increased from 43.6% to 45.4% in the same period. The best way to improve and fight inequality & poverty is to improve people's levels of education and skills and eventually their employability in the labour market. Creation of jobs will impact positively on the reduction of poverty and inequality. This shows that although there has been significant improvements in the education levels of the population in ELM, there is still high number of unemployed people which has resulted to an increase in poverty – the current Exxaro investment at Dorstfontein therefore has a potential to contribute to address of some of these challenges.

3.3.3 Household Income

Figure 23 below indicates household income trends within the ELM for the period 2001, 2007 and 2011 – there is a significant decrease in household earning below (R42 000) in the later period. The Municipality recorded HDI of 0.63 as per 2011 statistics, which is best in the province but deteriorating (*Figure 23*). Per capita personal income, it is higher than the district and is second highest in the province. The HDI is measured using indicators like literacy levels, infant mortality rate, annual household income, and life expectancy. Other receptors that could have potentially influence this drastic decrease in household income may include tighten legislation relating to mining, environmental permitting, change political landscape which often directly affect investments and capital injection for large capital projects.

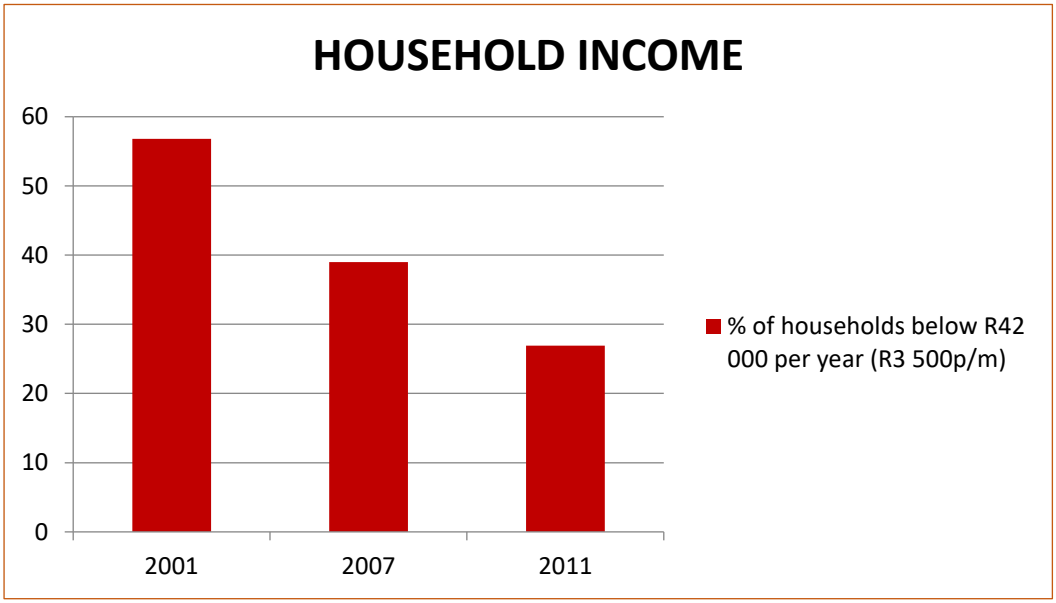


Figure 21: Household Income Trends (Source: 2018/19 IDP)

3.3.4 Unemployment

The unemployment rate of ELM has decreased from 27.3% in 2011, 25.4% in 2015 and 26.6% in 2016 (*Figure 24*). Its unemployment rate was the 5th lowest among all the municipal areas of Mpumalanga; this could be directly linked to the development of Kusile Power Station and the steady growth of the coal mining industry in a Local Municipality with more than 50 active mines (excludes prospecting areas and mining right that have not yet being developed). However, there are still huge disparities when it comes to unemployment between male and females i.e., the unemployment rate for females 29.8% while the male unemployment rate sits 19.2%. Youth unemployment rate according to the Census figure is 36.0%; a significant figure considering that there has been an increase in education

levels which could imply that there are more graduates that are unemployed or that there is limited tertiary education which would assist the youth to secure semi-skilled to skilled jobs of the fast growing economy of ELM. The unemployment rate within females remains a challenge, which may be addressed by the DCM proposed development should priority be given to women. The largest employing industry in ELM is mining and through the proposed project the DCM has an opportunity to positively contribute to addressing both youth and women unemployment. The Municipality also needs to increase the levels of education and skills development for both youth and women to improve their employability. The proposed development of DCM West and East conveyor belt including the dump facility can increase the employment rate within ELM.

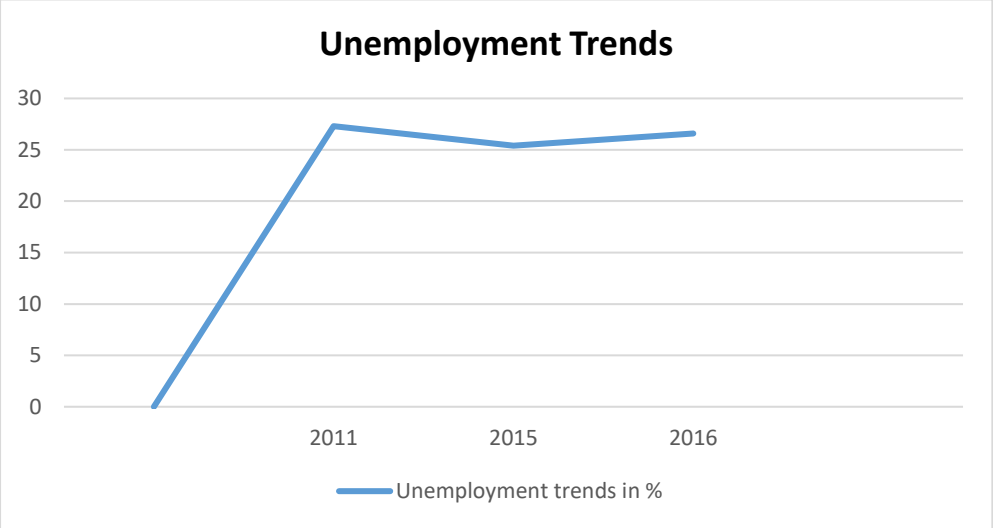


Figure 22: Unemployment trends in ELM (Source: ELM IDP 2018/19)

3.3.5 Employment

From an Environmental Impact Assessment (EIA) that was conducted by SRK Consulting in 2017, it is reported that DCM provides employment opportunities to approximately 836 workers on a contract basis. The mine is operated by a few large contracting companies and only employs a full-time staff compliment of 85 employees, excluding vacancies. To facilitate the upliftment of the previously disadvantaged labour force, a programme is in place for upgrading of literacy levels for the local communities. Dorstfontein Complex Mine also partakes in the graduate intake programme, which provides relevant job-related training and placement opportunities for individuals who successfully complete the programme. Current interventions are implemented in line with the company's **Employment Equity** and **Skills Development Plans** (Exxaro Coal Central (Pty) Ltd A, 2017). The construction of the proposed project will positively contribute to creation

of employment in ELM, the jobs will be a combination of permanent and non-permanent jobs i.e. the 50 jobs associated with the project construction phase and the 10 permanent jobs associated with the operation phase of the project. The pre-construction and construction of proposed project will inherently require additional employment opportunities. Contractors will be appointed for the pre-construction and construction activities.

3.3.6 Economic Profile

At district level, ELM contributes 46% of the GDP of the region (*Table 8*). This, indicates the nature of the concentration of economic activities in the area, followed by Steve Tshwete (at 37%). However, what is absent from the statistics is the breakdown of the sector concentration within the local spaces to clearly show the location quotient of these sectors within the Nkangala region. Emakhazeni, Dr. JS Moroka, Thembisile Hani, and Victor Khanye (Delmas) have the least contributions. The economic dominance of ELM within NDM has the potential of influencing population migration from nearby localities, thereby putting a strain on the provision of job opportunities and basic services.

Table 8: Table showing the Economic Profile of Nkangala District Municipality (Source: 2018/19 IDP).

Nkangala District	Delmas	Emalahleni	Steve Tshwete	Emakhazeni	Thembisile	Dr. JS Moroka
45,577,718	2,092,714	20,954,468	16,927,816	1,433,894	2,481,361	1,687,466
100%	5%	46%	37%	3%	5%	4%

3.3.7 Sector's Share of Emalahleni Local Municipality

The Economy of the ELM is driven by the mining sector, which contributed more than 50% in 2009 followed by Electricity at 12.1% and Finance at 10.8%. Over a three-year period, mining has had a steadily increased contribution to the economy of ELM; from 41% in 2007, 50.8% in 2008, with a slight decline to 49.8% in 2009 (*Figure. 25*).

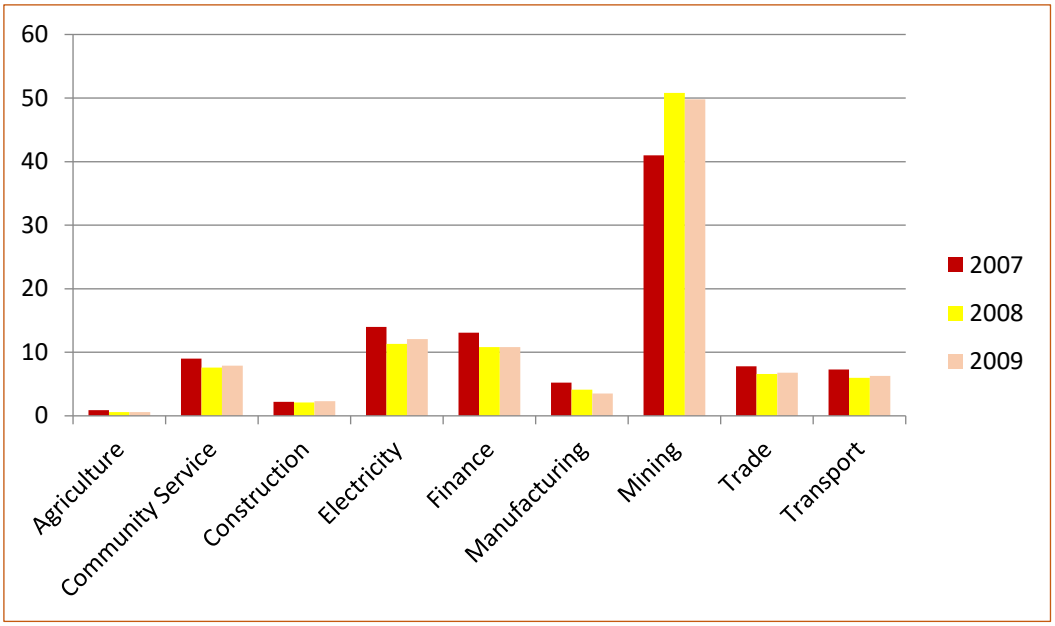


Figure 23: Sectoral Economic Contribution (Source: 2018/19 IDP).

DCM is identified as one of the largest coal mines in Emalahleni and the highest contributor to both economic growth and job creation. Given the abundance of coal reserves in Mpumalanga (and being the key mineral within Emalahleni); the local space is likely to benefit from the resources abundantly found within the locality. Coal produced within Emalahleni is for both the local and export markets. For the local market, Eskom is the primary buyer while China is the primary importer.

4. BASIC SERVICES DELIVERY

4.1 Basic Service Delivery Indicators

The following section shows an analysis of the trends in households as well as an analysis of the existing level of service delivery within ELM. Table 9 below illustrates the level of access to basic services at household level within the ELM as compared to regional and provincial level. The issue of sanitation is one of the major challenges for the ELM with over 78% of households either having no toilets or utilizing the bucket system. This could be attributed to the fact that, although most of its population is situated within townships and the Emalahleni town – there's a large number of the municipalities population that still resides in rural and peri-urban areas.

Table 9: Table Illustrating Local, Regional and Provincial Basic Service Infrastructure Indicators

BASIC SERVICE INFRASTRUCTURE INDICATORS	STATS RESULTS		
	Emalahleni	Nkangala	Mpumalanga
Percentage of households with no toilets or with bucket system	78.1%	53.68%	45.44%
Percentage of households with connection to piped (tap) water: on site & off site	88.9%	88.61%	86.85%
Percentage of households with refuse disposal from a local authority, private company or community members	73.6%	49.81%	39.92%

4.2 Access to Water

The 2018/2019 ELM IDP indicates that there was an increase in the number of households without access to piped water services provided by the Municipality between the period of 2011 up to 2016, as 13 792 (9.2%). Households without access to piped water in 2016 increase from the 13 656 (5.2%) in 2011. Overall the number of households with access to piped water in 2016 was 136 628 households with a share of 88.9% of households having access to piped water from a regional or local service provider. This is about the same rate as at the regional level with 88.61% of households in Nkangala having access to pipe water and the rate for the rest of Mpumalanga is at 86.85%. More than two-thirds (63%) of the households have access to water piped inside the house, Figure. *26 and 27* below shows the comparison on the different methods household's access water.

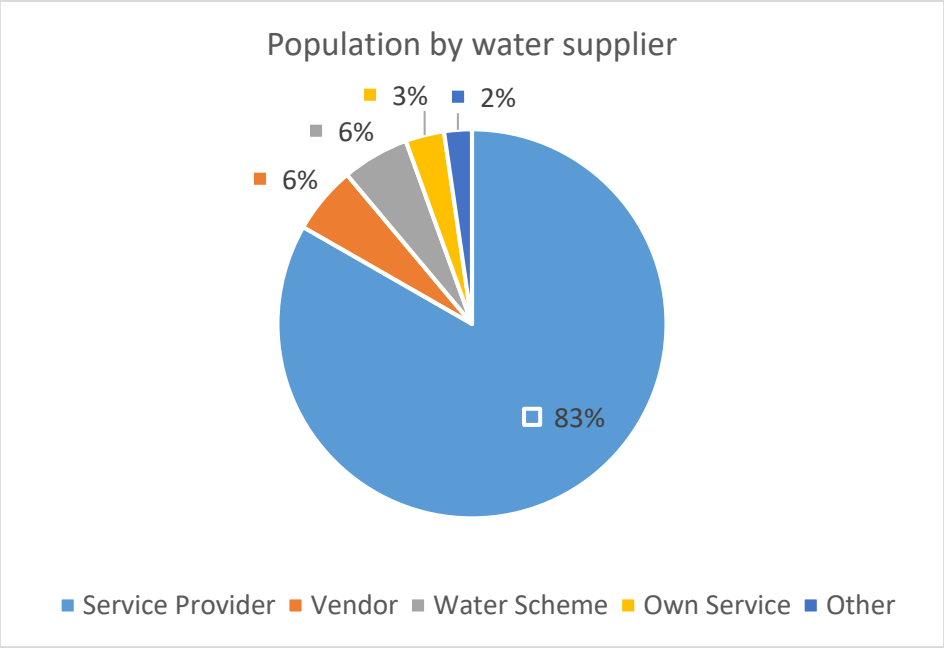


Figure 24: Population by Water Provider (Source: 2016 Community Survey).

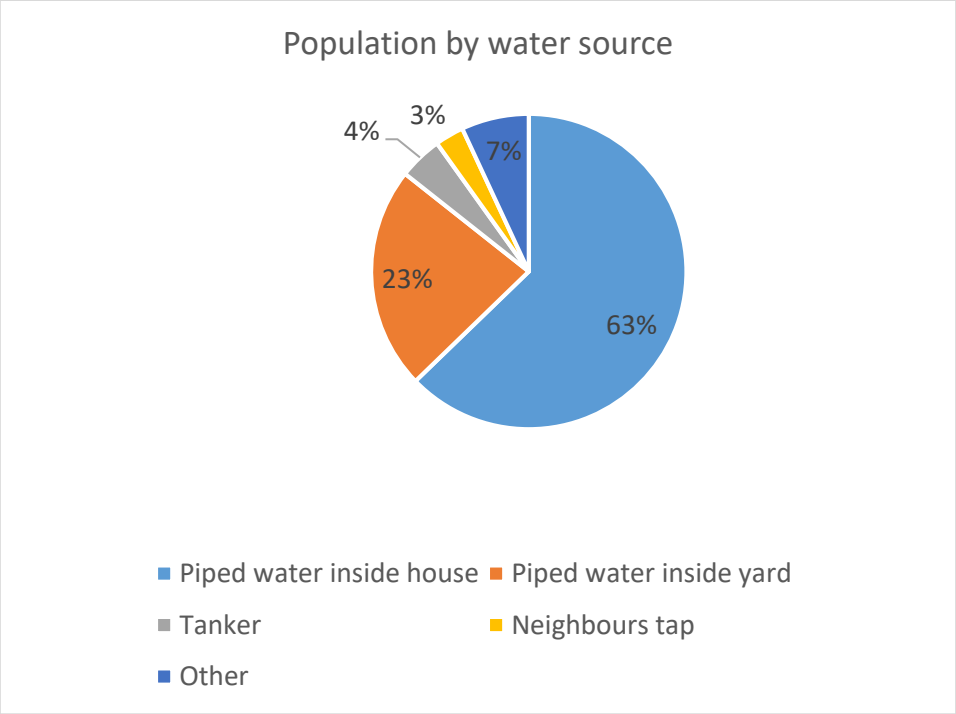


Figure 25: Population by Water Source (Source: 2016 Community Survey).

This means that water is a major challenge for the Municipality where water is shared between the mining industry, the energy production sector, farms and households for domestic used. This issue has also been demonstrated by the hydrogeological study conducted by GCS on behalf of Dorstfontein

Coal Mine in June 2015 which also proved that water is of serious concern within the study area. According to the study, the coal reserves located at Dorstfontein form part of the coal-bearing sandstones and siltstones of the Vryheid Formation which rest either conformably on diamictites and associated glaciogenic sediments of probable Dwyka age, or uncomfortably on basement rocks of the Lebowa Granite suite, which in turn is underlain by volcanic rocks of the Loskop Formation. Within this geological formation, three principal aquifers were identified in their conceptual Geohydrological model for the Mpumalanga coalfields. The aquifers included the weathered aquifer, the fractured Karoo aquifer and the fractured pre-Karoo aquifer. These are all classified as minor aquifers i.e. low yielding aquifers, but of high importance with a transmissivity values ranging between 0.01 and 22.5 m2/day with an average value of 3.3 m2/day and a geometric mean of 0.75 m2/day. According to the study, the weathered layer has a thickness of approximately 15m and it comprised of residual soils and weathered shale's and sandstone. Their hydraulic conductivity values are in the order of 10-2 m/d. with underlying fractured units consist of shale, sandstone and coal seams in which groundwater movement is limited to fractures. This poses a major challenge for ground water abstraction within the coal fields of ELM and may have a bearing a direct bearing to the issue of water scarcity to the municipality as it depends to external supply to meet its basic water demands. The fracturing of these aquifers mainly occurs in the top of this unit (i.e. underlying fractured units) decreasing with depth. Therefore, the hydraulic conductivity of Emalahleni coal fields' aquifers decrease with depth and range between 10-2 m/d in the upper layers and 10-4 m/d for the lower layers. In terms of the depth of ground water from surface, the study concluded that, groundwater levels generally follow topography and are mostly within 5 m below ground level (average of 5.5 mbgl) and some deeper groundwater levels down to 26 mbgl. With all the challenges, low bearing and fractured water aquifers, the groundwater in the surrounding areas to the study area has been determined to be used for single or several households for domestic use. These include, water supply to farm workers and in two cases for small communities constituting population size of between 50 to 100 people per community. Groundwater. Therefore, plays a significant role in the study areas and the surrounding communities in this water-scarce area. The study by GCS concluded that, groundwater quality is generally of good quality when compared to drinking water standards. It also concluded that there were no indications that existing mining activities are impacting on the groundwater quality – this is a positive existing impact on water bodies that are vital in the areas and should be protected at all costs.

4.3 Housing

According to the 2016 community survey, the number of households in ELM is 150, 419.This makes up one-third of the houses in the district and one-tenth of the houses in the province. 65% of the households in Emalahleni were occupying formal dwellings, while 23% of the households were occupying informal dwellings (shacks) in 2016. Flats in backyards and other types of dwelling accounted for 11 % of the type of housing in 2016. Apartments were the least represented dwelling type with 2% representation (*Figure. 28*). In terms of ownership, just over half (50.3%) of the households were fully owned or paid off.

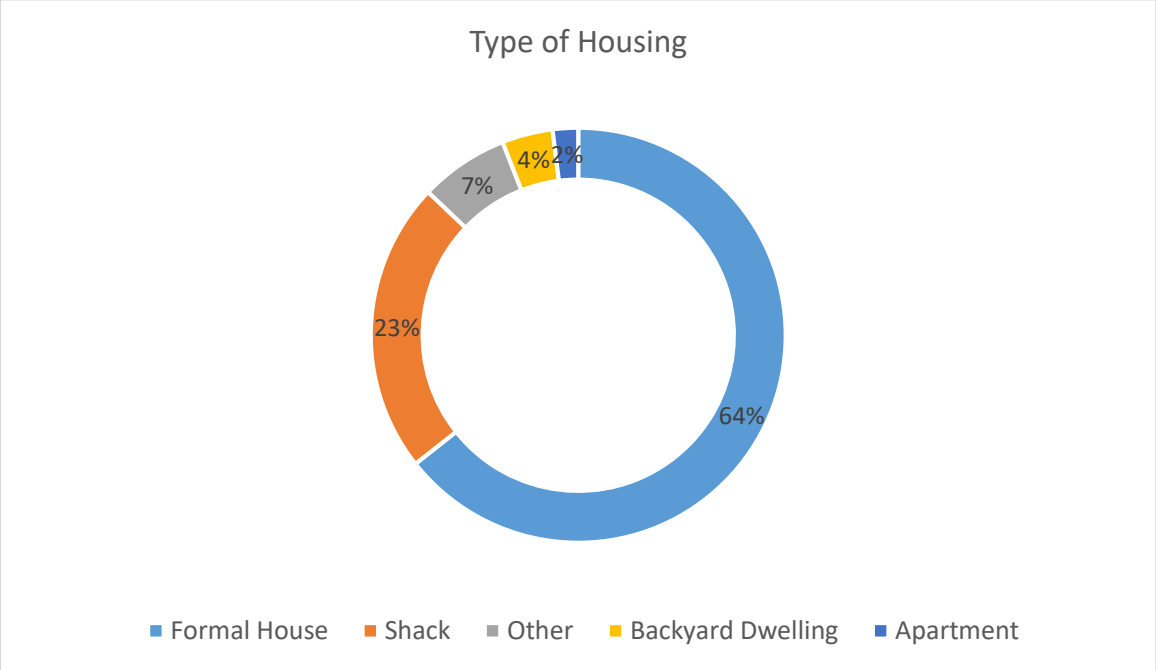


Figure 26: Type of Housing in ELM (Source: 2016 Community Survey)

4.4 Electricity Supply

According to the 2018/19 municipal IDP 106 306 (71%) of households had electricity connection in 2016. Currently 40 721 households are not connected to electricity which is more than a quarter of the households. This is an increase from the 2011 stats (*Table. 10*). It is widely understood that sprawling informal settlements and rural communities often poses a challenge for provision of this basic human rights service by many municipalities throughout most of the country and the ELM is no exception.

Table 10: Table Illustrating Share of Households without Electricity Access between 2011 and 2016 in ELM.

	Number of households without access		Share of total households	
Year	2011	2016	2011	2016
Electricity backlog	31, 527	40, 721	26.3%	27.1%

4.5 Road Infrastructure and Access to Transportation

As expected from a place whose economic mainstay is exporting coal, the available spatial structures in the municipality are dominated by the road and rail network. Most noticeably the N4 and N12 freeways and the national railway line which traverses the area eastward from the west towards the sub-continental Maputo-Walvis Bay Corridor (MWBC). The point of convergence of the N4 and N12 freeways (and the railway lines that run parallel to these) is a focal point in the spatial structure. The City of Emalahleni and its extensions have developed in a linear pattern along these freeways and railway lines, with the CBD located north of the convergence point of the N12 and the N4 towards Middelburg. There are various secondary roads which provide strong north-south road linkages between the ELM towns, the farming communities, coal fields, townships and urban node linkages. The Emalahleni area is well-connected at a regional level through the freeways and regional road network. The N12 and N4 freeways provide access to Gauteng to the west. To the east the N4 connects Emalahleni with Middelburg and Mbombela, as well as Maputo in Mozambique. Route R555 runs parallel to the N4 freeway from Emalahleni up to Middelburg and attracts extensive residential and commercial activity close to Emalahleni. It has been branded as the midway corridor and acts as a secondary corridor to the Maputo corridor. From the study area the R547 and the R544 provide the north-south or south-north linkage to and from Emalahleni CBD and the ELM towns such as Kriel and Bethal.

4.6 Concluding Remarks

In conclusion, based on the review of available statistics, in terms of access to basic service delivery the indicators for ELM are on par with that of the district and provincial level. The number of households without access to water increased between 2011 and2016, and this might be the result of increased influx of job seekers into the area which has had a direct impact on the increase in informal

housing which is the second most popular mode of housing in the municipality at 23% of all households being informal. The number of households without access to electricity also increased between 2011 and 2016. Though the overall number of households with access to electricity was greater than that of 2011, the total share of households without electricity in the entire population increased. This can also be attributed to the influx of job seekers and increased informal housing. The receiving area has a very good transport infrastructure; this is a positive in terms of exporting coal.

5. ECOLOGIGAL SUPPORT SERVICES

South Africa is a country that is developing at a rapid pace, and therefore it is important to manage economic development under the concept of sustainable development. The consideration of ecological support services is critical to socio-economic impact assessment studies because socio-economic impacts transcend the human aspect to influence the environment that people live in and the various ecological services that they derive from the environment. The Millennium Assessment of 2005 refers to ecological services as specific benefits people derive from the ecosystem. Ecosystem services are important as they provide an opportunity to provide sustainable resources for human wellbeing that will meet the Millennium Development Goals and to provide incentives for ecosystem conservation (SANBI 2013). Ecological support services include:

- Aquatic/Wetland Environment
- Terrestrial Environment
- Agriculture
- Anthropological and cultural heritage resources.

5.1 Wetland Environment

Steenkoolspruit is located south and west of the mine. These two rivers converge north of the mine, from which point the river is called the Olifants. During the field survey, it has also been noted that a number of wetlands and farm dams exist within the receiving environment. From the assessment of the Google Earth and maps, in the north east of the study area, wetland areas traverses both Route A and B of the proposed conveyor belt. A wetland study was undertaken for the project showed that the project will result to "…destruction of wetland habitat, surface water pollution including sedimentation as well as increased erosion, altered hydrological regimes, loss of wetland functionality and decreased downstream water quality as the major impacts during the construction and operational phase" (Lubbe, 2020). Necessary mitigation measures have been proposed which from a socio-economic perspective we deem sufficient to mitigate against adverse impact of wetland as a ecosystem support service.

5.2 Terrestrial Environment

5.2.1. Vegetation

The proposed development area is located in the Eastern Highveld Grassland biome. However, the area is heavily disturbed due to effects of farming, grazing and mining activities which has resulted in an altered grassland habitat (Caddick 2017). Caddick (2017), stated that the area has been invaded by alien plants, namely the *Bidens pilosa* and *Tagetes minuta*.

5.2.2. Fauna

During field survey cattle and goat herding was observed on site. According to the biodiversity study conducted by Caddick (2017), there is a high possibility that the *Pyxicephalus adspersus* (Giant Bullfrog) and *Metisella meninx* (Marsh Sylph) may be inhabiting the proposed development area. The Ecologist stated that both the Giant Bullfrog and the March Sylph would be under threat as a result of habitat loss, namely wetlands and the moist grasslands. Furthermore, the *Sagittarius serpentarius* (Secretarybird) and *Phoenicopterus minor* (Lesser Flamingo) were both observed by the dam within the mining area Ecologist specialist for the EIA. It must be noted that due to restriction of access, this study could not access the whole project area.

5.3. Agriculture

The majority of the proposed development area comprises of land that is currently being used for agriculture activities. The main activities include crop farming i.e. maize and soya beans and the secondary is grazing fields for livestock. The proposed Route A of the conveyor is within the area for grazing of cattle by the locals from Thubelihle township– both north and south of this conveyor belt. According to one of the Herders, the owner of Farm Rietkuil left the area a few years ago. The livestock is owned by Thubelihle Community and they pay the Herders to herd their livestock. The Herder stated that he (and the other herder not present) herded approximately 400 cows on behalf of the community. The proposition of Route A will therefore have a negative socio-economic impact to the community of Thubelihle Township who rely on the grazing fields and the water supply from a nearby stream.

5.4. Anthropological and Cultural Heritage Resources

Several cultural heritage resources were observed during the survey, these are also identified and included in the heritage study undertaken for the proposed project by Vhubvo Archaeo-Heritage Consultants. These included farmstead ruins and burial grounds and graves; however, these resources will not be impacted by the proposed infrastructure development activities because of the removal of dump Options that were initially proposed as part of the project.

5.5. Concluding Remarks

The region in which the proposed development is to take place contains important ecological sites such as wetland areas and is a habit to important fauna in the area. The majority of the vacant land

is currently being used for agricultural activities which include cultivated fields i.e. maize and soya beans and grazing fields.

6. SITE IMPACT ASSESSMENT

This chapter discusses the socio-economic impacts associated with the proposed development on the receiving environment in four stages of the project i.e. pre-construction phase, construction phase, operational phase and decommissioning phase of the project. The assessment process is informed by the methodology described in Chapter 2 as well as some of the socio-economic impacts that have been identified in the baseline assessment of the receiving environment.

6.1. Impact Rating: Project Planning /Pre-Construction Phase

Two impacts were identified and rated for the pre-construction phase of the proposed project. Mitigation measures of these impacts are given below.

Table 11: Pre-construction phase impact rating - 1

Issue	**Corrective measures**	**Impact rating criteria**					**Significance**
		Nature	Extent	Duration	Magnitude	Probability	
Developing spin-off businesses to support proposed project	**No**	Positive	2	3	4	2	**Low (27)**
	Yes	Positive	2	3	2	2	**Low (14)**
Corrective Actions	• There could be initiatives developed to contribute towards educating and developing necessary skills for the locals to take advantage of opportunities associated with the proposed construction of the proposed project. • Local businesses could be incubated and developed to be able to take opportunities in the construction and operation of the proposed project which is highly technical						

Table 12: Pre-construction phase impact rating - 2

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment expectations and influx of migrant labour	**No**	Neutral	4	3	6	4	**Medium (31)**
	Yes	Positive	4	3	2	4	**Medium (36)**
Corrective Actions	• There could be initiatives developed to contribute towards educating and developing necessary skills for the locals to take advantage of opportunities associated with the proposed project. • Local businesses could be incubated and developed to be able to take opportunities in the construction and operation of the proposed project which is highly technical. • When appointing subcontractors, Exxaro should give preference to appropriate subcontractors/SMMEs located in the surrounding communities, then in the municipal area, and then only to contractors located elsewhere or outside the province.						

6.2. Impact Rating: Project Construction Phase

Table 13: Construction phase impact rating - 1

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Job creation	**No**	Positive	2	1	6	4	**Medium (36)**
	Yes	Positive	2	2	8	4	**Medium (48)**
Corrective Actions	• Employment of skilled, semi-skilled and unskilled labours in the construction of proposed project within the receiving environment and ELM • Skills development initiative to prepare locals to have necessary skills to take up employment opportunities with the proposed project in line with the mine Social Labour Plan and the associated Employment Equity and Skills Development Plans. • Exxaro should promote the creation of employment opportunities for women and youth. The positions reserved for the youth and women may only be filled with persons outside of these categories if it can be demonstrated that no suitable persons can be employed from these categories.						

Table 14: Construction phase impact rating - 2

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Development of tenders and contract opportunities for local businesses in construction of the proposed Conveyor Belt and extending the existing discard dump	**No**	Positive	3	3	2	2	**Low (16)**
	Yes	Positive	3	3	2	4	**Medium (32)**
Corrective Actions	• If possible, the local businesses should be incubated and developed to be able to take opportunities in the construction of the proposed project. This should be aligned with the mine Social Labour Plan and associated Employment Equity and Skills Development Plans. • It is recommended that Exxaro to consult with local business forums.						

Table 15: Construction phase impact rating - 3

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Change in local land use in the affected area for the proposed project.	**No**	Negative	2	2	8	3	**Medium (36)**
	Yes	Positive	1	1	2	1	**Low (4)**
Corrective Actions	• Construction activities for the proposed project and the associated auxiliary infrastructure should be restricted within the footprint the approved site • With mitigation construction activities will be restricted to the mine receiving environment and there will be no negative spill-overs. There is therefore no adverse change in land use in the area.						

Table 16: Construction phase impact rating - 4

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Increased traffic	**No**	Negative	2	2	6	5	**Medium (50)**
	Yes	Positive	1	1	2	2	**Low (8)**
Corrective Actions	• The proposed conveyors construction will result to temporary increase in traffic volumes, but will reduce with the project operational phase. The conveyors belts will reduce traffic volumes on the roads and result in improved road conditions due to reduction in number of trucks which tend to impact significantly on the road conditions and life cycle of the roads.						

Table 17: Construction phase impact rating - 5

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Potential increase in occupation health and safety risks resulting from increase in traffic volumes associated with construction vehicles/trucks working on the proposed project especially for the locals to access the cemetery and the grazing fields and water bodies for their livestock in the receiving environment	**No**	Negative	1	2	6	5	**Medium (54)**
	Yes	Positive	1	1	2	1	**Low (4)**
Corrective Actions	• The cemetery access is in an area with a stop sign, truck drivers should be alerted to pay attention to families/community during burial days which are often Saturday and grant right of way to families/community during these occasions. • Roads must be adequately maintained to prevent deterioration of roads surfaces due to heavy vehicle traffic. Road maintenance should not be the sole responsibility of the ELM or the Department of Public Works.						

Table 18: Construction phase impact rating - 6

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Increase in pressure for water demand and allocation to support the construction of the proposed project and contamination of water bodies on site.	**No**	Negative	2	3	10	4	**Medium (60)**
	Yes	Neutral	1	2	6	3	**Low (27)**
Corrective Actions	• Various water schemes that are in place in ELM and Mpumalanga Province in general should be considered and in partnership with the responsible authorities and other water intake stakeholders in the area, the mine should ensure that it applies for the relevant permits • The mine should also ensure that it establishes the necessary water recycle measures such as water recycling and stormwater management systems as there is a possibility of contamination of water bodies during construction of the proposed project.						

Table 19: Construction phase impact rating - 7

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Reduction in agricultural land due to construction of the proposed project	**No**	Negative	4	4	8	5	High (> 80)
	Yes	Neutral	2	2	6	3	Medium (30)
Corrective Actions	• The proposed project will decrease the agricultural land or agricultural potential of the receiving environment which is also characterised by agricultural activities such as cultivation land and grazing land for local livestock. With regards to livestock Route B should be considered as the preferred alternative to Route A as livestock grazes along Route A. • If Route B is chosen as the preferred route, only one section of the receiving environment will be impacted, and the remaining section can continue to be used for agricultural activities and food security will not be majorly affected.						

Table 20: Construction phase impact rating -8

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on heritage resources	**No**	Negative	2	5	10	2	**Medium (34)**
	Yes	Neutral	1	1	2	1	**Low (4)**
Corrective Actions	• The project will not impact on archaeological or heritage graves.						

Table 21: Construction phase impact rating - 9

	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Increase in negative public sentiments about the proposed project if local businesses and labour are not considered in procurement	**No**	Negative	2	3	8	4	**Medium (52)**
	Yes	Positive	2	2	2	2	**Low (12)**
Corrective Actions	• To improve project public participation and communication strategies in order to strengthen multi-stakeholder engagement and participation in the planning and implementation of the proposed project and associated ancillary infrastructure such as Special Purpose vehicles to and from site and traffic measures that would assist the community and local herders. • Exxaro should inform and consult with its Stakeholders on all stages of the proposed project.						

6.3. Impact Rating: Project Operational Phase

Table 22: Operational phase impact rating - 1

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Dust suppression system, water recycling system, stormwater management system	**No**	Negative	2	4	6	4	**Medium (48)**
	Yes	Positive	1	1	4	2	**Low (12)**
Corrective Actions	• Necessary stormwater management plans have been designed to manage and mitigate any potential stormwater and capture polluted water overflows from the existing dump. • The provision of a dust suppression system will reduce the amount of dust associated with the extension the existing Discard Dump Facility. •						

Table 23: Operational phase impact - 2

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	**No**	Negative	2	2	6	3	**Medium (30)**
	Yes	Positive	2	1	2	1	**Low (5)**
Corrective Actions	• Urgent implementation of the project infrastructure such as construction of the conveyor belt will result in reduction is traffic volumes in the local roads for the transportation of coal by the conveying it instead of hauling coal by trucks.						

Table 24: Operational phase impact rating – 3

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Increase of the economy	**No**	Neutral	3	4	2	2	**Low (18)**
	Yes	Positive	4	5	0	4	**Medium (36)**
Corrective Actions	• The proposed development activities will result in an increase in efficiencies as coals will be easily transported from the east to west through a systematic conveyor belt system result in an increased productivity by the mine.						

Table 25: Operational phase impact rating - 4

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Skills transfer	**No**	Neutral	2	1	1	0	**Low (0)**
	Yes	Positive	2	5	6	4	**Medium (52)**
Corrective Actions	• Skills transfer programme should focus on the type of jobs that will result from the proposed project and structure skills transfer/training with the local communities to align with project deliverables so that project job creation is fully optimised resulting to long term and sustainable job opportunities.						

6.4. Impact Rating: Project Decommissioning Phase

Table 26: Impact associated with project decommissioning phase

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment opportunities in disassembling and recycling of recyclable materials from the proposed, Conveyor Belt, and extending the existing Discard Dump Facility.	**No**	Neutral	2	1	3	2	**Low (12)**
	Yes	Positive	4	2	6	4	**Medium (48)**
Corrective Actions	• Develop skills and employment opportunities for the locals during the decommissioning phase of the project.						

7. CONCLUSIONS

It is concluded that the significance of the Positive Socio-Economic benefits associated with the proposed development exceed the significance of the Negative Socio-Economic impacts**.** Below is the list of **Positive Socio-Economic Benefits**:

- The proposed mine expansion and prolonged life of the mine will result in sustainable jobs at the mine and will increase employment opportunities over the medium and long term. These include skilled, semi-skilled and under skilled labour which could consist of locals (in and around the mining area) as well as regional and national communities. Based on information provided in the Mining Works Programme, the proposed project will certainly require both skilled and unskilled labour; therefore, it is expected to yield positive spinoffs for the locals, the province and the country at large. From the existing mine works programme, the proposed project will generate approximately 50 jobs, both skilled and unskilled labour and approximately 10 more jobs for operationalisation of the project.
- The mine is already a socio-economic anchor within the immediate communities and more so for the country. The proposed project's planned infrastructure, excluding the actual mine investment, will further stimulate the local economy, given that total expenditure of R120,000,000.00 is budgeted for the proposed project's planned infrastructure which translates to 0,003% of Emalahleni's Gross Geographic Production (GGP) calculated at 40,5 billion.
- Though not based on empirical data derived from a Traffic Impact Assessment study, the proposed conveyor belt will undoubtedly result in reduced traffic volumes on the road from trucks transporting coal from the DCM West to the DCM East as well as from vehicles and trucks on the roads i.e., the R547 and R544.
- The proposed extension of the existing Discard Dump is situated in an area that is already disturbed and is also located in proximity to already existing mining infrastructure ., therefore it will not have an impact on the agricultural activities and livestock grazing.
- The proposed expansion of the existing discard will result in better management of the waste produced by the mine within a controlled environment. This measure will minimise the Negative Socio-Economic Impact on the ecological support services and the environment in general.

However, there will always be Negative Socio-Economic consequences associated a large capital project such as this one regardless of the efforts by the project proponent to minimise them. It is concluded that, the identified Negative Socio-Economic consequences associated with this project have been identified as short to medium term impacts and is expected to cease or decrease during

the operational phase of the project i.e. these are impacts mostly associated with the construction phase of the project. Below is the list of **Negative Socio-Economic Impacts**:

- Proposed development is located in an area characterised by a variety of agricultural activities which include among others: maize and soya beans cultivated fields and grazing fields for livestock i.e. cattle and goats. :
    - There will be reduced agricultural land for both crop and livestock farmers as the result of the conveyor belt and service road for maintenance and special purpose vehicles.
    - As such there will be a loss in agricultural potential arable land and grazing fields, but these impacts are localised and will not threaten the local, regional, provincial and national food security.
    - Direct impacts associated with farming from a localised perspective include:
        - ❖ Loss of agricultural land and consequently a negative impact on local farmer's annual agricultural yields. However, these impacts are minimal and are only associated with the planning and construction phase of the project. They will cease with the operational phase of the project as farmers will have already adapted to changing landscape by either exploring new lands within their properties or finding alternative forms of agriculture that would result in high yields within their farms such as pivot farming methods or controlled stock grazing methods.
        - ❖ The local livestock, which is dominantly cattle and goat from the nearby community of Thubelihle Township, uses the area north and south of proposed Route A of the proposed conveyor belt and service road. South of this Route the community can access water from the tributary for livestock. Constructing the proposed conveyor belt on Route A will negatively impact on the community and their livestock as they will not be able to access water bodies. The result is reduced agricultural fields during the project construction phase, but these impacts will cease with the operational phase of the project. The conveyor belt will prohibit the herders and their cattle's from accessing the water bodies for their cattle to drink. Consideration of Route Alternative A for the conveyor belt would imply that the cattle herders would have to access the R547 south of the mine operations in an area with no traffic lights to cross the road, which might result in roads fatalities i.e., livestock vs. vehicles vs. trucks collisions.

- Water bodies form the second group of ecological support services that will be impacted. These include surface water bodies; for example, the construction of the proposed infrastructure will transform the landscape and alter the water catchment of the receiving environment. Direct consequences will include:
    - Altered catchment, tributaries, wetlands and small dam due to water diversions to accommodate the planned conveyor belt and service road.
- In terms of heritage resources, there will be no impacts Based on the above it is concluded that the proposed expansion of the Dorstfontein West Mine will result to minimum negative impacts on agricultural activities (and agricultural land) and water bodies in the study area. But these impacts are insignificant as compared to the positive once and mitigation measures have been put in place.

8. RECOMMENDATIONS

When all is considered, the socio-economic benefits of the proposed project far outweigh the negative impacts; therefore, from a socio-economic point of view, there is no impediment to granting the EA to Exxaro as it will mostly have a positive socio-economic impact on the receiving environment. This should be dependent on the adherence and implementation of the following recommendations:

- Route B of the proposed conveyor belt should be selected as the preferred route as it will have less impacts on agricultural-cultivated fields (it traverses the least agricultural-cultivated fields as compared to Route A). This route will not pose access restrictions for local farmer's cattle to the tributary that traverses the site from west to east as is the case with Route A for the conveyor belt. The selection of Route A would mean that the mine has to make provision for the cattle to access the identified water bodies or drill boreholes, and construct wells that would be used for stock consumption, which will increase the investment on the project. Furthermore, the area has low yield, which could also impact on other underground water users in terms of water abstraction by the mine.
- From a socio-economic perspective, proposed extension of the existing discard dump will not have any negative socio-economic (e.g. impact on agricultural activities and livestock grazing) or environmental effects; it is situated in an area that is already disturbed therefore it will not have an impact on agricultural activities and livestock grazing.
- The proposed development should leverage the opportunity for economic upliftment by ensuring that at least or a minimum of 30% of the project construction value is allocated to local procurement for industries in Mpumalanga Province so that the project has a more direct multiplier effect in terms of the local economy of the region. If the project requires high skilled labour for construction, the main contractor must ensure that they procure some of its goods and services locally to benefit the local economy and result to increased local employment where possible. This condition must be aligned with the mine's Socio-Economic Development Plan and Social Labour Plan.
- Due to issues identified in relation to water resources in the receiving environment as one of the ecological support services and the fact that the mine will require some increased water allocation to operationalise the proposed infrastructure – it is recommended that should recycle both grey and black water as far as possible to be used for industrial activities. This will reduce mines dependency on fresh water and avoid completion with water allocation for agricultural and domestic consumption.
- Projects of this nature often fail or get delayed due to poor communication between the project proponent and I&APs who would want to inform the project. It is recommended that

the mine should develop a clear and concise two-way communication strategy, with its community or stakeholder liaison officer communicating the plan with mine stakeholders. Mpumalanga is a volatile landscape where community representation in such a project is always contested and negotiated. The two-way communication strategy would assist the mine to ensure that it keeps its stakeholders informed about the project at all times and avoid a potential strikes or labour or community unrest. This will include, among other things:

- Having a grievances procedure in place that is accessible to everyone.
- Contributing to skills development through their corporate governance and Corporate Social Responsibility (CSR) initiatives with the main focus on female empowerment.
- Having plans in place to avoid the displacement of the nearby farming community.
- Developing water recycling/ purifying technologies that will allow the mine to produce and maintain its operational water.

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