



N’Komati Anthracite (Pty) Ltd – N’Komati Anthracite Mine



Integrated Environmental Authorisation Process for Open Cast Mining Areas and Expansion of the Madadeni Underground Area and EMPr Consolidation & Amendment

Draft Scoping Report

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Date: August 2023

DMRE Reference Number: MP 30/5/1/2/2/89 MR

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Prepared by: Kirthi Peramaul, Alta van Dyk



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<p>VERSION CONTROL</p> <p>Alta van Dyk Environmental cc</p> <p>Version: Final for Public comment</p> <p>Approved by: <u>Alta van Dyk</u></p> <p>Signed: </p> <p>Position: Technical Director</p> <p>Date: August 2023</p>
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DRAFT SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT ACTIVITIES

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED), THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED) AND THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998) FOR WATER USES.

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FILE REFERENCE NUMBER SAMRAD: MP 30/511/2/2/89 MR

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “*will not result in unacceptable pollution, ecological degradation or damage to the environment*”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable, or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

PURPOSE OF THE DOCUMENT / OBJECTIVES OF THE SCOPING PROCESS

The scoping process is the first phase of the Environmental Impact Assessment (EIA) as required by the National Environmental Management Act (NEMA) and aims to identify significant issues as well as determine the scope of the subsequent Impact Assessment Phase.

The scoping process culminates in the compilation of a Draft Scoping Report (DSR) which includes a description of the environmental issues, potential impacts, potential alternatives and a detailed plan of study for the EIA Phase. After the review period has lapsed, all comments made, and concerns raised by the Interested and Affected Parties (I&APs) are evaluated and addressed in the Final Scoping Report (FSR) (This Report). The FSR is submitted to the Department of Mineral Resources and Energy (DMRE) for approval before the Draft Environmental Impact Assessment Report (DEIR) can be submitted. The Scoping Phase is the first phase in obtaining Environmental Authorisation (EA) from the DMRE and outlines a plan for the Environmental Management Programme Report (EMPr).

- 1) The objective of the scoping process is to, through a consultative process—
 - (a) identify the relevant policies and legislation relevant to the activity;
 - (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
 - (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
 - (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
 - (e) identify the key issues to be addressed in the assessment phase;
 - (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
 - (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

With the completion of the Scoping Phase, all comments received will be included within the Final Scoping Report and attached as a component of the Stakeholder Engagement Process. The Draft and Final Scoping Report are submitted to the relevant authorities: Department of Mineral Resources, for comment and decision making. It should be noted that stakeholder consultation is an on-going process which continues into the EIA Phase of the project.

COMMENTS ON THE DRAFT SCOPING REPORT

This Draft Scoping Report was available for comments for the period of **30 days from the 28 August to 28 September 2023**. Copies of the Draft Scoping Report are available at the following public places:

- N’Komati Anthracite Mine Security Office, Mpumalanga.
- Mawewe Tribal Authority Offices.
- Matsamo Tribal Authority Offices.
- Kwalugedlane Tribal Authority Offices.
- Mangweni Youth Advisory Centre
- Malelane Public Library, Park Street, Malelane, Mpumalanga.
- Offices of Alta van Dyk Environmental Consultants, 4 Garcia Peak, Midlands Estate, Centurion, Gauteng.
- Website: www.altavandykenvironmental.co.za

DUE DATE FOR COMMENT ON DRAFT SCOPING REPORT CLOSED ON:

28 September 2023

Comments were submitted to the Project Manager:

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GLOSSARY AND TERMINOLOGY

“alternative” a possible course of action, in place of another, that would meet the same purpose and need (of the proposal). Alternatives can refer to any of the following but are not limited to alternative sites for development, alternative projects for a particular site, alternative site layouts, alternative designs, alternative processes and alternative materials.

“construction” means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

“Constitution” – Refers to the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).

“Development” – means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

“Development footprint” – means any evidence of physical alteration as a result of the undertaking of any activity.

“Development setback” – means a setback line defined or adopted by the competent authority.

“Development site” – Boundary and extent of development works and infrastructure

“domestic waste” Waste, excluding hazardous waste that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.

“ECO” - Environmental Control Officer: - Person tasked with monitoring implementation of the EMP during construction

“environment” The surroundings within which humans exist and that are made up of:

- i. the land, water and atmosphere of the earth;
- ii. micro-organisms, plant and animal life;
- iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being. This includes the economic, social, cultural, historical and political circumstances, conditions and objects that affect the existence and development of an individual, organism or group.

“environmental impact assessment (EIA)” An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the environment. The EIA includes an evaluation of alternatives. As well as recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and environmental management and monitoring measures.

“environmental management plan (EMP)” An environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.

“Expansion” – means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

“footprint” Refers to the surface area of land directly affected by a development or activity; and is directly related to the physical extent and size of the development or activity.

“general waste” - Waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- domestic waste;
- building and demolition waste;
- business waste;
- inert waste; or
- any waste classified as non-hazardous waste in terms of the regulations made under section 69;

“hazardous substances or hazardous waste” hazardous substances are substances that are potentially dangerous and may affect human and/or environmental health. This would be because of the substances’ inherent chemical and physical composition, which could be toxic, poisonous, flammable, explosive, carcinogenic or radioactive. Hazardous substances include, but are not limited to:

- Human excrement, fuel, lubricating oils, hydraulic and brake fluid, acids, paints, anti-corrosives, insecticides, pesticides, detergents, cement, etc.
- Hazardous wastes are the by-products and wastes associated with the use of hazardous substances as well as potentially hazardous items such as spent batteries, old oil filters, light bulbs, circuit boards, sharp objects etc. which requires special collection and handling.

“Impact” – A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

“Incident” – An undesired event which may result in significant environmental impacts but can be managed through internal response

“interested and affected parties” Individuals, communities, or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

“Land Use” – means the purpose for which land and buildings is or may be used lawfully in terms of a land use scheme, existing scheme or in terms of any other authorisation, permit or consent issued by a competent authority, and includes any conditions related to such land use purposes.

“Layout Plan” – means a plan indicating information relevant to a land development application and the land intended for development and includes the relative location of erven, public places, or roads, subdivision or consolidation, and the purposes for which the erven are intended to be used.

“life of mine (LoM)” number of years that the operation is planning to mine and treat ore, as taken from the current mine plan.

“Maintenance” – means actions performed to keep a structure or system functioning or in service on the same location, capacity, and footprint.

“Maintenance Management Plan” – means a management plan for maintenance purposes defined or adopted by the competent authority.

“mining” The making of any excavation for the purpose of winning a mineral. The term covers reconnaissance, prospecting, mining, or retention operations in relation to a prospecting or mining right, permit or license.

“mining related activities” Activities directly related to mining, which are required for mine construction, operation and/or rehabilitation. Such activities serve no purpose other than to support the construction, operation and/or rehabilitation of the mine, and will be ceased, removed and/or rehabilitated at the end of the life of the mine, unless they can be utilized as part of the end-use requirement of the mine and to the benefit of the local community and environment.

“mitigate” The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

“monitoring” The repetitive and continued observation, measurement, and evaluation of environmental data, to enable the detection of changes over a time period to assess the efficiency of control, management and/or mitigation measures.

“Opencast” refers to open pit, open strip, and dragline mines.

“Owner” – means a person registered in a deeds registry as contemplated in sections 1, 2 and 102 of the Deeds Registries Act as the owner of land or beneficial owner in law and includes the Municipality or any other organ of state as an owner or where properties have been vested and is under the control and management of the Municipality in terms of section 63 of the Local Government Ordinance, 1939 (Ordinance 17 of 1939).

“public participation process” A process of involving the public in order to identify issues and concerns and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on or raise issues relevant to specific matters.

“residue stockpile” means any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.

“resource” The calculated amount of material in a mineral deposit, based on limited drill information.

“run-of-mine” A term used loosely to describe ore of average grade.

“Scoping Report” - A scoping report is a report whose purpose is to describe the methodology and range of activities of the appraisal work to be done in order to begin the process of collating information on relevant plans and programmes and is Finalized in accordance to regulation R 982 dated 4 December 2014.

“stockpile” Broken ore heaped on surface, pending treatment or shipment.

“Tributaries” – A stream or river which flows directly into a larger river or stream.

“Watercourse” means – (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

“Wetland” – means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

“Water quality” means the physical, chemical, toxicological, biological (including microbiological) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural, and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended) or micro-organisms, (b) physico-chemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physico-chemical attributes.

“Water Use License” – An authorisation from the Department to a designated water user to use water. The authorisation will provide details on the time-frames and conditions for the designated water use

“waste” Includes any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered.

“waste classification” Means establishing:

- i. whether a waste is hazardous based on the nature of its physical, health and environmental hazardous properties (hazard classes), and
- ii. the degree or severity of hazard posed (hazard categories).

ABBREVIATIONS

amsl	above mean sea level
BID	Background Information Document
DMRE	Department of Mineral Resources and Energy
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FSR	Final Scoping Report
Ha	Hectares
I&APs	Interested and Affected Parties
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Mine Water and Waste Management Plan
LoM	Life of Mine
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
mamsl	Metres above mean sea level
mbgl	Metres below ground level
MPRDA	Mineral and Petroleum Resources Development Act
m ³	Cubic Metres
m ²	Square metres
m	Metres
NEMA	National Environmental Management Act
NEMAQA	National Environmental Management: Air Quality Act 39 of 2004
NEMPAA	National Environmental Management Protected Areas Act
NEMWA	National Environmental Management: Waste Act 59 of 2008
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
RoD	Record of Decision
SAHRA	South African Heritage Resources Agency
SWMP	Stormwater Management Plan
WMA	Water Management Area
WULA	Water Use Licence Application

EXECUTIVE SUMMARY

N’Komati Anthracite

N’Komati Anthracite Mine is an existing opencast strip and underground mining operation owned by Nkomati Anthracite Mine (Pty) Limited under Afrimat Limited situated in the Mpumalanga Province of South Africa, approximately 52 kilometres south of Komatipoort and 10 km east of Mzinti. Nkomati Anthracite (Pty) Ltd has a mining right (reference MP30/5/1/2/2/89MR), which was renewed on 26 January 2022 by the Department of Mineral Resources and Energy (DMRE). The Mining Right is valid for a period of 30 years and allows for both open cast and underground mining.

The Mine is currently abstracting anthracite by means of both underground and opencast mining methods at the Mangweni and Madadeni Operations. Ore is hauled via trucks to the existing Beneficiation Plant, where it is washed and sorted and transported to clients.

Due to the complex geological structuring and availability of the coal seams in the region, the utilisation of opencast mining at the operations in conjunction with continued underground mining for the mine to be able to maintain its committed tonnages and the market and as such remain operational.

Project Description

The proposed activities are required in order to ensure that N’Komati Anthracite Mine can access the required volumes of anthracite at their existing Mangweni and Madadeni operations. This will be achieved by accessing the available anthracite resource in a more effective manner in order to be able to keep the Mine open. The complex geology at the existing operations poses a challenge to extract volumes and thus the establishment of proposed opencast mining areas and expansion of the Madadeni underground area is required to supplement the RoM from the existing operations.

Opencast Mining Areas

Five (5) opencast mining areas are proposed and form part of this application. These areas are as follows:

- Block L larger area
- Madadeni Opencast Mining Area
 - North North East
 - North East East
- Mangweni Mining Area
 - Mangweni Open cast
 - Mangweni South

Underground Mining Areas

Expansion of the previously approved Madadeni Underground Area

Supporting Infrastructure

- Overburden Stockpiles and Discard Dump
- Berms
- Haul Roads

Regulatory Approval Process

Before N’Komati Anthracite may commence with the development of the proposed project, the following environmental related approvals are required:

- A Scoping and Environmental Impact Reporting (S&EIR) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) Regulations (2014, as amended). The competent authority for this process is the Mpumalanga Department of Minerals and Energy (DMRE).

- Approval in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA) (combined application in terms of NEMA and NEM:WA to be submitted to the DMRE).
- A Water Use Licence Application (WULA) in terms of the National Water Act (Act 36 of 1998). The competent authority for this process is the Department of Water and Sanitation (DWS).

Environmental Assessment Practitioner

Alta van Dyk Environmental Consultants cc (an Independent Environmental Consultancy) has been appointed as the independent Environmental Assessment Practitioners (EAP) for the project by N’Komati Anthracite Mine to carry out the Scoping and EIA process. A practice which entails amongst others site surveys, scoping of issues and potential impact identification, identifying and describing alternatives, conducting public participation meetings, as well as actual impact assessment and providing mitigatory measures for these potential impacts.

Possible Impacts

Environmental Impact Assessment (EIA) is a tool used to assess the significant effects of a project or development proposal on the environment. EIAs make sure that project decision makers think about the likely effects on the environment at the earliest possible time and aim to avoid, reduce or offset those effects. Possible impacts associated with the development of the proposed project have been identified and will be further investigated as part of the impact assessment phase of the project. These include possible positive or negative impacts on the surface and groundwater resource, impacts caused by activities on air quality, noise and vibration, impacts on heritage resources and social impacts, only to name a few.

EIA has 5 main stages namely 1) Screening, 2) Scoping (this phase), 3) preparing the EIA Report, 4) submitting a formal application to the Competent Authority (CA), 5) decision-making by the CA. During the process Interested and Affected Parties (I&APs) are consulted, and concerns gathered to provide for mitigation measures to avoid, reduce or offset any possible impacts. In support of this application process, the Department of Mineral Resources and Energy (DMRE) are the Competent Authority.

During the process alternatives are being considered. These are documented as part of the Scoping Phase of the process. Based on the outcome of the specialist studies, the most feasible alternative is taken forward as part of the impact assessment phase of the project to derive site specific management and mitigation measures

Specialist Studies

As part of the Scoping and EIA process, a team of independent specialists have been appointed as to undertake the required specialist studies. The aim of these studies is to identify and quantify the impacts associated with the proposed project, propose mitigation measures as to manage or mitigate these impacts and provide the required monitoring and auditing requirements. The specialist studies to be undertaken include the following:

- Noise Impact & Vibration
- Soils, Land Use and Land Capability
- Groundwater Assessment
- Air quality Impact Assessment
- Financial Quantum
- Hydrology
- Heritage & Palaeontology Impact Assessment
- Wetland Delineation and Impact Assessment
- Social Impact

Public Participation

During the Scoping Phase, the following stakeholder engagement activities were undertaken:

- Updating the existing stakeholder database by identifying competent authorities, adjacent landowners and businesses in close proximity to the proposed opencast project;

- Project announcement:
 - Placing of site notices around the proposed project area;
 - Placing an advertisement in the local newspaper
 - Distribution of a Background Information Document to identified stakeholders;
- Making the Draft Scoping Report available for public comment for a period of 30 days
- Inviting stakeholders to register as Interested and Affected Parties (I&APs) and requesting comments on the proposed project and Draft Scoping Report; and

Comments raised by stakeholders during the Scoping Phase are captured in the Comment and Response Report.

The image (overleaf) provides a diagrammatical flow diagram of the regulatory approval process. The project is currently in the Scoping Phase.

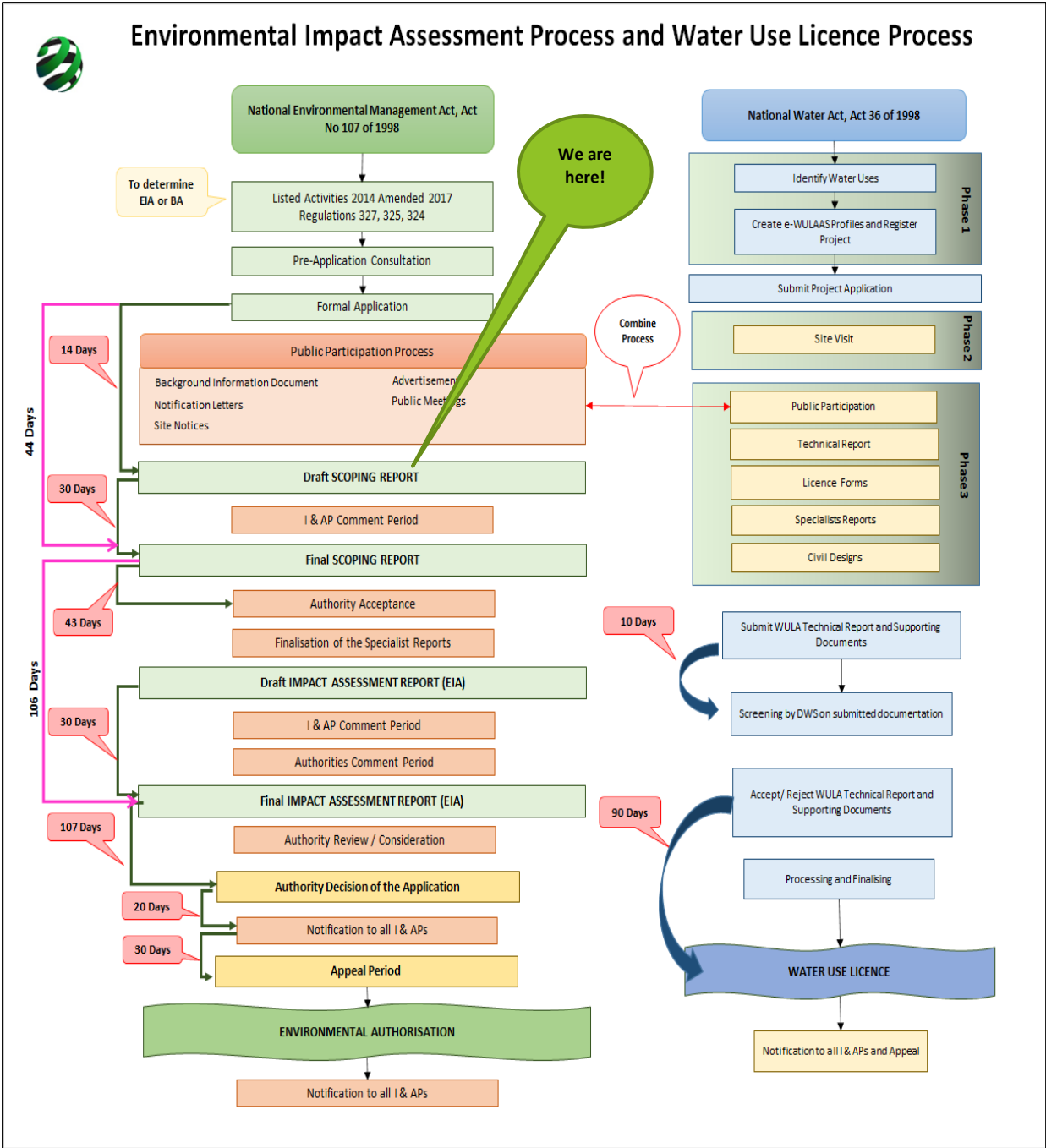


Figure 1-1: Regulatory Approval Process

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1 INTRODUCTION AND BACKGROUND

1.1 N'KOMATI ANTHRACITE MINE

N'Komati Anthracite Mine is an existing opencast strip and underground mining operation owned by Nkomati Anthracite Mine (Pty) Limited under Afrimat Limited situated in the Mpumalanga Province of South Africa, approximately 52 kilometres south of Komatipoort and 10 km east of Mzinti. Nkomati Anthracite (Pty) Ltd has a mining right (reference MP30/5/1/2/2/89MR), which was renewed on 26 January 2022 by the Department of Mineral Resources and Energy (DMRE). The Mining Right is valid for a period of 30 years and allows for both open cast and underground mining.

The Mine is currently abstracting anthracite by means of both underground and opencast mining methods at the Mangweni and Madadeni Operations. Ore is hauled via trucks to the existing Beneficiation Plant, where it is washed and sorted and transported to clients.

Due to the complex geological structuring and availability of the coal seams in the region, the utilisation of opencast mining at the operations in conjunction with continued underground mining for the mine to be able to maintain its committed tonnages and the market and as such remain operational.

Alta van Dyk Environmental Consultants cc has been appointed as the independent Environmental Assessment practitioner to undertake the required Environmental approvals for the development of Opencast mining areas, expansion of the Madadeni underground mining operations, EMPr amendment and Consolidation.

1.2 DETAILS OF THE APPLICANT

Table 1-1 provides details of the applicant.

Table 1-1: Details of the Applicant

Detail	N'Komati Anthracite (Pty) Ltd
Company Registration	1980/008581/07
Mine Owner	N'Komati Anthracite (Pty) Ltd
Postal Address:	PO Box 231 Sonpark Nelspruit 1206
Physical Address	Building A2, Unit 2, Upper Ground Floor, Central Park Business Park, 12 Suikerriet Street, Nelspruit, 1200
Contact Person	Mr Marlo Janse van Rensburg
Telephone:	021 917 8840

1.3 INDEPENDENCE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Alta van Dyk Environmental Consultants cc has a team of qualified Environmental Impact Assessment Practitioners (EAPs) in support of the management and execution of the Regulatory Processes. The team will consist of the following team members.

Kirithi Peramaul (BSc Hons Environmental Monitoring and Modelling, Pr.Sci.Nat, Registered EAP). Kirithi has 13 years' experience in the environmental management field and is currently registered with the South African Council of Natural Scientific Professions (SACNASP) as a Professional Natural Scientist (Registration No 400012/18: Environmental Science) and is as a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (Registration No 2020/1537).

Kirthi specialises in environmental authorisations, environmental compliance monitoring, environmental management plans, water use authorisation, stakeholder engagement, risk assessments and blue and green drop auditing. She has been involved in projects related to Waste Management, Linear Infrastructure, as well as Mixed-Use developments. The Curriculum Vitae of the EAP is attached to **Appendix A**.

Alta van Dyk holds a master’s degree in Environmental Management from the University of North-West and a Masters of Law (LLM) degree in International Commercial Law from the Salford University in Manchester. In terms of professional affiliation, Alta van Dyk is registered with the South African Council for Natural Scientific Professions (SACNASP – 400099/02) in Natural Science Services, as well as Environmental Science fields of practice. Alta is also a Registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA). Alta van Dyk has 31 years of experience in the environmental field.

Alta van Dyk has been involved as the project manager in various EIAs in terms of the National Environmental Management Act (NEMA) (No 107 of 1998), the National Environmental Management Waste Act (NEMWA) (No 59 of 2008), the National Water Act (NWA) (No 36 of 1998) as well as the Minerals and Petroleum Resources Development Act (MPRDA) (No 28 of 2002). Her responsibilities included the overall management of the project, the identification and assessment of environmental impacts and the development of environmental management plans.

Alta van Dyk meets the requirements for independence as she does not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the EIA Regulations, 2014 (as amended) and has no vested interest in the proposed activity proceeding, and also has no, and will not engage in, conflicting interests in the undertaking of the activity.

Table 1-2: Contact Details - Environmental Assessment Practitioner

Company Details	Postal Address	Physical Address
Alta van Dyk Environmental Consultants cc Tel: +27 12 940 9457 Fax: +27 86 3967	Postnet Suite #745 Private Bag X1007 Lyttelton 0140	Stand 2212 9 Mountain Sherman Road Midlands Estate 1692

A multi-disciplinary specialist team has been appointed to conduct the various specialist studies to determine the possible impacts that the developments at N’Komati Anthracite Mine might have on the environment and what possible mitigation measures can be implemented to reduce the possible risks.

The table below lists the various specialist studies to be undertaken to determine the possible impacts on the environment as a result of the proposed project.

Table 1-3: Specialist Team

Specialist Field	Company	Name
Noise Impact & Vibration	dBAcoustics	Barend van der Merwe
	Blast Management and Consulting	JD Zeeman
Soils, Land Use and Land Capability	Earth Science Solutions	Ian Jones
Groundwater	Future Flow	Martiens Prinsloo
Air quality Impact Assessment	Umoya-Nilu Consulting (Pty) Ltd	Mark Zunckel
Financial Quantum	Hydrological Environmental Engineering Solutions (Pty) Ltd	Deon van der Merwe
Hydrology		
Heritage & Palaeontology Impact Assessment	PGS Heritage	Henk Steyn
Wetland Delineation and Impact Assessment	WCS Scientific (Pty) Ltd	Dieter Kassier
Social Impact	Tony Barbour Environmental Consultant and Researcher	Tony Barbour

1.4 NEED AND DESIRABILITY OF THIS PROJECT

The proposed activities are required in order to ensure that N’Komati Anthracite Mine can access the required volumes of anthracite at their existing Mangweni and Madadeni operations. This will be achieved by accessing the available anthracite resource in a more effective manner in order to be able to keep the Mine open. The complex geology at the existing operations poses a challenge to extract volumes and thus the establishment of proposed opencast mining areas and expansion of the Madadeni underground area is required to supplement the RoM from the existing operations.

The employment opportunities afforded at the N’Komati Anthracite mine already contribute towards maintaining and improving employment opportunities within the Nkomazi Local Municipality. Such will have a positive spin off on the region and contribute to the provincial Gross Value Added (GVA). Mine revenue will facilitate fund allocation to local economic development through the implementation of projects identified in the Social and Labour Plan. Local contractors and businesses will benefit from supplying the mine with goods and services. The proposed project will enable the N’Komati Anthracite Mine to:

- Continue with Anthracite mining and stay in operation.
- Produce a sufficient quality and quantity of anthracite to meet its client’s requirements; and
- Facilitate economic development opportunities through the Social and Labour Plan.

1.5 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

N’Komati Anthracite anticipates that the proposed underground and opencast operations could extend the life of the mine up to 30 years. N’Komati Anthracite mine has a mining right that is valid from 19 February 2021 until 18 February 2051.

1.6 STRUCTURE OF THE DRAFT SCOPING REPORT (DSR)

The Draft Scoping Report has been structured as follows:

Table 1-4: Requirements for Scoping Report

Chapter	Content
Chapter 1	Introduction and Background
Chapter 2	Regional Setting and Locality
Chapter 3	Existing Operations
Chapter 4	Future Operations
Chapter 5	Alternatives Considered
Chapter 6	Legislative Background
Chapter 7	Environmental Status Quo
Chapter 8	Possible Environmental Impacts
Chapter 9	Plan of Study for Environmental Impact Assessment
Chapter 10	Public Participation Process
Chapter 11	Conclusion
Chapter 12	Undertaking regarding correctness of information
Chapter 13	References

1.7 REQUIREMENTS FOR SCOPING REPORT

The Draft Scoping Report has been structured in accordance with the requirements as specified in Government Gazette No 38282 dated 04 December 2014, Regulation 982.

Table 1-5: Requirements for Scoping Report

No	Description	Reference
a)	Details of: the EAP who prepared the report the expertise of the EAP to carry out scoping procedures	Section 1.3
b)	A description of the proposed activity	Chapter 4
c)	A description of any feasible and reasonable alternatives that have been identified	Chapter 5
d)	A description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is: a linear activity, a description of the route of the activity an ocean-based activity, the coordinates where the activity is to be undertaken	Chapter 2
e)	A description of the environment that may be affected by the activity and the manner in which activity may be affected by the environment	Chapter 7
f)	An identification of all legislation and guidelines that have been considered in the preparation of the scoping report	Chapter 6
g)	A description of environmental issues and potential impacts, including cumulative impacts, that have been identified	Chapter 8
h)	Details of the public participation process conducted in terms of regulation 27(a), including: the steps that were taken to notify potentially interested and affected parties of the application proof that notice boards, advertisements, and notices notifying potentially interested and affected parties of the application have been displayed, placed, or given a list of all persons or organisations that were identified and registered in terms of regulation 55 as interested and affected parties in relation to the application a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues	Chapter 10
i)	A description of the need and desirability of the proposed activity	Section 1.4
j)	A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity	Chapter 5
k)	Copies of any representations, and comments received in connection with the application or the scoping report from interested and affected parties	Chapter 10 To be included in the Final Scoping Report
l)	Copies of the minutes of any meetings held by the EAP with Interested and Affected Parties and other role players which record the views of the participants	Chapter 10 To be included in the Final Scoping Report
m)	Any responses by the EAP to those representations and comments and views	Chapter 10 To be included in the Final Scoping Report
n)	A plan of study for environmental impact assessment which sets out the proposed approach to the environmental impact assessment of the application, which must include: a description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialized processes, and the manner in which such tasks will be undertaken an indication of the stages at which the competent authority will be consulted description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity particulars of the public participation process that will be conducted during the environmental impact assessment process	Chapter 9
o)	Any specific information required by the competent authority	N/A.
p)	Any other matters required in terms of sections 24(4)(a) and (b) of the Act (New regulation can only be enforced after it went through all the channels)	N/A
In addition, a scoping report must take into account any guidelines applicable to the kind of activity which is the subject of the application.		
The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) (Activities that require authorization from more than one organ of state) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation (1)(c) (draft regulation must be approved by the Committee and procures followed), exist.		

2 REGIONAL SETTING AND LOCALITY

This section describes the regional locality of the N’Komati Mine as well as a brief history.

2.1 MINERAL RIGHTS

The N’Komati Anthracite Mine (N’Komati) has an existing mining right (MP30/5/1/2/2/89 MR), which was renewed on 19 February 2021 and is valid for a period of 30 years and allows for both open cast and underground mining. The mining right covers an area of 11812.4450 hectares (ha). The Mineral Rights Property Description is provided in **Table 2-1**.

Table 2-1: Mineral Rights Property Description

21 Digit Surveyor General Code for each farm portion	Grobler 479 JU	TOJU00000000047900000
	Guillaume 480	TOJU00000000048000000
	Wildebeest 494 JU;	TOJU00000000049400000
	Rusplek 495	TOJU00000000049500000
	Sweet Home 496 JU	TOJU00000000049600000
	Bonnie Vale 497 JU	TOJU00000000049700000
	Excelsior 498 JU	TOJU00000000049800000
	Murray 502 JU	TOJU00000000050200000
	Fig Tree 503 JU	TOJU00000000050300000
	Beginsel 504 JU	TOJU00000000050400000
	Unsurveyed State Land	Not Applicable

Figure 2-1 provides an illustration of the N’Komati Mine Mining Rights Area.

2.2 REGIONAL SETTING AND LOCALITY

The Mine is situated approximately 50 kilometres south of Komatipoort, 10km west of the Mozambique Border and 6.5 kilometres north of the town Tonga. The mine is situated within the jurisdiction Nkomazi Local Municipality within the Elanzeni District Municipality. The Local Municipality forms the eastern section of the Mpumalanga province with prominent towns such as Malelane, Komatipoort, Tonga, Kamhushwa and Kamaqhekeza. The regional locality map is provided in **Figure 2-2**. The locality map showing the current and approved operations is provided in **Figure 2-3**. The locality map showing the infrastructure that forms part of this application is provided in **Figure 2-4**. The properties associated with this application are as follows:

- Wildebeest 494 JU
- Rusplek 495 JU
- Sweet Home 496 JU
- Matabula 701 JU (*previously documented as surveyed state land*)
- Kwa-Hoyi 612 JU (*previously documented as Bonnie Vale 497 JU and Excelsior 498 JU*)

The 21 Digit SG codes for Farms Matabula 701 JU and Kwa-Hoyi 612 JU are provided in **Table 2-2**.

Table 2-2: SG Codes for Farms Matabula 701 JU and Kwa-Hoyi 612 JU

21 Digit Surveyor General Code for each farm portion	Matabula 701 JU	TOJU00000000070100000
	Kwa-Hoyi 612 JU	TOJU00000000061200000

2.3 Property Ownership

The land is owned by the state under the control of the Department of Rural Development and Land Reform with the Tribal Authorities as custodians thereof. **Table 2-3** provides the property ownership details.

Table 2-3: Property Ownership Details

Property	Surface Right Owner
Matabula 701 JU	Mawewe Tribal Authority
Matabula 701 JU	Matsamo Tribal Authority
Sweet Home 496 JU	Kwalugedlane Tribal Authority
Rusplek 495 JU	Kwalugedlane Tribal Authority
Kwa-Hoyi 612 JU	Hloyi Tribal Authority
Wildebeest 494 JU	Kwalugedlane Tribal Authority

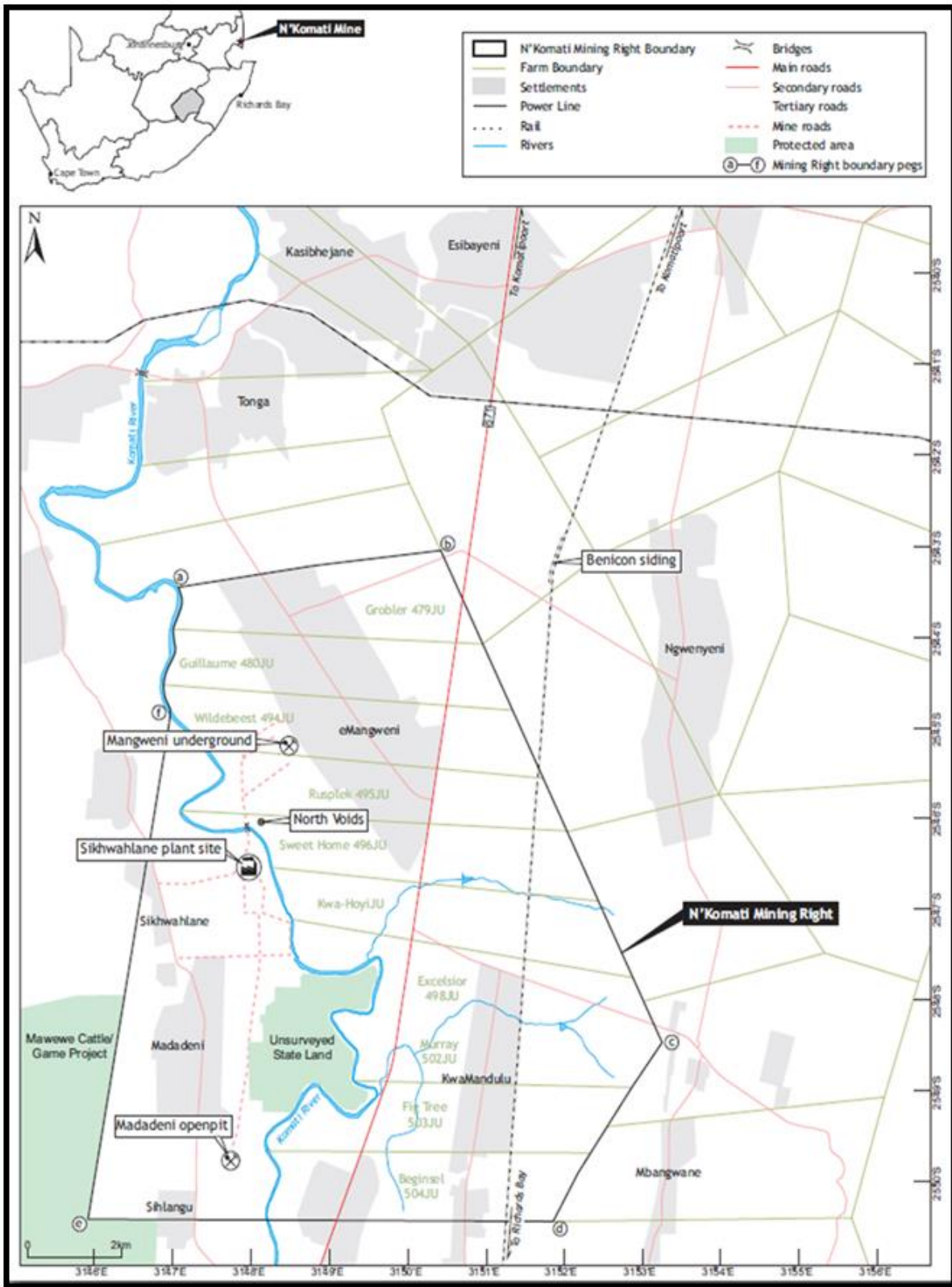


Figure 2-1: M'Komati Mine Mining Rights Area

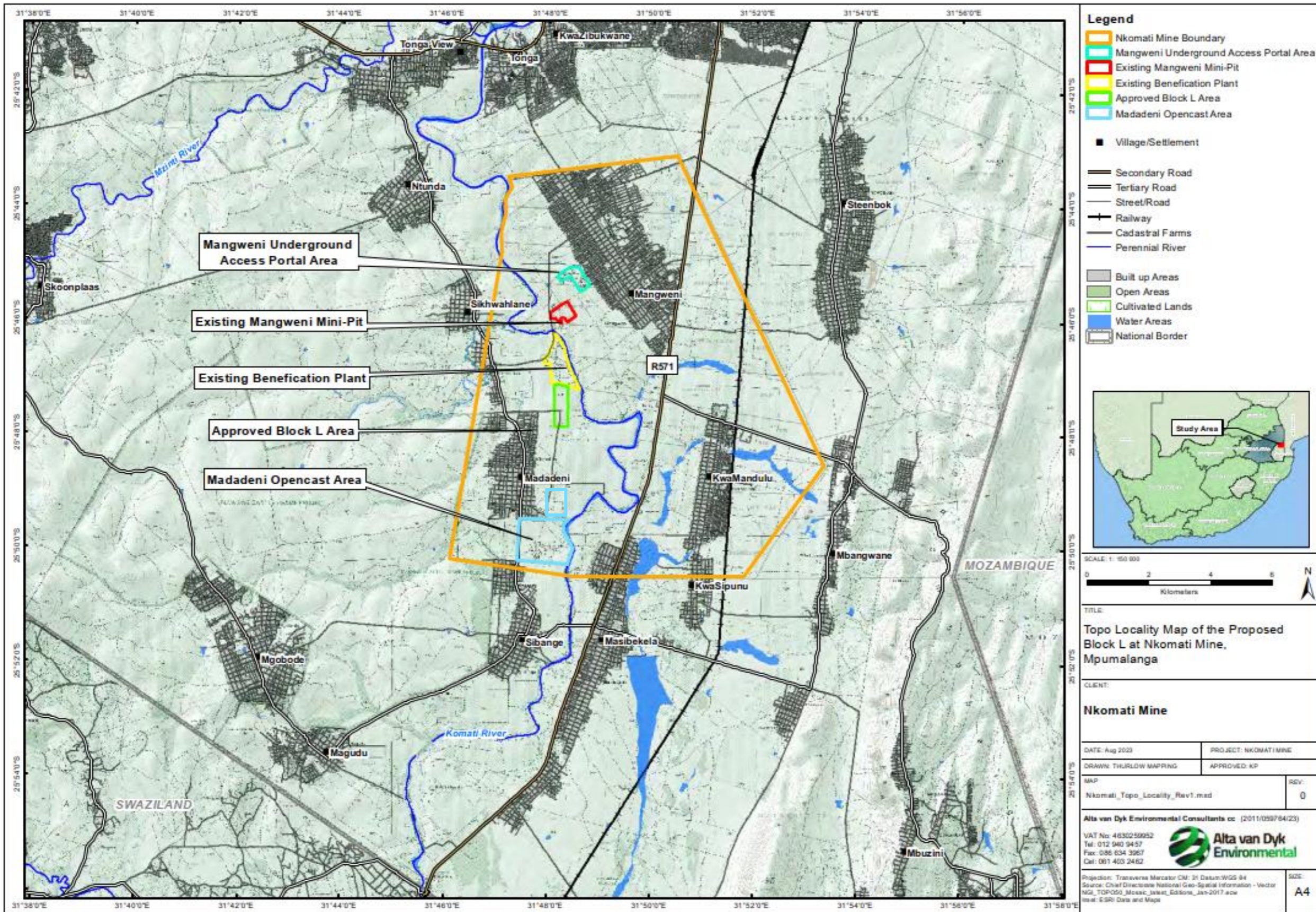


Figure 2-2: Locality Map

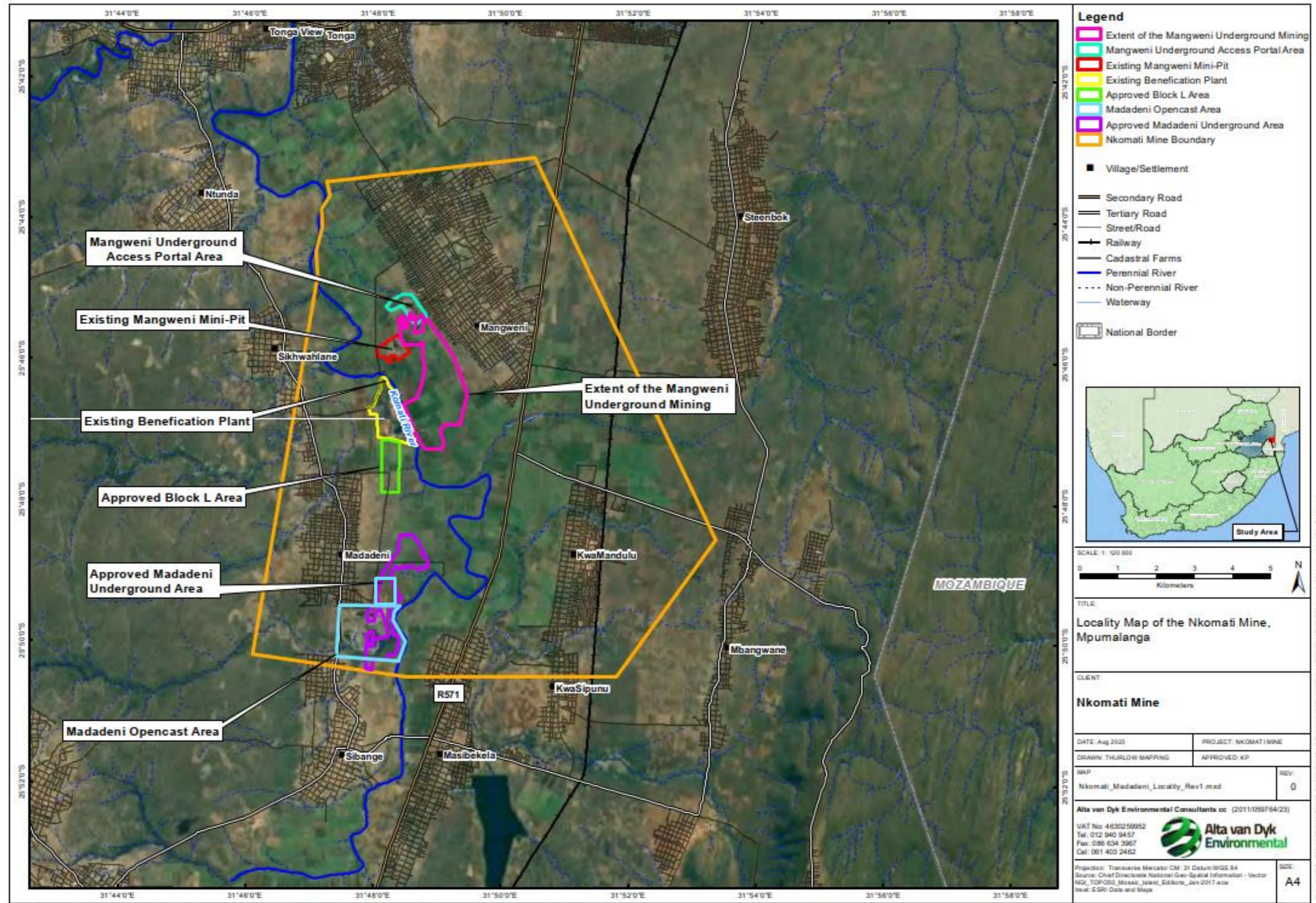


Figure 2-3: Locality Map indicating the Layout of the existing Operations

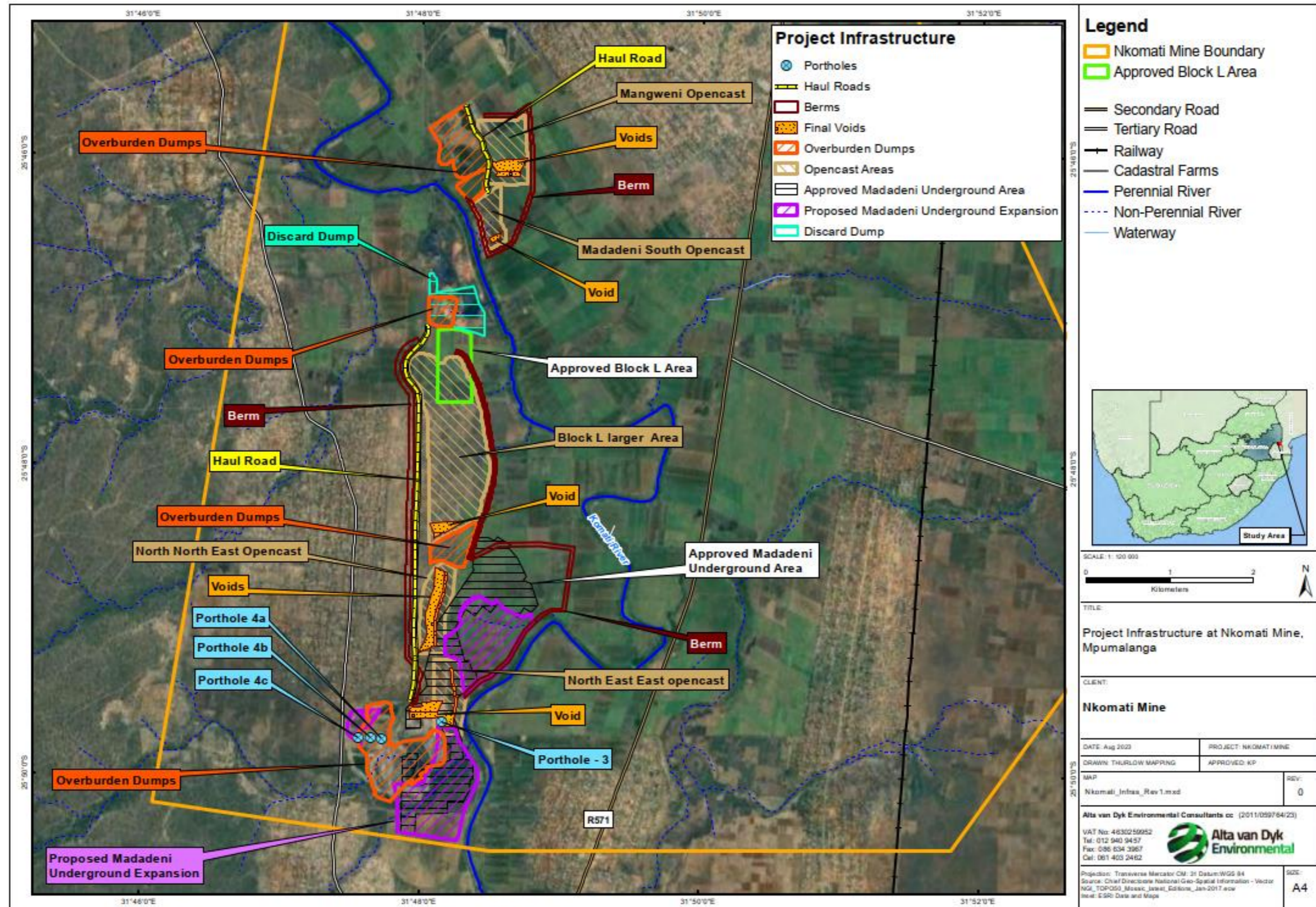


Figure 2-4: Locality Map Showing Proposed Infrastructure (part of this application)

2.4 BRIEF HISTORY

The mining operation at Nkomati Anthracite Mine commenced in 1985 by Messina Mining Limited, under an agreement that was entered into with Kangwane Mineral Exploration (Pty) Ltd. In 1991 Dania Corporation Limited took over Messina Mining Limited's share, which was however liquidated in 1992. In 1993, Benicon Coal (Pty) Ltd bought the 60% share held by Dania Corporation Limited in Nkomati Anthracite (Pty) Ltd and continued with mining at Nkomati Anthracite Mine. The mining operation under Benicon Coal (Pty) Limited was undertaken under a mining license issued in terms of the Minerals Act (Act No. 36 of 1992). Despite the mine having a mining license, the mining operation was undertaken under an un-approved EMPR (GCS, 2012).

The commencement of the MPRDA required that all mines operating under mining licenses in terms of the Minerals Act have approved EMPR documents and convert their mining licenses to the new order Mining Rights in terms of MPRDA. In view of the fact that the mine's EMPR was not approved, a new Mining Right (DMR. Ref. No.: MP30/5/1/1/2/89MR) was applied for in terms of the MPRDA for Nkomati Anthracite Mine under Nkomati Anthracite (Pty) Limited in 2005. The Mining Right and EMPR was granted and approved respectively, for Nkomati Anthracite Mine in 2010. Nkomati Anthracite Mine has subsequently amended their approved EMPR for the mining of coal at the Madadeni Opencast mining area that occurs within the Mining Right area of the Nkomati Anthracite Mine, which was gained in April 2011.

N'Komati Anthracite Mine in recent years was owned by Unicorn Capital Partners (UCP) (60%) & Mpumalanga Economic Growth Agency (MEGA) (40%). Afrimat owned 27.27% of UCP. In 2018, rural communities in Mpumalanga were granted a 16.1% stake in the mine following a ground-breaking agreement after Sentula Mining secured a loan from the Industrial Development Corporation (IDC). This agreement aimed to put an end to tension between the owners of Nkomati Anthracite Mine and the surrounding tribal communities of KwaLugedlane, Matsamo and Mawewe. MEGA played a major role in securing a stake in the mine for the residents following engagements with them.

In 2020 N'Komati Mine was placed under business rescue by Afrimat Limited. Afrimat acquired full ownership of N'Komati mine in 2020.

To date the following approved Environmental Management Programmes were received by the operations:

Table 2-4: Historical Track Record of approvals

Document Reference	Approved operations
Nkomati Anthracite (Pty) Limited. Nkomati Anthracite Mine. Environmental Impact Assessment and Environmental Management Programme. Geovicon cc. Report No. 522/2005. 15 November 2005.	<u>Underground mine (Mangweni), Processing Plant and the Opencast Area adjacent to the Processing Plant</u> <ul style="list-style-type: none"> • Haul Roads. • Electricity supply. • Topsoil and overburden stockpiling area at plant area. • Water Management Facilities. • Telephone Lines. • Workshop. • Washing Plant. • Mine Office; and • Substation.
Nkomati Anthracite (Pty) Ltd: Madadeni Opencast Mining Project. Environmental Impact Assessment Report. Including the summary on Interested and Affected Parties Consultation. Geovicon Environmental (Pty) Ltd. March 2011.	<u>Madadeni Opencast</u> The development of the Madadeni opencast operations on state land south of the Madadeni Village.

Document Reference	Approved operations
<p>Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Mine Final Basic Assessment Report. Alta van Dyk Environmental Consultants.</p> <p style="text-align: center;">June 2017</p>	<p><u>Processing Plant Upgrades and Mangweni Underground Operations</u></p> <ul style="list-style-type: none"> • A second Washing Plant in parallel with the existing module; • A pressure filter to recover water and produce a fine product; • Appropriately prepared surfaces to be constructed underneath all crushed ore and product stockpiles as to protect the product from becoming contaminated during the loading process; • Lining and upgrade of the Plant Pollution Control Dam; • Settling Ponds; • New conveyors and screening for product separation; and • Additional Run-of-Mine (ROM) Stockpile with conveyor at the underground mine workings.
<p>Nkomati Anthracite (Pty) Ltd: Madadeni Opencast Section. Environmental Impact Assessment and Environmental Management Plan Report. Final for DEA and Public Review. Project Number: 11-375. GCS Water and Environmental Consultants.</p> <p style="text-align: center;">July 2012.</p>	<p><u>Madadeni Opencast</u></p> <p>Section 24G rectification Application for some activities undertaken without authorisation at the Madadeni opencast area:</p> <ul style="list-style-type: none"> • Construction of a haul road between the Madadeni opencast area and the processing plant; • Construction of a water supply pipeline from North Void to the Beneficiation Plant crossing the Komati River on the existing low water bridge • Pollution control dam; • Vegetation clearance of more than 1 Ha.
<p>Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Basic Assessment and EMP Amendment Madadeni Mining Area</p> <p style="text-align: center;">November 2019</p>	<p><u>Madadeni Operations</u></p> <ul style="list-style-type: none"> • Opencast expansion. • New Underground Mining Area. • Reshaping of stockpiles for rehabilitation.
<p>Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Basic Assessment for the Mangweni Mini Pit & EMPr amendment for the Mangweni Operations and Plant Area</p> <p style="text-align: center;">March 2020</p>	<p><u>Mangweni Operations</u></p> <ul style="list-style-type: none"> • Mangweni Mini Pit
<p>Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Basic Assessment for the N’Komati Mine Block L Opencast and Amendment of the EMPr for Mangweni Operations and Plant Area</p> <p style="text-align: center;">April 2022</p>	<ul style="list-style-type: none"> • Block L opencast

N’Komati Mine proposes to consolidate all the approved EMP’rs into a single Amended and Consolidated EPP as per the environmental approval trajectory provided in **Figure 2-5**.

This application includes the consolidation of the 2017, 2019, 2022 EMPr with the inclusion of the current application components as detailed in Chapter 4.

N'KOMATI ANTHRACITE: EVOLUTION OF ENVIRONMENTAL APPROVALS

2005	<ul style="list-style-type: none"> • Opencast (old opencast area – now Voids) • Mangweni Underground Mining
2011	<ul style="list-style-type: none"> • Madadeni Opencast Area
2017	<ul style="list-style-type: none"> • Expansion of the Processing plant • Washing plant
2019	<ul style="list-style-type: none"> * Amendment of the 2011 approved EMPr (the 2019 EMPr superseded the 2011 EMPr) • Expansion of the Madadeni Opencast Area • Madadeni Underground Area
2020	<ul style="list-style-type: none"> * Amendment of the 2005 approved EMPr • Mangweni Mini Pit
2022	<ul style="list-style-type: none"> * Amendment of the 2020 EMP (the 2022 EMPr superseded the 2020 EMPr) • Block L opencast mining area

Existing Approved EMPr:

- ✓ 2017 EMPr (Expansion of the Processing plant, washing plant)
- ✓ 2019 EMPr (Expansion of the Madadeni Opencast Area, Madadeni Underground Area, Madadeni Opencast Area)
- ✓ 2022 EMPr (Block L Open cast area, Mangweni Mini Pit, Mangweni underground, Opencast (old opencast area – now Voids))



Current Application

- ✓ Consolidation of the 2017, 2019 & 2022 EMPr's
- ✓ Inclusion of the proposed new opencast areas, haul road, berms, discard facility, overburden material & expansion of Madadeni underground area

Figure 2-5: Approval Processes to date and Consolidation of the EMPr Documentation

3 EXISTING OPERATIONS AND ASSOCIATED INFRASTRUCTURE APPROVALS

3.1 Access to the N’Komati Anthracite Mine

Access to the mine is via a gravel road about 2km off the Mzinti to Madadeni area public road, the mine approximately 50 km south of the town of Komatipoort. Internal access roads have been constructed within the mine to access and connect to all the sections of the mine.

3.2 Existing Mining Operations

The mine is divided into the following operational areas, namely:

- Mangweni Operations (Underground & mini pit)
- Madadeni Operations (Open Pit and Underground)
- Beneficiation Plant
- Block L (Open Pit)

Details of the existing operations has been provided in this chapter.

3.2.1 Mangweni Operations

3.2.1.1 Mangweni Underground Operations¹

This section of the mining area is located to the northeast of the processing plant. Underground mining currently takes place at the existing Mangweni Operations through the bord and pillar mining method. Ore is extracted from underground and transported to the plant for processing. Water that is removed from underground is pumped to the North Void where it is stored and occasionally used as make-up water at the beneficiation plant. The current Mangweni Underground area consists of the following infrastructure and facilities:

- Overburden Stockpile
- Waste Rock Dump
- Topsoil Stockpile
- Offices and Change Houses
- Adit
- Workshop Complex
- Conservancy tanks
- Run of Mine Stockpiles
- Salvage yard

Figure 3-1 provides an image of the Mangweni Underground Operations and **Figure 3-2** the access portal area.

¹ Nkomati Anthracite (Pty) Limited. Nkomati Anthracite Mine. Environmental Impact Assessment and Environmental Management Programme. Geovicon cc. Report No. 522/2005.



Figure 3-1: Photograph of the Mangweni Operations – Access Portal Area

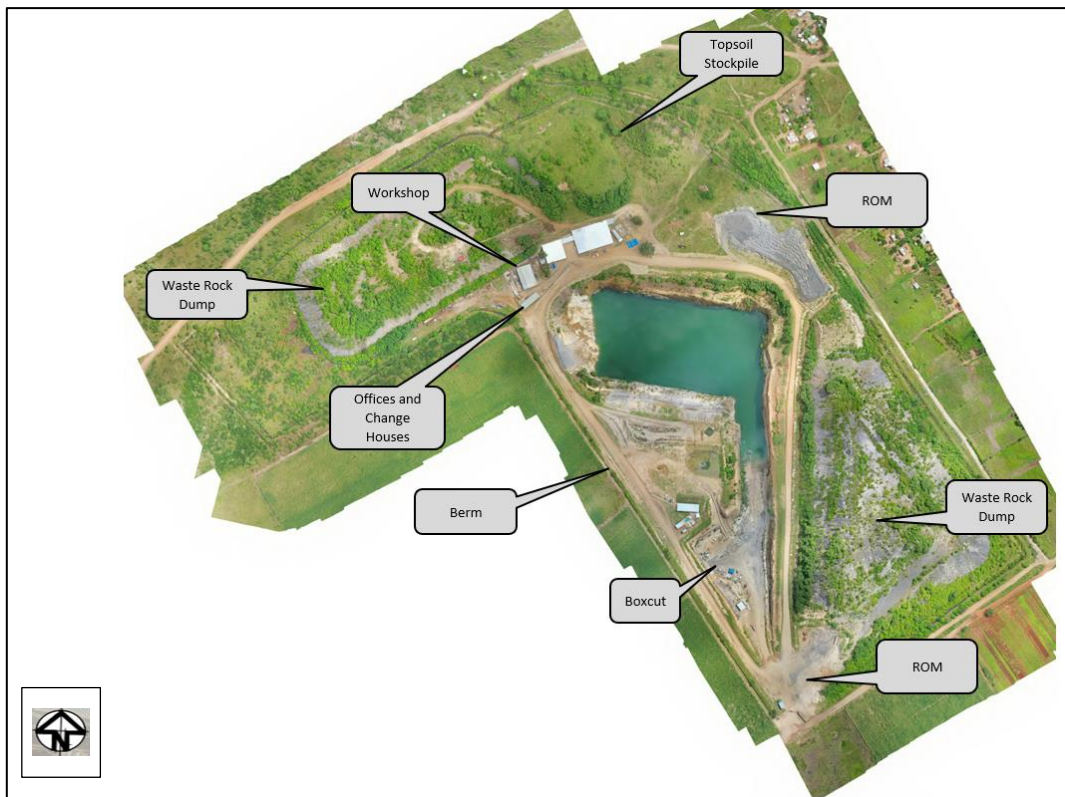


Figure 3-2: Mangweni Underground Section – Access Portal Area

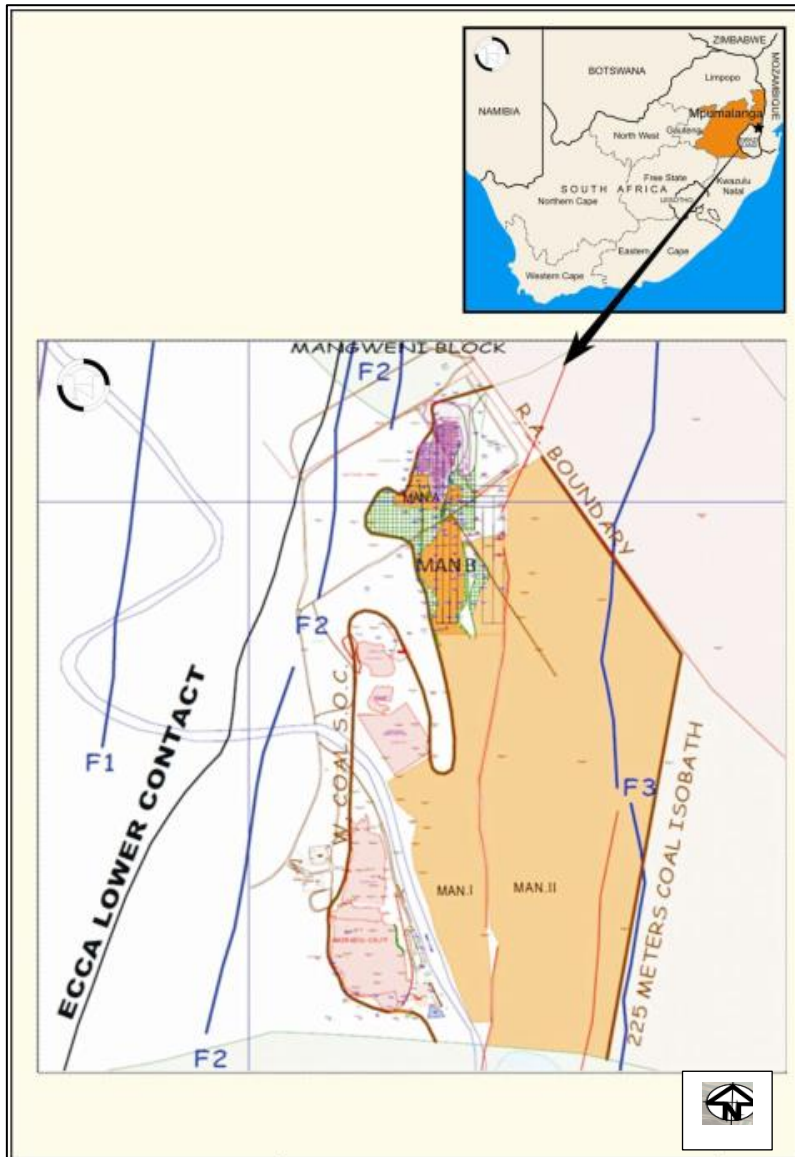


Figure 3-3: 2011 Mangweni Underground Resource Block (SRK, 2011)²

3.2.1.2 Mangweni Mini Pit³ and North Void

The Mangweni Mini-Pit is an opencast pit located between the North Void and the current Mangweni Underground. Mining at the mini pit commenced in 2021 and ceased in 2023 with continual rehabilitation currently underway. As with the Mangweni Underground, ore is abstracted and transported to the plant for processing. Water that is removed from the opencast mini pit is pumped to the North Void for storage and occasionally used as make-up water around the plant.

² SRK Consulting, 2011. An Independent Competent persons, Report on Material Coal Assets of Sentula Mining Limited Report No 431395.

³ AvDE, 2020, Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite, Basic Assessment for the Mangweni Mini Pit & EMPr amendment for the Mangweni Operations and Plant Area.



Figure 3-4: Mangweni Mini Pit Layout and North Void

The Mangweni Mini Pit infrastructure consists of the following:

- Overburden stockpiles
- Topsoil stockpiles
- Run of mine stockpiles
- Access and haul road

Note:

The 2020 EMPr and Environmental Authorisation allows for the following listed activities in terms of the EIA Regulations 2014 (as amended)

- EIA Regulations GN 983 of 2014
 - Activity 27 - The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan;
 - Development of the Mangweni Mini-Pit

The north void is a mined opencast pit located northeast of the processing plant adjacent to the Mangweni Mini Pit.

The north void is a previously mined out, opencast section of the mine (Figure 3-4 for the locality of the North Void just south of the Mini Pit Area). The north void is located north-east of the processing plant, on the northern side of the Komati River, southwest of the Mangweni Underground Operations.

Water from the Mangweni underground workings is pumped to this void, from where it is then used as make-up water for the processing plant. The area is sloped in such a way that contaminated surface water run-off will collect in the void and clean water will disperse into the environment.

The void is used for the storage of mine water from the Madadeni opencast mini pit and underground workings from where it is pumped via a water pipeline and used at the processing plant for processing. The north void consists of the following:

- Generator and pumpstation
- Pipeline network
- Access and haul roads

3.2.2 Madadeni Operations

The Madadeni Operations includes open cast and underground mining areas that are currently being mined.

The Madadeni operations and is situated \pm 6 kilometres south of the processing plant. A haul road has been constructed and ROM (Run of Mine) product is transported from the ROM stockpiles at Madadeni to the Beneficiation Plant where it is processed and stockpiled to be collected by consumers.

It is estimated that mining will continue up until 2023 with approximately 944 073 tonnes of anthracite being mined over the period. Currently the “roll over” method of mining is employed allowing for the material to be placed back into the pit areas as mining progresses. The deposition will take place in such a manner that it allows for the development of two portals to ensure access to the Madadeni Underground operations.

3.2.2.1 Madadeni Opencast Areas ⁴⁵⁶

The original Madadeni Open Pit Area was approved in 2011. The Madadeni North East opencast area was approved 2019 and is currently being mined.

The material excavated from the opencast have been quantified and is sufficient to be used to shape and slope existing stockpiles and will not require new stockpiles to be established. The Madadeni opencast pit area consists of the following:

- Run of Mine Stockpiles
- Overburden Stockpiles
- Topsoil Stockpiles
- Waste Rock Dump
- Site office
- Access and haul road

Note:

The 2019 EMP and Environmental Authorisation allows for the following listed activities in terms of the EIA Regulations 2014 (as amended)

- EIA Regulations GN 983 of 2014 (as amended)
 - Activity 27 - The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan;
 - Development of the North East opencast area.

The original 2011 Madadeni Opencast area is provided in the Blue outline and the 2019 approved North East Block in Yellow in **Figure 3-5**. The quantified resource block is indicated in **Figure 3-6**.

⁴ Geovicon Environmental (Pty) Ltd, 2011, Nkomati Anthracite (Pty) Ltd: Madadeni Opencast Mining Project. Environmental Impact Assessment Report. Including the summary on Interested and Affected Parties Consultation.

⁵ Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Basic Assessment and EMP Amendment Madadeni Mining Area, 2019

⁶ Nkomati Anthracite (Pty) Ltd: Madadeni Opencast Section. Environmental Impact Assessment and Environmental Management Plan Report. Final for DEA and Public Review. Project Number: 11-375. GCS Water and Environmental Consultants, 2012



Figure 3-5: Madadeni Opencast Area approved 2011 and 2019 EMPr

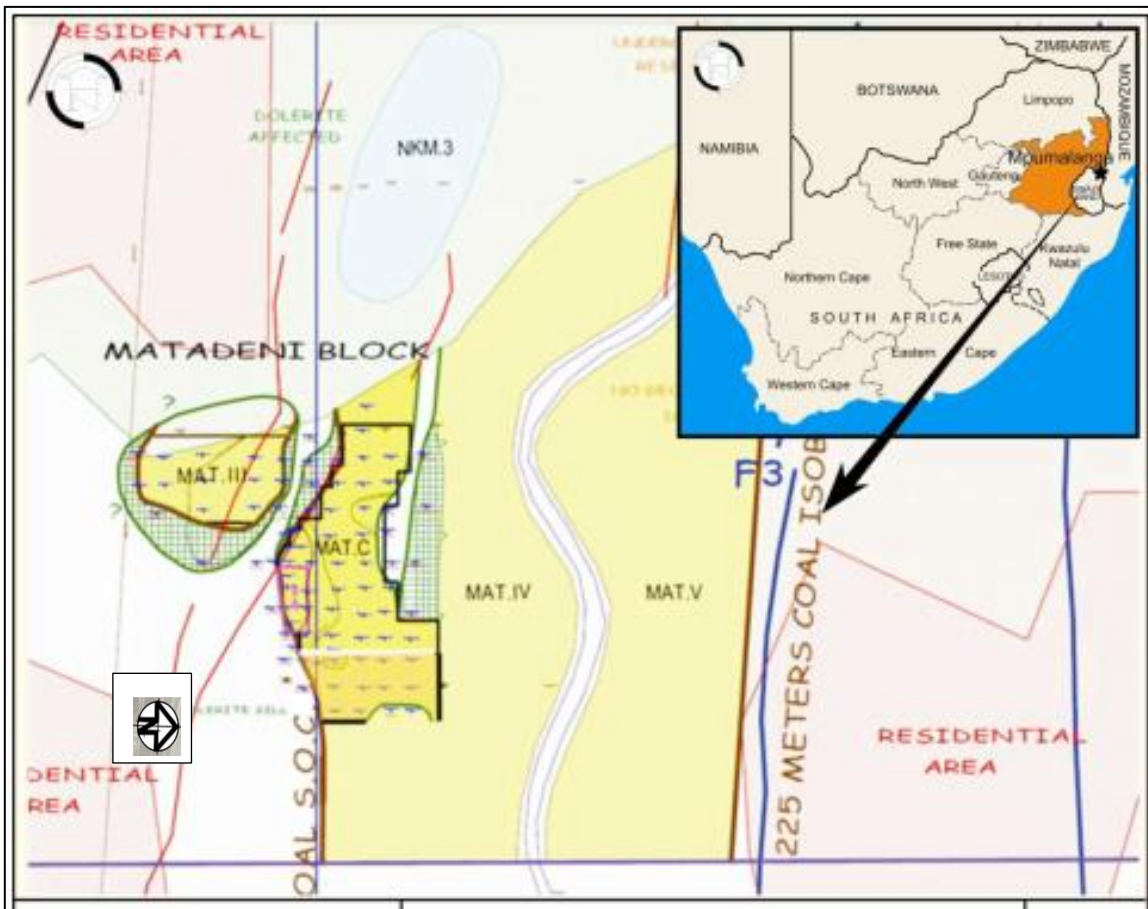


Figure 3-6: 2011 Madadeni Resource Block (SRK, 2011)

3.2.2.2 Madadeni Underground Mining⁷

N’Komati Anthracite mine has also received environmental approval to undertake underground mining at the Madadeni operations in 2020⁸.

Due to the complex geological structuring of the coal seams in the Madadeni region, the utilisation of underground mining at the Madadeni Operations is required in conjunction with continued opencast mining in a north-easterly direction. Madadeni underground mining operations was approved in the 2020 EMPr.

Mining at the underground operations has not yet commenced. The Madadeni Underground will make use of two portals for underground access and will be located within the existing disturbed opencast mining area. The proposed underground mining will take place within the already disturbed opencast mining area. Access to the underground will be by means of a ramp down to two portals.

The approved Madadeni Underground layout is provided in Figure 3-7.

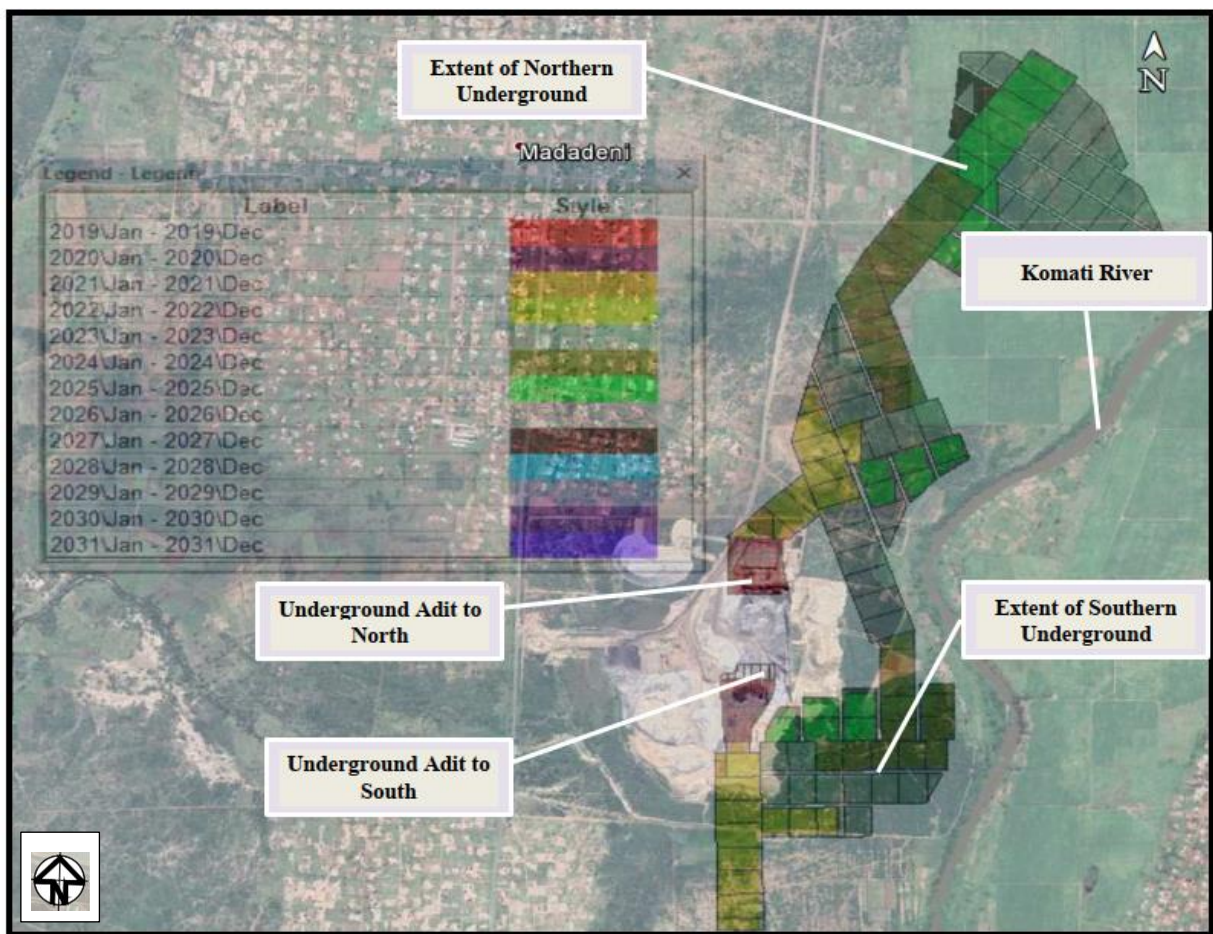


Figure 3-7: Approved Madadeni Underground Area Extent

⁷ Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Basic Assessment and EMP Amendment Madadeni Mining Area, 2019

⁸ DMRE, 2020. Environmental Authorisation in terms of the national Environmental management Act, 1998 (NEMA) as amended and the Environmental Impact Assessment (EIA) Regulations, 2014 for underground mining and overburden stockpile in respect of portion of Unsurveyed State Land, the Farms Grobler 479 JU, Guillame 480 JU, Wildebeest 494 JU, Rusplek 495 JU, Sweetrhorne 496 JU, Bonnie Vale 497 JU, Excelsior 498 JU, Murray 502 JU, Fig Tree 503 JU and Beginsel 504 JU, Situated in the Magesyerial District of Barberton in Mpumalanga Region.

3.2.3 Block L Open Cast⁹

The Block L opencast mining area obtained approval in the 2022 EMPr. The Block L opencast mining area is situated to the south of the existing processing plant along the existing haul road. Mining of Block L commenced in 2023 and it is expected that mining could continue up until 2031.

As the open pit progresses, a topsoil layer of approximately 300mm will be removed and stockpiled, separate from overburden to facilitate effective rehabilitation. The topsoil stockpile will be minimal as the material will be used in annual rehabilitation. The coal seam will be removed using drill and blast in combination with mechanised truck and shovel to expose ore. The ore (anthracite) will be hauled to the plant for processing through use of the existing haul road. The roll over method of mining will be used as far as practically possible to ensure effective use of the area (**Figure 3-8**).

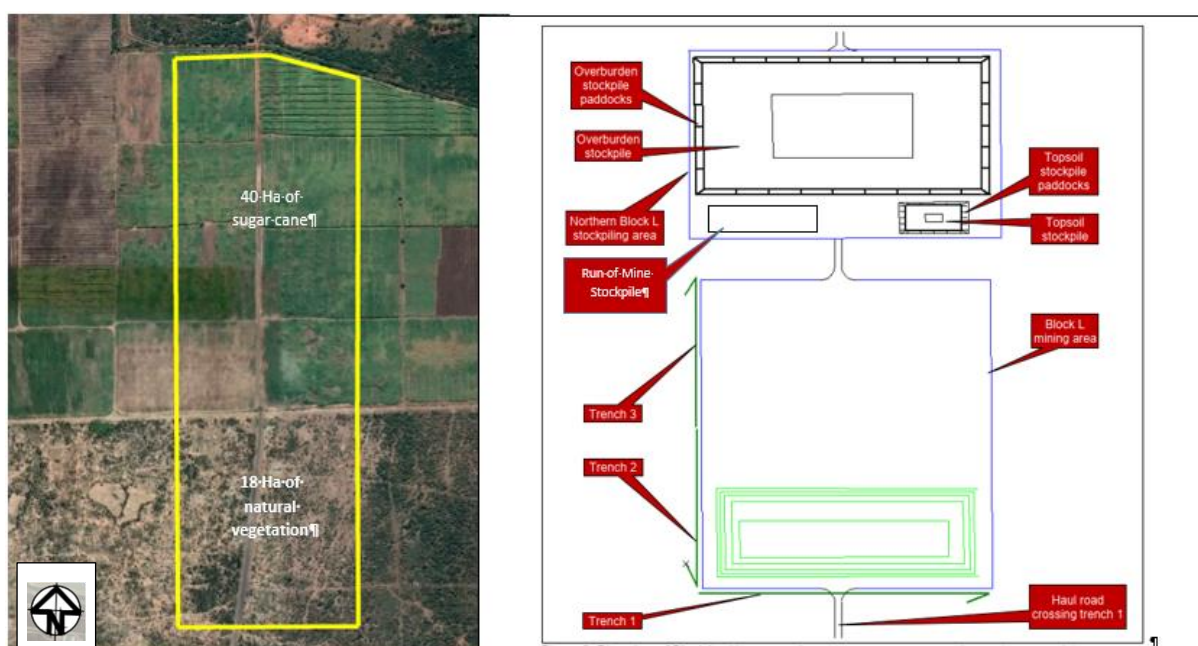


Figure 3-8: Block L Mining Area

An overburden quantity of approximately 3.3million m³ will be placed inside the pit to limit the overburden stockpile footprint, whilst approximately 3.7million m³ of overburden will be stockpiled on the Northern side of Block L on an area current used for sugarcane farming. The fissure water that will be removed from Block L which will be transferred to **Void 2**.

Note:

The 2022 EMPr and Environmental Authorisation allows for the following listed activities in terms of the EIA Regulations 2014 (as amended)

- EIA Regulations GN 983 of 2014 (as amended)
 - Activity 19: The infilling or deposition of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles, or rock of more than 10 cubic metres from a watercourse.
 - Activity 27 - The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan;
 - Activity 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (i) where the existing reserve is wider than 13.5 meters; or (ii) where

⁹ Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite. Basic Assessment for the N’Komati Mine Block L Opencast and Amendment of the EMPr for Mangweni Operations and Plant Area, April 2022

3.3 Beneficiation Plant¹⁰

Run of Mine (RoM) is transported via trucks on the haul road from Madadeni and Mangweni Operations to the processing plant where it is stockpiled on top of an elevated area. From the elevated area the RoM is fed into the crush and screening plant. Three material streams are produced through the processing plant: namely product, discard, and slurry. Anthracite is fed via the RoM bin through the primary crusher and screens and into the washing plant. Fines are collected from the de-sliming screen and fed to the spiral plant. The larger size fraction is then pumped to the cyclone plant which separates the product from the discard at a set density. The product is run through the washing plant where the ore is washed to remove impurities which could lower the value of the anthracite. Magnetite gets recovered and the product is screened into three different sizes and stockpiled separately. The discard material from the first crushing and screening process is washed and screened a second time to ensure that all products have been extracted. The washed anthracite and discard run through the filter press plant where excess water is removed from the product as well as fine materials which could potentially silt up the process water dams. The excess water is pumped into the thickeners to be re-used in processing. **Figure 3-9** provides a photograph of the beneficiation plant and **Figure 3-10** provides a layout of the Beneficiation plant.

Discard is stockpiled before being used to backfill the voids as per the approved WUL. The fine filtered material (slurry) is removed from the filter with the intent to dry and sell off the slurry for brick making and other industries and community projects. However, currently the offtake does not occur at a quick enough rate which means that slurry is also being used to backfill the voids. Based on water quality monitoring results, the slurry is viewed as inert and doesn't pose a risk of acid mine drainage as anthracite is cleaner than coal and is often used in water filtration. The slurry is the same material as discard, which the mine is authorised to backfill with and as such the mine backfills with slurry.

The Product is collected by interlink trucks and transported to the clients. A weighbridge is located at the plant to weigh product coal leaving the site.

The plant re-uses its process water and makes use of makeup water from the North Void if required. The mine has recently desilted and relined the two process water/storage dams located at the processing plant. The slurry settling dams are no longer required due to the presence of a filter press and as a result these dams are being emptied to be rehabilitated.

Located to the South of the washing plant are the plant offices, diesel storage/fuelling area; workshops, salvage yard, discard handling area (where discard is stored temporarily before being pushed into the void for backfilling), truck staging area and internal haul road. Block L is proposed to be to further to the South of this area along the haul road.

The Beneficiation Plant and associated area includes the following infrastructure:

- Beneficiation plant
- Product stockpile area
- Discard handling area
- Slurry stockpile.
- Slurry settling ponds
- Pollution Control Dams
- Fuel Bunker
- Workshop area
- Offices
- Septic tank

¹⁰ Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite Mine Basic Assessment Report. Processing Plant Upgrades and Mangweni Underground Operations Alta van Dyk Environmental Consultants, June 2017.

- Salvage area
- South void



Figure 3-9: Photograph of the Beneficiation plant

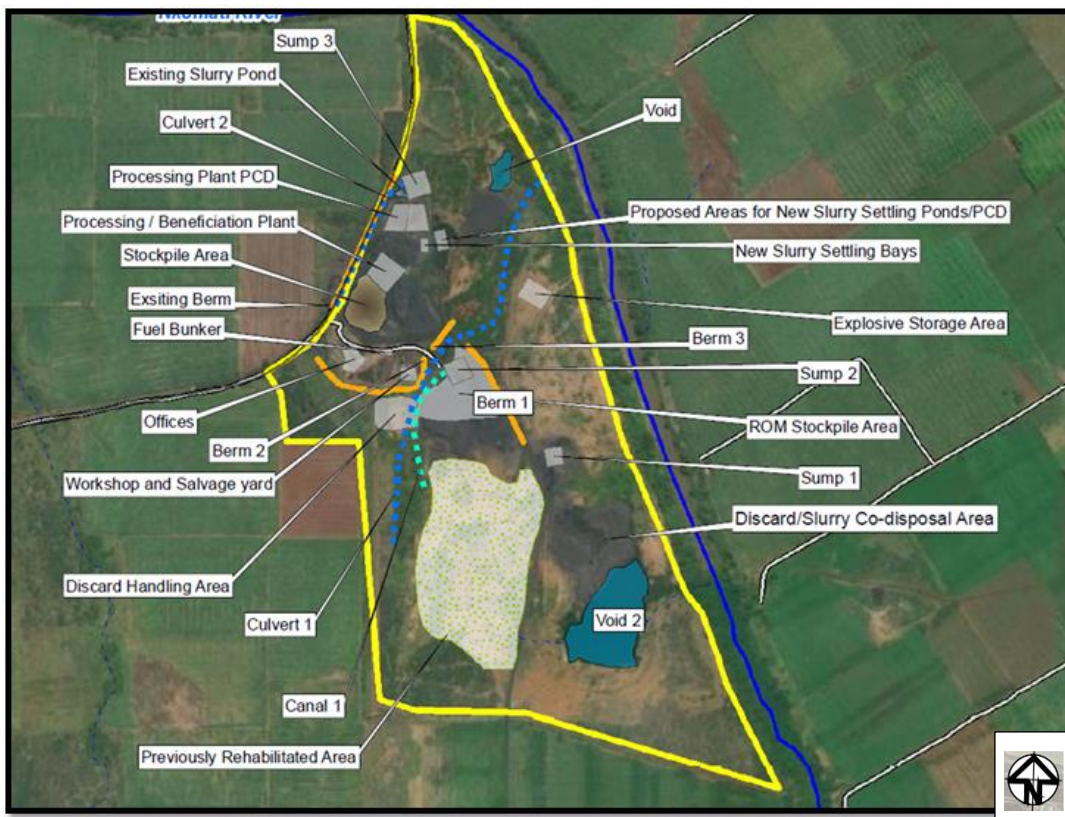


Figure 3-10: Beneficiation Plant layout

Note:

The 2017 EMPr and Environmental Authorisation allows for the following listed activities in terms of the EIA Regulations 2014:

- EIA Regulations GN 983 of 2014
 - Activity 34: The expansion or changes to existing facilities for any process or activity where such expansion or changes will result in the need for a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the release of emissions or pollution.
 - A second Washing Plant in parallel with the existing module;
 - A pressure filter to recover water and produce a fine product;
 - Appropriately prepared surfaces to be constructed underneath all crushed ore and product stockpiles as to protect the product from becoming contaminated during the loading process;
 - Lining and upgrade of the Plant Pollution Control Dam;
 - Settling Ponds;
 - New conveyors and screening for product separation; and
 - Additional Run-of-Mine (ROM) Stockpile with conveyor at the underground mine workings.

Located to the north-east of the washing plant is an old opencast Void called Void 1. This Void is in the process of being filled as part of the rehabilitation process. The following images show that the Void has been significantly backfilled. The process of continued backfilling and allowing natural vegetation to become established is underway, before determining what (if any) additional measures are required to facilitate the establishment of vegetation. The following images show Void 1 in 2014 versus 2022 (**Figure 3-11**).



Figure 3-11: Void 1 in 2014 Vs 2022.

3.4 Supporting Services at N’Komati Mine

Details of the current supporting services at the mine is provided in **Table 3-1**.

Table 3-1: Current Supporting Services at the N’Komati Anthracite Mine

SERVICE	DESCRIPTION
Process Water	The process water used for the operations at the mine is obtained from the approved process water dams, old mine voids, recycled plant water and water from within the pits. With the focus being on using recycled water, there is no municipal water used in process.
Potable/Domestic Water	Potable water for consumption is brought in from the town whilst water from the licensed boreholes (WUL: 05/X13J/ACGIJ/1864) is used for the change houses and ablutions – already approved areas.

<p>Sanitation</p>	<p>Licensed conservancy tanks have been installed in bunded, fenced off areas located adjacent to the office blocks at the processing plant. These conservancy tanks are used for sewage (toilet) effluent only and are cleaned by an external contractor. Safe disposal certificates are obtained from the contractor. Licensed French drains accommodate the grey water generated at the change houses and from the kitchen areas at both the processing plant and underground workings offices.</p> <p>Portable chemical toilets are installed at all other parts of the mine i.e., Madadeni Opencast and security areas. These chemical toilets are serviced by an external contractor and cleaned on a regular basis. Safe disposal certificates are obtained from the contractor.</p>
<p>Electricity</p>	<p>Electricity is supplied by Eskom. There are several smaller generators around the mine i.e., North Void, Plant Offices and Madadeni opencast which are responsible for providing power on a temporary basis.</p>
<p>Domestic/General Waste</p>	<p>Waste generated is temporarily stored on-site prior to off-site transportation to recycling facilities, collection points or licensed waste disposal sites by registered contractors. The domestic/general waste collected from the mine is transported to the Steenbok Landfill Site.</p>

4 FUTURE OPERATIONS

4.1 Open Cast Mining Areas

Five (5) opencast mining areas are proposed and form part of this application. These areas are as follows:

- Block L larger area
- Madadeni Opencast Mining Area
 - North North East
 - North East East
- Mangweni Mining Area
 - Mangweni Open cast
 - Mangweni South

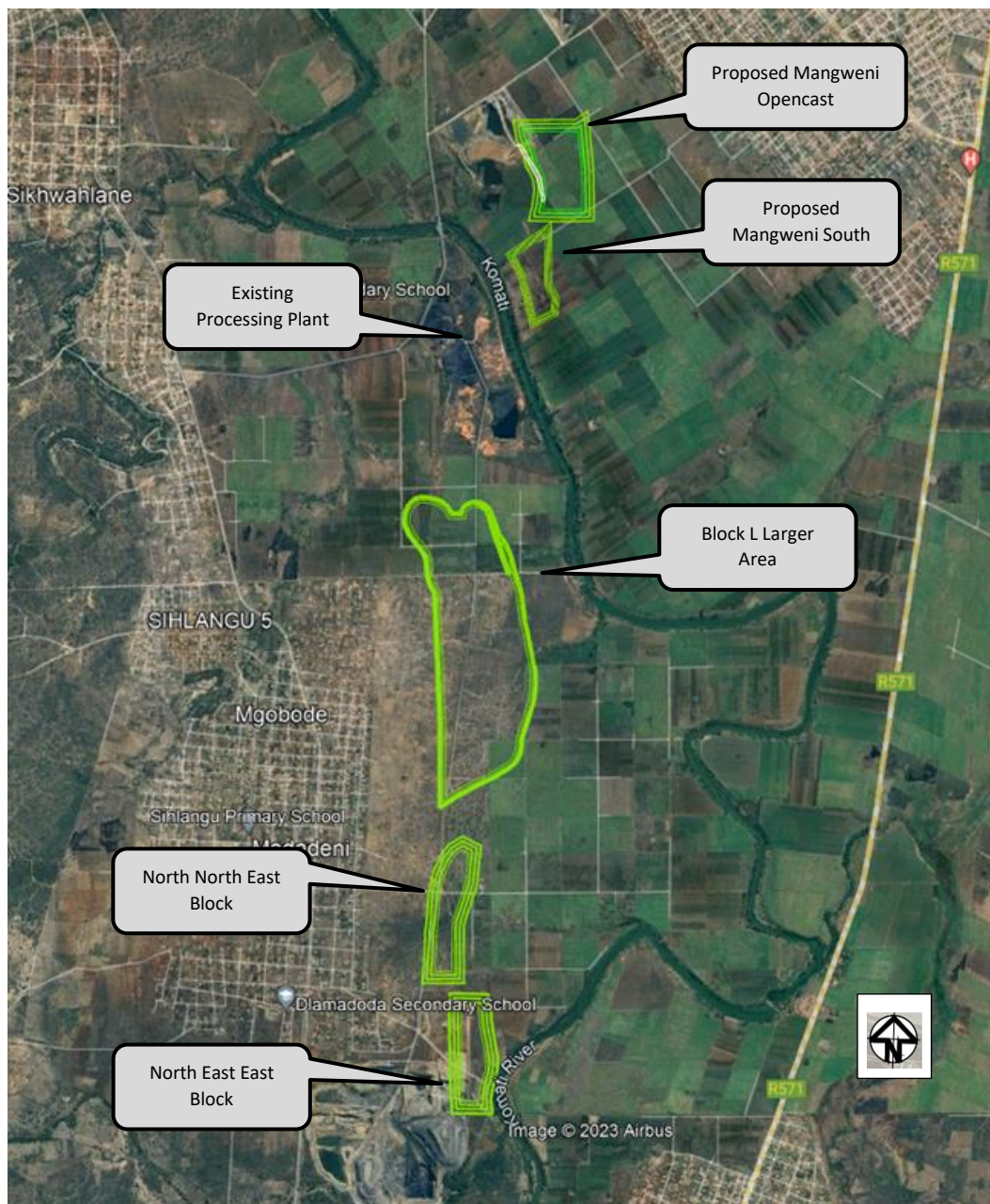


Figure 4-1: Proposed Opencast Mining Areas

4.1.1 Mining Methodology

Open cast strips will be exposed by means of a boxcut to allow room for mining.

After topsoil (softs) has been removed and used for the construction of stormwater and noise berms, overburden material will be blasted, stripped, and placed on the overburden stockpile. This stockpiled overburden material will be used during rehabilitation of the opencast pit by means of placing the material back into the pit areas.

Drill and blast mining methods will be implemented. A pattern will be marked by the blaster/miner, using a burden that will be determined by the blasting specialist based on the rock strength and required fragmentation. The most efficient drilling pattern will be designed and used, which will also meet the minimum legal requirements in terms of fly rock, air and ground vibrations etc.

The ore (anthracite) will be collected by 40t and 30t trucks and transported to the beneficiation plant. Concurrent rehabilitation will take place during the operational phase. Backfilling of benches with overburden material will take place as the mining benches are advanced. Each bench will be fully rehabilitated and covered with topsoil as backfilled.

4.1.2 Block L Larger Area

Block L was approved in the 2021 EMP. The approved Block L is approximately 40ha and mining is currently underway. The mine intends to expand the Block L area known as the "Block L Larger area". The Block L larger area is situated south of the existing processing plant and is approximately 140 ha. The production profile is ~ 6 455 855 tonnes over a period of 23 years. At closure or at Life of Mine, a void will unavoidably be formed due to the material removed from the opencast pits to the plant. The voids will be safeguarded with fencing and safety berms at closure.

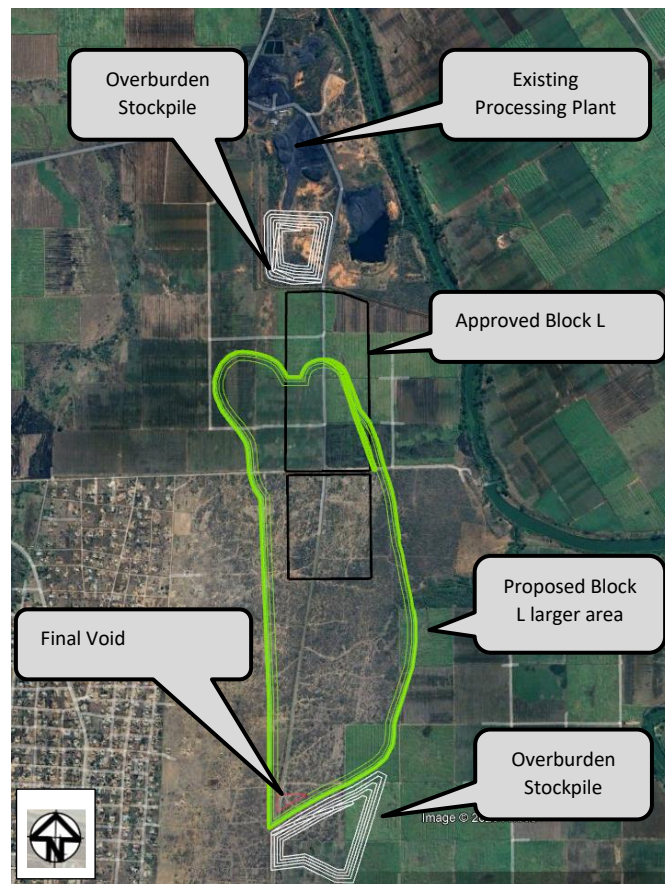


Figure 4-2: Proposed Block L Larger Area

At closure or at Life of Mine, a void will unavoidably be formed due to the material removed from the opencast pits to the plant. The voids will be safeguarded with fencing and safety berms at closure.

Surface water management measures such as stormwater diversion berms will be constructed to ensure that there is no undue soil erosion due to mining related activities. Topsoil stripped from the mining areas will be utilised as for the berms. These earth berms will also be used to provide visual and acoustical buffer to adjacent receptors. The location of the berms are provided in **Figure 2 4**.

4.1.3 Mangweni Opencast

Two (2) open cast areas are proposed for the Mangweni operations. These include the Mangweni opencast and the Mangweni south mining areas. These opencast areas are situated east of the existing Mangweni Mini Pit. The Mangweni opencast area is ~39 ha, with a production profile of ~3 285 299 tonnes for a period of ~15 years. The Mangweni south opencast is ~18 ha and has a production profile of ~1 458 499 tonnes for a period of ~7 years.

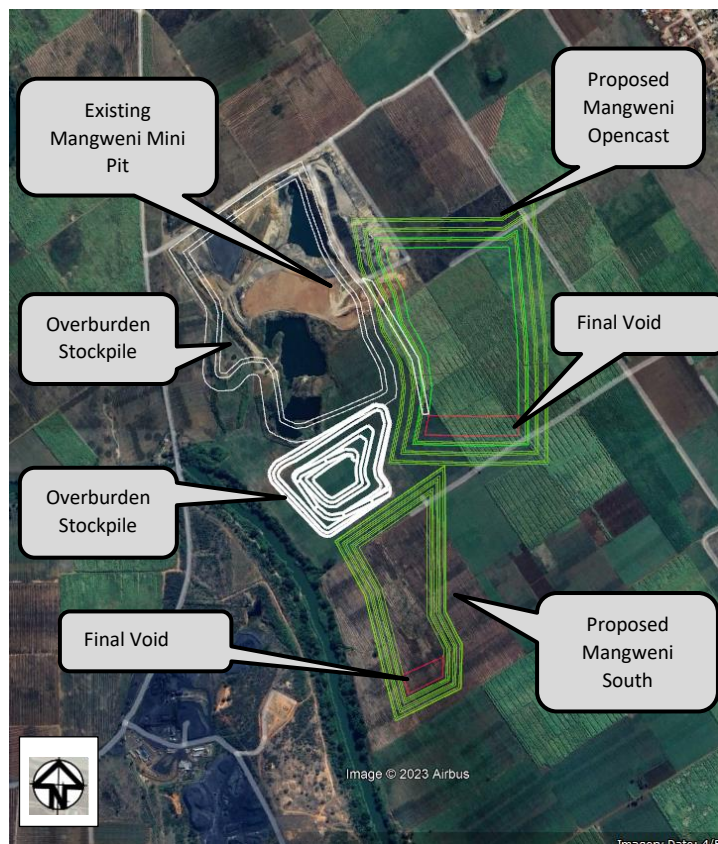


Figure 4-3: Proposed Mangweni Opencast Areas

4.1.4 Madadeni Operations

The Madadeni North North East Opencast is proposed north of the existing Madadeni opencast mining area. The proposed mining area is ~33ha with a production profile of ~1 129 976 tonnes over a period of 7 years.

The Madadeni North East East area is ~30ha with a production profile of ~1 519 995 tonnes over a period of 13 years.

Surface water management measures such as stormwater diversion berms will be constructed to ensure that there is no undue soil erosion due to mining related activities. Topsoil stripped from the mining areas will be utilised for the berms. These earth berms will also be used to provide visual and acoustical buffer to adjacent receptors. The location of the berms are provided in **Figure 2-4**.

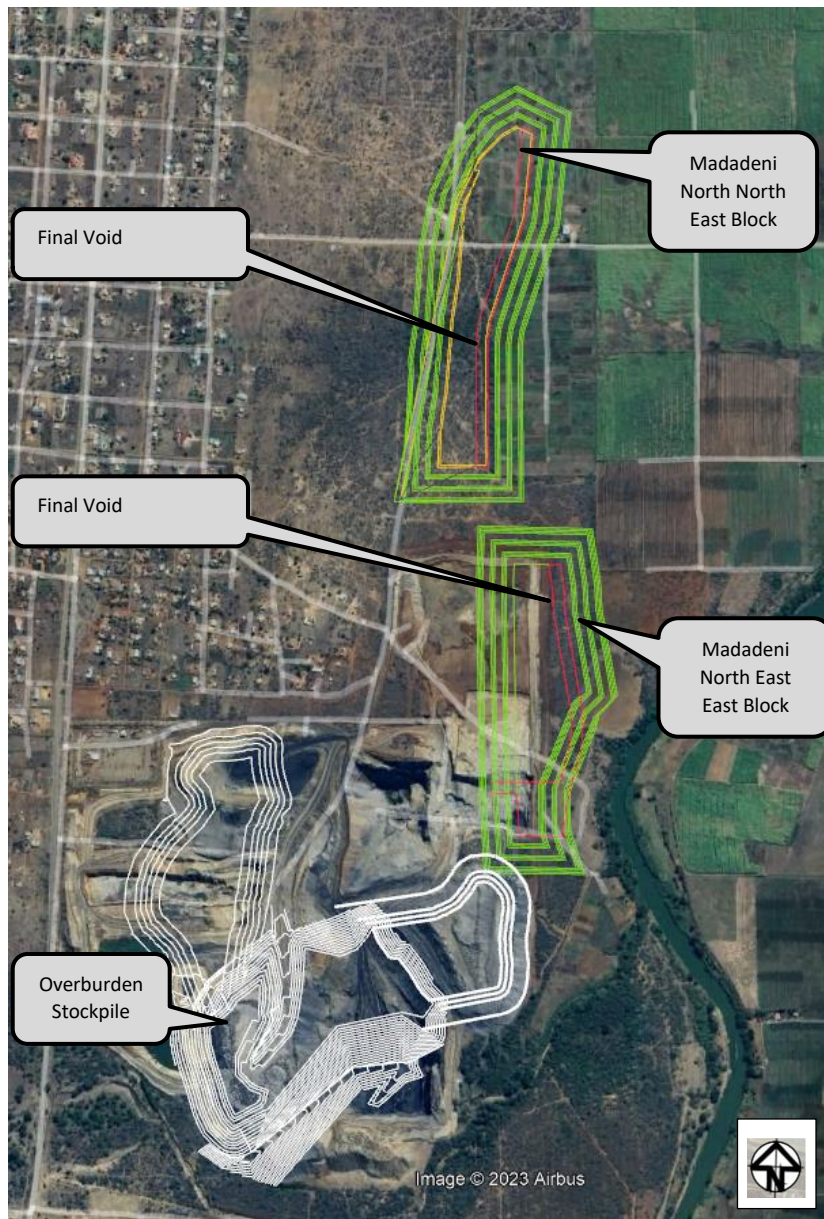


Figure 4-4: Proposed Madadeni Opencast Areas

4.1.5 Overburden Stockpiles

Seven (7) overburden stockpiles are proposed. Overburden material will be blasted and placed on the overburden stockpile. This material will be used during rehabilitation of the opencast pit. The location of the overburden stockpiles is provided in **Figure 4-5**. The anticipated volume of the overburden material per opencast area is provided in **Table 4-1**.

Table 4-1: Overburden Material per Opencast Area

Opencast Area	Bank cubic meters (Bcm)
Mangweni opencast	29 657 581
Mangweni South	12 664 275
Block L larger area	47 293 199
Madadeni North North East	18 798 845
Madadeni North East East	17 016 484

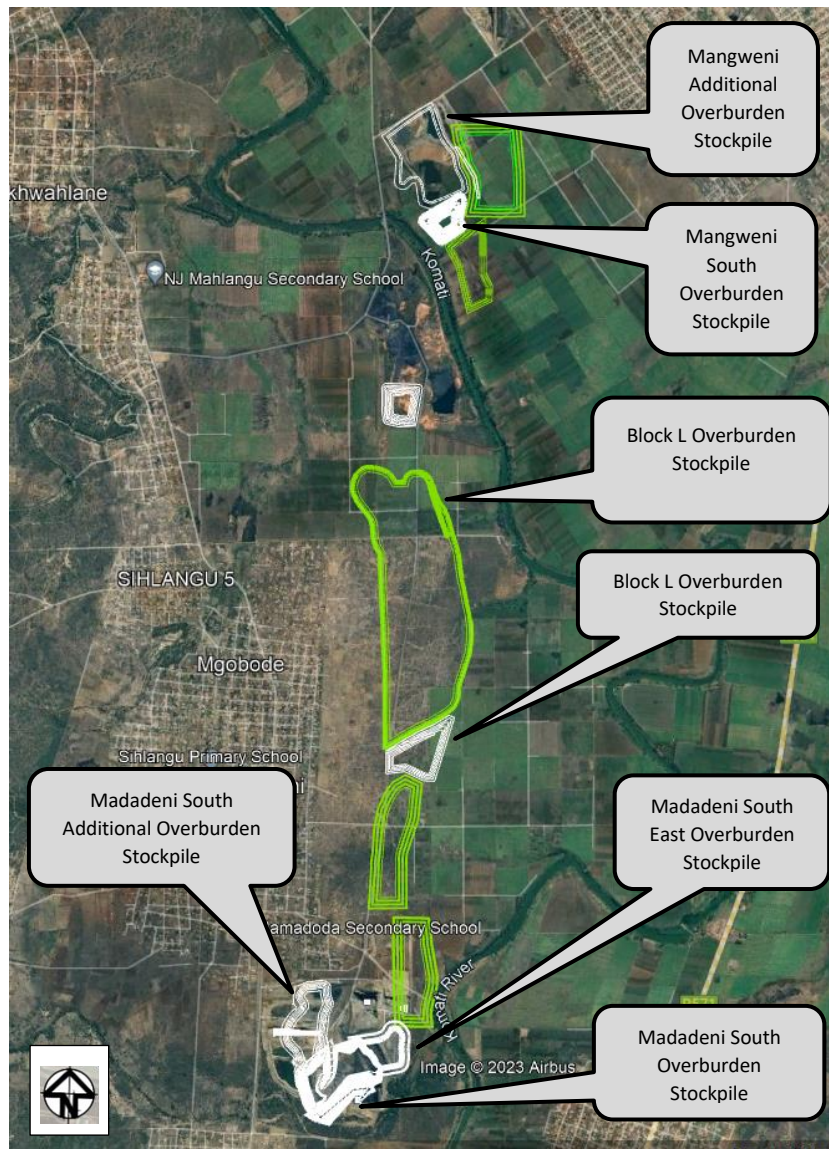


Figure 4-5: Overburden Stockpiles (to be backfilled in support of rehabilitation)

4.2 Underground Operations

4.2.1 Mining Methodology

The Madadeni underground operations has been approved in the 2020 EMP. A decision was taken to sink 2 adits (portals) for underground access from within the existing Madadeni Opencast pit in order to ensure the least possible environmental disturbance. Bord-and-pillar mining method is used for dipping coal seams. This entails the mining of rooms (bords) leaving pillars intact as a primary support to support the immediate roof. Secondary support will be used in the form of roof bolts and any other support means as and when required into the immediate roof of the bords mined. Anthracite mined at Madadeni is transported by an internal haul road to the processing plant. Raw product is processed at the plant, sorted and sold. This sequence of operational events is expected to continue for the proposed expansion.

4.2.2 Madadeni Underground Expansion

Figure 4-6 provides details of the previously approved Madadeni Underground Area and the proposed expansion of the approved area.

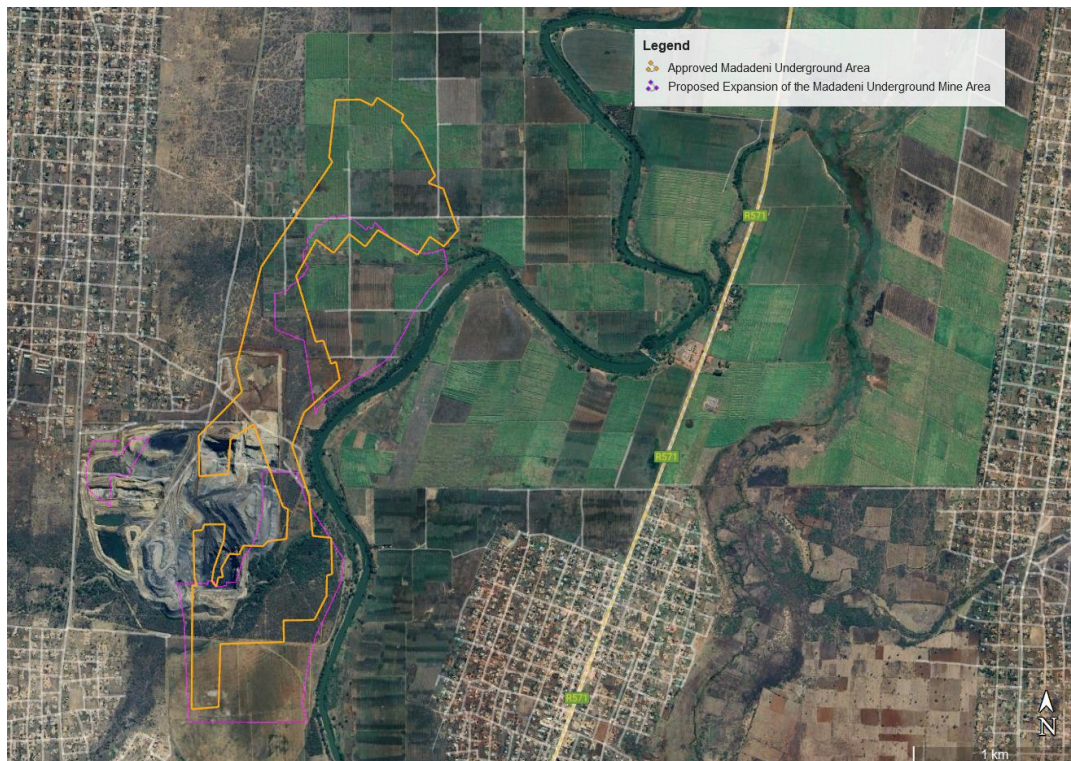


Figure 4-6: Madadeni Underground Operations



Figure 4-7: Madadeni Underground Portals

4.2.3 Beneficiation Plant

Anthracite mined at both the open pit and underground operations will be processed at the existing N 'Komati Mine Beneficiation Plant.

4.2.4 Discard and Duff Disposal Areas

Currently Discard¹¹ from the processing plant are either discarded in the historical mined open pit area (Void 1 and 2) as per the approved Water Use Licence¹² or stockpiled next to Void 2 on the previously rehabilitated areas.

Duff from the Filter Press Plant is stockpiled next to Void 2 and is sold off to third party contractors in support of brick-making activities.

The locality of Void 1 and 2 is indicated in **Figure 4-8**. Void 1 has reached the end of its capacity and are nearing final rehabilitation. Void 2 currently remains open and is used for water storage purposes.



Figure 4-8: Location of Discard Voids

Due to the voids used for discard disposal reaching their end-of-life capacity, is proposed to establish a dedicated discard / Duff facility. Although the development of the facility is mentioned in the 2005 EMP, the facility was never constructed. The facility was designed in 2007 but approval of the facility design is outstanding. Due to the facility never being constructed and the changes in legislation, the development of the facility has been included as part of this process.

The facility will be constructed in three (3) phases. Phase 1 & 2 will have a design capacity of 1000 000 tonnes and Phase 3 of 750 000 tonnes catering for at least a LoM of 20 years. The facility will have a discard area of

¹¹ Fine dry coal (usually anthracite) obtained from a coal-preparation plant. The size range is 3/16 to 0 in (4.8 to 0 mm)

¹² Water Use Licence 05/X13J/ACGII/1864 // Exemption No 27/2/2/X13J/049 dated 13 February 2014 - Appendix IV, Condition 1.2.

approximately 13 Ha in extent and will be located on a previously mined and backfilled area subject to Water Use Licence Approval.

The facility will have a estimated height of 15m due to the space limitation. The development of the discard facility will be on a previously mined and backfilled area with differential settlement. Due to the fact that discard was backfilled into the pit previously it will just be a continuation of disposal on the top of the area to create a 15m higher area. The disposal was licenced in the 2021 Water Use License issued by the DWS. Therefore it is anticipated that the new site will have a Class D liner. A Class C liner will tear due to the differential settlement.

The design of the facility caters for clean and dirty water separation with clean and dirty water drains and dirty water berms as per the requirement of the National Water Act, 1998 9Act 36 of 1998) – Regulation GN704.

The 2007 layout of the facility is indicated in **Figure 4-9**.

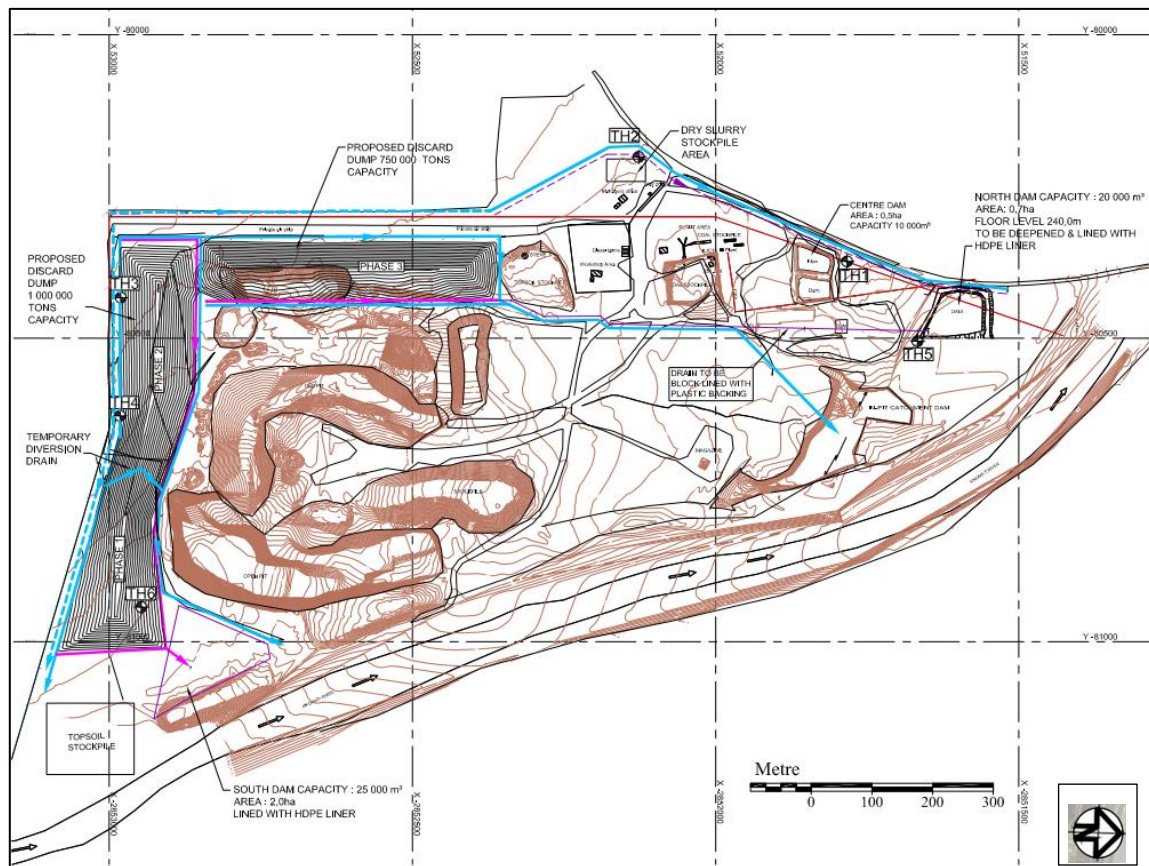


Figure 4-9: Design Layout of the Discard Facility

4.3 Haul Roads

Due to the change in mine plan, the existing haul road from the Madadeni Open Pit operations to the Beneficiation Plant will be impacted. Two new haul roads are proposed as part of this application which includes the following:

- From the Madadeni operations to the processing plant which is ~ 5km in length.
- From the Mangweni open cast areas to tie into the mine internal road which is ~ 2km in length.

The Haul Roads has been designed to cater for 30 and 40 tonne Dump Trucks. The width of the Haul Road will be 22m to allow for bi-directional traffic. Safety berms and signage will be positioned wherever deemed necessary for safety reasons along the road. The location of the haul road is provided in **Figure 2-4**.

4.4 LIFE OF MINE

The N’Komati Anthracite Mine (N’Komati) has an existing mining right (MP30/5/1/2/2/89 MR), which was renewed on 19 February 2021 and is valid for a period of 30 years and allows for both open cast and underground mining.

4.5 Future Planned Mining Areas

Exploration in the area revealed that anthracite reserves are present. The area is situated towards the east of the proposed north north east mining block (shown with the red circle in **Figure 4-10**). This area does not form part of the application and has been included in this report as an area of interest for future mining.

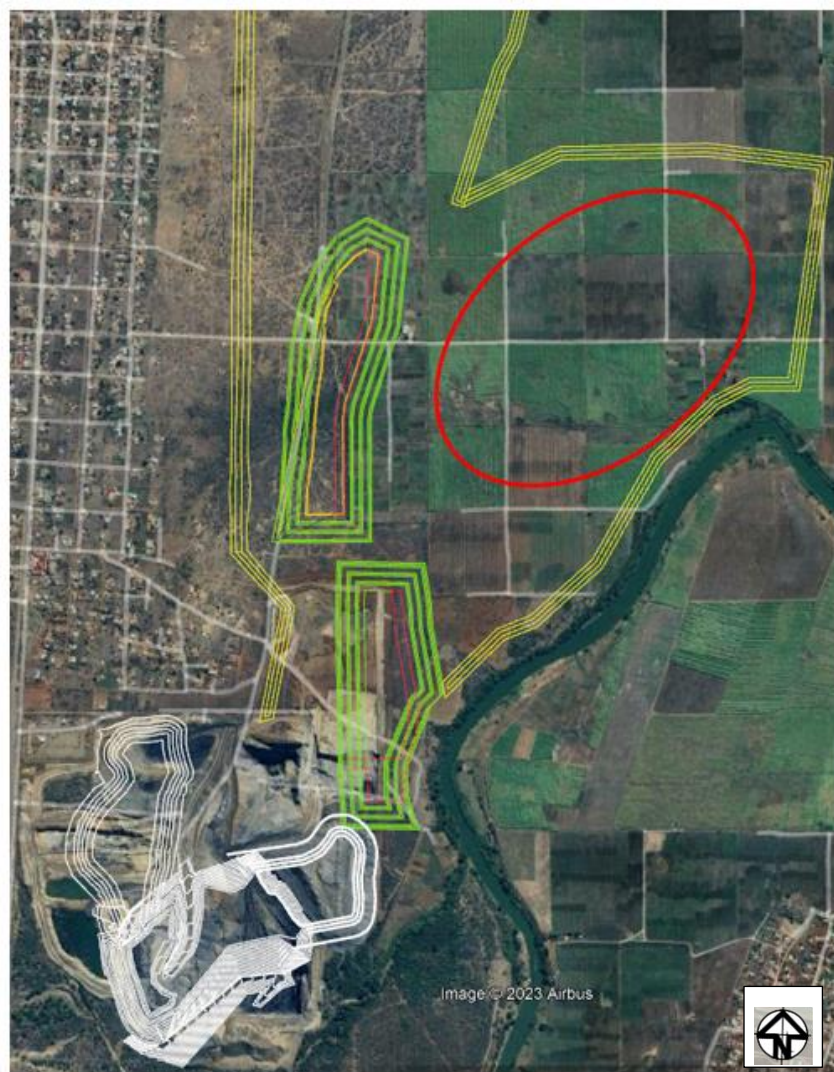


Figure 4-10: Future Planned Mining Area (not part of this application)

5 ALTERNATIVES CONSIDERED

NEMA prescribes that every application for EA must include, *inter alia*, an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity (i.e. No-Go Alternative). “Alternatives”, in relation to a proposed activity, are different ways of meeting the general purposes and requirements of the proposed activity, which may include alternatives to:

- the location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the technology to be used in the activity; and
- the option of not implementing the activity.

This section presents the various alternatives considered in this Scoping Report.

Table 5-1: Alternatives as provided through the NEMA

Alternative	Definition
Activity	Refers to alternatives in the nature of the proposed activity. Can be defined as project alternatives.
Location	Refers to alternatives in the location of the proposed activity. This can be considered for the entire proposal or for a component of the proposal. A distinction should be drawn between alternative locations that are geographically separate and alternative locations that are site layout alternatives.
Technology	Refers to alternatives in technology and equipment used. The aim of this is to reach the same goal by using different methods or processes.
Site Layout	Refers to alternatives in spatial configuration of an activity on a particular site.
Scale	Refers to activities that can be broken down into smaller units and undertaken at different scales.
Design	Refers to alternatives in design for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability.

5.1 Property or Location Alternatives

The property for the preferred location has been selected because it is located within the existing mining right area owned by the state under the jurisdiction of a Tribal Authority with whom N’Komati Anthracite Mine has an agreement in place regarding occupancy of the land.

The property on which the activities is being undertaken and will continue to be undertaken is an already disturbed property, which has been altered by mining, overgrazing and sugar cane farming.

The preferred location of the underground and opencast areas are restricted by the location of the resource, presence of surrounding settlements, the shallowness of the anthracite seam as well as the location of the site in relation to the beneficiation plant and existing mining operations.

5.2 Type of Activity to be Undertaken

The activities to be undertaken at the Operations entails five open cast operations that will supplement yield from the underground mining activities currently ongoing. These operations will make use of the roll over mining method.

In terms of the Madadeni operations, further consideration of the strip ratios indicated it more economically viable to separate the originally envisaged one opencast pit into smaller opencast pits with underground components to access the deeper anthracite leading off the opencast high wall.

5.3 The Design or Layout of the Activity

The mine is an existing operation hence the layout has already been determined and implemented. The preferred option is to make use of the existing infrastructure and layout as far as possible. This would mean that the layout would be as compact as possible and not expand unnecessarily. In terms of the Madadeni operations, the current design/layout is the most suitable as the underground operations is an expansion of the existing approved operations that will take place within existing opencast areas or areas identified for opencast mining.

In terms of the Mangweni opencast areas, the design/layout has been developed considering the following:

- Location of mining right area;
- Location of the proven reserve
- Critical Biodiversity Areas in terms of the Mpumalanga Biodiversity Sector Plan
- Proximity to the existing mine infrastructure (beneficiation plant)

The layout of the Mangweni opencast has limited alternatives as it is constrained to the location of proven reserve. The layout was further development to limit the clearance on indigenous vegetation, while the activity is planned on current sugarcane cultivated areas.

5.4 Technology to be used in the Activity

The Mine has existing opencast operations at Madadeni, hence the new opencast operations will mine using the same technology and machinery as are used in the existing opencast operations. This is due to the workforce already being equipped with the knowledge and skills required to mine in this manner. Anthracite abstracted from the various open cast operations will be trucked along the existing haul road to the existing processing plant where it will be processed in the existing manner before being sold.

The existing operations are currently mined using a standard Drill and Blast operation cleaning with Excavators and Dump Trucks. This way of operating will be carried through into the proposed opencast areas.

A full fleet of diesel driven equipment will be utilised. There is currently no power supply to the site. Equipment planned for use includes the following:

- Excavators;
- 40t Articulated Dump (ADT) Trucks;
- D9 Dozers;
- Water Browser;
- Diesel Browser;
- TLB;
- Grader;
- Primary Drill Rig;
- Secondary Drill Rig;
- LDV;
- Lighting Plant;
- Generator.

Haulage to the processing plant includes the following equipment:

- 30t & 40t Trucks and Horse Side tipper super link
- Front End Loader (FEL)
- Or alternatively could be done with suitable mining trucks direct from pit.

Road maintenance, dust suppression and grading are undertaken by a water browser and a grader.

The alternative of using different technology was investigated but was not seen as feasible. Using different technology would mean that the workforce available in the area would not have the skills required to perform the task. This would result in outside labour being used which is not desirable for the surrounding communities or the Mine who aims to create employment opportunities for local people. The preferred option of using current technology that local labour is familiar with is thus seen as the best option.

During operation, the mine will continue to investigate new and emerging technologies for improved safety and efficiency and will train employees in this new technology where applicable.

5.5 The Operational Aspects of the Activity

N’Komati Anthracite Mine is an operational mine consisting of Madadeni and Mangweni Mining Areas, along with an operational beneficiation plant.

The application is for both open cast and underground mining process. In terms of opencast mining the topsoil is firstly removed and stockpiled for use during rehabilitation. Secondly, as much soft overburden material as possible is removed without the use of blasting techniques. This material is stockpiled separately from the topsoil and hard overburden. Lastly, the hard overburden is drilled, blasted, and excavated, and stockpiled for rolled over, until the top of the anthracite is reached.

Anthracite mined at the proposed opencast areas will then be transported by an existing and new internal haul roads to the existing beneficiation plant. Raw product is processed at the plant, sorted, and sold.

In terms of underground mining, the application includes the expansion of the previously approved Madadeni Underground area, hence a Drill and Blast Board and Pillar operation will be maintained.

The above operational description is seen as the most effective way of operating as the existing workforce are familiar with this manner of operation and it makes use of existing infrastructure and facilities to cause the least possible environmental disturbance.

The option of implementing different operational aspects has been investigated, but since the workforce are familiar with the existing operational aspects, a decision was taken to utilise the existing manner of operation as far as possible. This will mean that the existing workforce will remain employed as far as possible, and that mining can commence as soon as authorisation is granted.

5.6 The Option of not Implementing the Activity

Should the proposed development not proceed, the anthracite resources identified will remain in situ. The landowners and legal occupants will continue to utilise the area for grazing and cultivation. Potential environmental impacts, which may result from the proposed mining operation will be avoided.

By implementing the proposed mining activities, this will enable N’Komati Anthracite Mine to access the remaining anthracite within the existing mining right area to supplement the existing Mangweni and Madadeni Operations. By not implementing the activity, the Mine will not be able to reach the required amount of anthracite required to keep the mine open.

The Mine currently has supply agreements in place and is required to achieve these volumes for the agreements to remain valid. Without the ability to honour the existing agreements in terms of production volumes, the Mine will not be able to remain operational. The no-go option will require a re-evaluation of the business structure and may result in closure of the Mine.

6 LEGISLATIVE BACKGROUND

6.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT 108 OF 1996)

The Constitution of South Africa compels all to ensure the rights of South African citizens. Section 24 of the constitution states that:

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 legislative and other measures that-*
 - *prevent pollution and ecological degradation.*
 - *promote conservation; and*
 - *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

This right is binding on the state and people, both natural and juristic. Sustainable development is the cornerstone of South Africa's environmental law regime.

In fulfilment of its constitutional mandate to take reasonable legislative measures that give effect to Section 24 of the Constitution, the government has promulgated several environmental laws since 1994. These laws provide a legal framework that embodies internationally recognized legal principles. The principal act governing activities that affect the environment is the National Environmental Management Act, No 107 of 1998 (NEMA) and National Environmental Management: Waste Act, Act 59 of 2008 (NEM:WA) while the principal act governing activities that affect water resources is the National Water Act, Act 36 of 1998 (NWA).

The issuing of authorisations in terms of NEMA, NEM:WA, NWA or any other permits or licence for any aspect of the proposed project will ensure that the environmental right enshrined in the Constitution contributes to the protection of the biophysical and socio- economic environment. The abovementioned authorisations, permits, or licences will be largely based on the legislation outlined in this Chapter (Chapter 6).

6.2 THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT 28 OF 2002) (MPRDA) AS AMENDED ON 21 APRIL 2009

The fundamental principles of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) are:

- Mineral resources are non-renewable.
- Mineral resources belong to the nation and the State is the custodian.
- Protection of the environment for present and future generations to ensure sustainable development of the resources by promoting economic and social development.
- The need to promote local and rural development of communities affected by mining.
- Reformation of the industry to bring about equitable access to the resources and eradicating discriminatory practices; and
- Guaranteeing security of tenure.

The MPRDA sets forth the governing act/legislation to lawfully proceed with the commencement of mining and mining related activities.

6.2.1 Amendment of rights, permits, programmes and plans

Section 102 (“*Amendment of Rights, Permits, Programmes and Plans*”) of the MPRDA addresses amendments to already approved authorisations in terms of mining and mining related activities. This section states:

(1) “A reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right, production right, prospecting work programme, exploration work programme, production work programme, **mining work programme, environmental management programme or an environmental authorisation issued in terms of the National Environmental Management Act, 1998**, as the case may be, may not be amended or varied (including by extension of the area covered by it or by the additional of minerals or a shares or seams, mineralised bodies or strata, which are not at the time the subject thereof) without the written consent of the Minister.

To support the various opencast mining areas and the expansion of the Madadeni Underground area an application for the amendment of the approved Mining Works Programme will be submitted for consent of by Minister in terms of Section 102 of the Act to lawfully proceed with the commencement of mining and mining related activities.

6.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998) (NEMA)

The National Environmental Management Act (Act No. 107 of 1998) (NEMA) is the environmental framework legislation promulgated to ensure that the environmental rights contemplated in Section 24 of the Constitution of South Africa (Act 108 of 1996) are realised. NEMA sets out:

- The fundamental principles that need to be incorporated in the environmental decision-making process.
- The principles that are necessary to achieve sustainable development.
- Provides for duty of care to prevent control and rehabilitate the effect of significant pollution and environmental degradation; and
- It allows for the prosecution of environmental crimes.

Existing environmental approvals have been included in **Table 2-4**.

6.3.1 Application for Environmental Authorisation

In terms of the section 24(5) read with section 44 of the Act, Environmental Impact Assessment (EIA) Regulations have been published that provide a list of activities that may require either a Basic Assessment (BA) or a Scoping and Environmental Impact Assessment process to be followed as to authorise their lawful undertaking. These listed activities have been gazetted as follows.

- Listing Notice 1: Activities requiring a Basic Assessment environmental authorisation process.
 - Government Notice No. 983 in Gazette No. 38282 on 4 December 2014, as amended on 7 April 2017 in Gazette No. 40772 as Government Notice No. 327
- Listing Notice 2: Activities requiring a Scoping and Environmental Impact environmental authorisation process; and
 - Government Notice No. 984 in Gazette No. 38282 on 4 December 2014, as amended on 7 April 2017 in Gazette No. 40772 as Government Notice No. 325
- Listing Notice 3: Activities within certain geographic / sensitive areas requiring a Basic Assessment environmental authorisation process.
 - Government Notice No. 985 in Gazette No. 38282 on 4 December 2014, as amended on 7 April 2017 in Gazette No. 40772 as Government Notice No. 324
- National Environmental Management Act, 1998 (Act No. 107 of 1998), Amendment to the Environmental Impact Assessment Regulations, Listing Notice 1, Listing Notice 2 and Listing Notice 3 of the Environmental Impact Assessment Regulations, 2014 for activities identified in terms of Section 24(2) and 24D of the

National Environmental Management Act, 1998 (Act No 107 of 1998). Gazette Notice 517 No. 40701 dated 11 June 2021.

Table 6-2 records the listed activities triggered and applied for to support the development of the proposed project as detailed in Chapter 4.

Table 6-1: NEMA - Triggered Listed Activities

Name of activity	Aerial extent of the activity	Listed activity	Applicable listing notice
Listing Notice 1			
<p><i>The development of-</i> <i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <i>where such development occurs-</i> <i>(a) within a watercourse</i> <i>(c) within 32 metres of a watercourse, measures from the edge of a watercourse</i></p> <ul style="list-style-type: none"> • The following infrastructure will be situated within or within 32m of delineated watercourses <ul style="list-style-type: none"> ○ Opencast area ○ Overburden stockpiles ○ Haul road ○ Berm ○ Discard and Duff Disposal Facility and associated stormwater conveyance infrastructure 	<p>~260ha ~130ha ~13ha ~269ha ~33ha</p>	<p>Activity 12</p>	<p>GN R. 327</p>
<p><i>The infilling or depositing of any material of more than 10m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m³ from a watercourse</i></p> <ul style="list-style-type: none"> • The following infrastructure will be situated within a delineated watercourses <ul style="list-style-type: none"> ○ Opencast area ○ Overburden stockpile ○ Haul road ○ Berm 	<p>~242ha ~38ha ~13ha ~269ha</p>	<p>Activity 19</p>	<p>GN R. 327</p>
<p><i>Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.</i></p> <ul style="list-style-type: none"> • To support the various opencast mining areas and the expansion of the Madadeni Underground area) an application for the amendment of the approved Mining Works Programme as well as Environmental Management Programme will be submitted for consent 	<p>~705 ha</p>	<p>Activity 21D</p>	<p>GN R. 327</p>

Name of activity	Aerial extent of the activity	Listed activity	Applicable listing notice
of by Minister in terms of Section 102 of the Act to lawfully proceed with the commencement of mining and mining related activities			
<p><i>The development of a road –</i> <i>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres</i></p> <ul style="list-style-type: none"> • Haul road 	~13 ha	Activity 24	GN R. 327
<p><i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.</i> Clearance of vegetation for the construction of:</p> <ul style="list-style-type: none"> ○ Opencast area ○ Overburden stockpile ○ Haul road ○ Berm ○ Discard Dump and associated stormwater conveyance infrastructure 	~260ha ~130ha ~13ha ~269ha ~33ha	Activity 27	GN R. 327
Listing Notice 2			
<p><i>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent,</i></p> <ul style="list-style-type: none"> • The following Section 21(g) water uses will be applied for: <ul style="list-style-type: none"> ○ Discard dump and associated stormwater conveyance infrastructure ○ Overburden stockpiles ○ Backfilling with overburden material 	~33ha ~130ha ~260ha	Activity 6	GN R. 325
<p><i>The clearance of an area of 20 ha or more of indigenous vegetation,</i></p> <ul style="list-style-type: none"> • Clearance of vegetation for the construction of: <ul style="list-style-type: none"> ○ Opencast area ○ Overburden stockpile ○ Haul road ○ Berm ○ Discard Dump and associated stormwater conveyance infrastructure 	~705 ha	Activity 15	GN R. 325
<p><i>The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area of 10 hectares or more.</i></p> <ul style="list-style-type: none"> • Discard and Duff Disposal Dump 	~33ha	Activity 16	GN R. 325

Name of activity	Aerial extent of the activity	Listed activity	Applicable listing notice
Listing Notice 3			
<i>The clearance of an area of more than 300m² or more of indigenous vegetation</i> <ul style="list-style-type: none"> ○ Opencast area ○ Overburden stockpile ○ Haul road ○ Berm ○ Discard Dump and associated stormwater conveyance infrastructure 	~705 ha	Activity 12	GN 324

6.4 NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 (ACT 59 OF 2008) (NEM:WA)

According to the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA), the purpose of the legislation is:

- *To 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.*
- *To provide for institutional arrangements and planning matters*
- *To provide for national norms and standards for regulating the management of waste by all spheres of government*
- *To provide for specific waste management measures*
- *To provide for the licensing and control of waste management activities*
- *To provide for the remediation of contaminated land*
- *To provide for the national waste information system*
- *To provide for compliance and enforcement; and*
- *To provide for matters connected therewith.*

Part 4, Section 19 (1) of NEM:WA states that “*The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment*” and must by notice “*indicate whether a waste management licence is required to conduct the activity or, if a waste management licence is not required, the requirements or standards that must be adhered to when conducting the activity.*”

The Minister has gazetted Waste Management Activities in respect of which a waste management licence is required in terms of Section 19 and 20 of the Act. These listed waste activities have been gazetted as follows:

- Government Notice 921 in Government Gazette 37083 dated 29 November 2013 as amended by:
 - Gazette Notice 633 in Government Gazette dated 25 July 2015.
 - Government Notice No. 1440 dated 25 November 2016 Regulations regarding the planning and management of residue stockpiles and residue deposits:
 - Gazette Notice 242 in Government Gazette 40698 dated 17 March 2017.
 - Gazette Notice 1094 in Government Gazette 41175 dated 11 October 2017.
 - Gazette Notice 1757 in Government Gazette 45907 dated 11 February 2022.

The amended list of waste management activities that have or are likely to have a detrimental effect on the environment are specified and classified in terms of three categories namely, Category A, B and C waste activities under NEMWA. These three categories differentiate waste activities through waste classification (General; Hazardous, Inert), volumes and utilization (Storing, Recycling, Treatment, Disposal, Establishment and Reclamation)

Category A Waste Activities:

The waste activities as listed under this Category is subdivided into the following main headings:

- Storage of waste;
- Recycling or recovery of waste;
- Treatment of waste;
- Disposal of waste; and
- Construction, expansion or decommissioning of facilities and associated structures and infrastructures;
- Residue stockpiles or residue deposits

In terms of Category A (3) *“A person who wishes to commence, undertake, or conduct a waste management activity listed under this Category, must conduct a basic assessment process set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No 107 of 1998) as part of the waste management licence application contemplated in section 45 read with section 20(b) of this Act.”*

Category B Waste Activities

The waste activities as listed under this Category is subdivided into the following main headings:

- Storage of hazardous waste;
- Reuse, recycling, or recovery of waste;
- Treatment of waste;
- Disposal of waste on land; and
- Construction of facilities and associated structures and infrastructure.
- Residue stockpiles or residue deposits

In terms of Category B (4) *“A person who wishes to commence, undertake, or conduct a waste management activity listed under this Category, must conduct a scoping and environmental impact reporting process set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of waste management licence application completed in section 45 read with section 20(b) of this Act.”*

Category C: Waste Activities

The waste activities as listed under this category is subdivided into the following main headings:

- Storage of waste
- Recycling or recovery of waste

In terms of Category C (5) *“A person who wishes to commence, undertake or conduct a waste management activity listed under this Category, must comply with the relevant requirements or standards determined by the Minister listed below-*

- (a) Norms and Standards for Storage of Waste, 2013; or*
- (b) Standards for Extraction, Flaring or Recovery of Landfill Gas, 2013; or*
- (c) Standards for Scrapping or Recovery of Motor Vehicles, 2013. “*

In addition to the above list of waste management activities that have or are likely to have a detrimental effect on the environment, the legislation is read in conjunction with Chapter 2 (Standard Containment Barrier Design, Waste Acceptance and Waste Disposal Requirements) of Government Notice 636 in Government Gazette 36784 dated 23 August 2013 which dictates the appropriate national norms and standards for disposal of waste as to guide facility design development.

6.4.1 Application for Waste Management Licence

Part 4, Section 20 of NEM:WA states that *“no person may commence, undertake or conduct a waste management activity, except in accordance with (a) the requirements or standards determined in terms of section 19(3) for that activity; or (b) a waste management licence issued in respect of that activity, if a licence is required”* by lodging an application with the licencing authority in terms of Chapter 5, Section 45 of the Act.

Chapter 5, Section 44 (1) specifically states that *“For the purposes of issuing a licence for a waste management activity, the licensing authority must as far as practicable in the circumstances co-ordinate or consolidate the application and decision-making processes contemplated in this Chapter with the decision-making process in Chapter 5 of the National Environmental Management Act and other legislation administered by other organs of*

state, without whose authorisation or approval or consent the activity may not commence, or be undertaken or conducted”

In addition to the above, Chapter 5, Section 44(7) states that “An integrated licence must be regarded as an integrated environment authorisation contemplated in section 24L of the National Environmental Management Act.

Section 24L (1) of NEMA specifically states that “A competent authority empowered under Chapter 5 of NEMA to issue an environmental authorisation and any other authority empowered under a specific environmental management Act may agree to issue an integrated environmental authorisation” if “(2)(a) the relevant provisions of this Act and the other law or specific environmental management Act have been complied with; and the environmental authorisation specifies the provisions in terms of which it has been issued; and relevant authority or authorities that have issued it.”

It is N’Komati Anthracite Mine’s intent to lodge an integrated (NEMA and NEM:WA) application to the DMRE as part of this regulatory approval process as to approve the listed waste activities associated with the proposed mining and mining related activities for an integrated Environmental and Waste Management Licence.

Table 6-2 records the listed waste activities triggered and applied for, to support the development of the proposed activities detailed in Chapter 4.

Table 6-2: Listed Waste Activities under NEM:WA to be applied for.

Category	Waste Activity	Waste Activity Description
B	Activity 7	<i>The disposal of any quantity of hazardous waste to land</i> <ul style="list-style-type: none"> Overburden stockpiles
B	Activity 10	<i>The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).</i> <ul style="list-style-type: none"> Overburden stockpiles Discard and Duff Disposal Facility
B	Activity 11	<i>The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</i> <ul style="list-style-type: none"> Overburden stockpiles Discard and Duff Disposal Facility

6.5 NATIONAL WATER ACT, 1998 (ACT 36 OF 1998) (NWA)

The purpose of the National Water Act (Act No. 36 of 1998) (NWA) is to ensure that the nation’s water resources are protected, used, developed, conserved, managed, and controlled. Use of water for mining and related activities is also regulated through regulations that were updated after the promulgation of the NWA (Government Notice GN704 dated 4 June 1999).

Sections 40 and 42 of NWA provides for the responsible authority to request public participation and an assessment of the likely effect of the proposed license for the protection, use, development, conservation, management, and control of the water resource.

The following chapters of the NWA are of importance:

- Chapter 3, Part 4 states that anyone who owns, occupies, controls, or uses land is deemed responsible for taking measures to prevent pollution of water resources.
- Chapter 4 deals with water use regulation.
- Chapter 12 deals with water management in terms of dam safety.
- Section 19 deals with water management at mines in terms of pollution prevention and control.

- Section 21 defines the water uses requiring authorization.
- Section 26 (1) provides for the development of regulations requiring monitoring, measurement and recording as well as the effects to be achieved through management practices prior to discharge or disposal.

6.5.1 Application for a Water Use Licence

Section 21 of the NWA defines 11 consumptive and non-consumptive water uses that require authorisation prior to their commencement / undertaking:

- **21(a): Taking water from a water resource.**
- 21(b): Storing water
- **21(c): Impeding or diverting the flow of water in a watercourse.**
- 21(d): Engaging in a stream flow reduction activity.
- 21(e): Engaging in a controlled activity.
- 21(f): Discharging waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit.
- **21(g): Disposing of waste in a manner which may detrimentally impact on a water resource.**
- 21(h): Disposing in any manner of water which contains waste from, or which has been heated in any industrial or power generation process.
- **21(i): Altering the bed, banks, course, or characteristics of a watercourse.**
- 21(j): Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
- 21(k): Using water for recreational purposes.

Water uses that are not permissible in terms of Schedule 1 of the NWA need to be authorized under a tiered authorization system as a General Authorization in terms of the General Authorization Regulations as published under section 39 of the NWA or as a Water Use Licence, as provided for in terms of section 21 of the NWA.

The authorization system allows for the “Reserve” and provides for public consultation processes in the establishment of strategies and decision making and guarantees the right to appeal against such decision.

Section 27 of the NWA specifies that the following factors regarding water use authorization be taken into consideration:

- The efficient and beneficial use of water in the public interest.
- The socio-economic impact of the decision whether to issue a licence.
- Alignment with the catchment management strategy.
- The impact of the water uses and possible resource directed measures; and.
- Investments made by the applicant in respect of the water use in question.

The NWA introduced the concept of Integrated Water Resource Management (IWRM), comprising all aspects of the water resource, including water quality, water quantity and the aquatic ecosystem quality. The IWRM approach provides for both resources directed, and source directed measures. Resource directed measures aim to protect and manage the receiving environment, whilst source directed measures aim to control the impacts at source.

6.5.1.1 Approved Water Use License

The N’Komati Anthracite Mine operates in terms of the Water Use License 05/X13J/ICGIJ/12737 issued on the 20 March 2023 and valid for 20 years from the date of issuance.

Note

The following Water Uses are authorised in support of the operations:

- Section 21(a) – Taking of water from a water resource

<ul style="list-style-type: none"> ○ Groundwater abstraction through borehole for domestic purposes – 6600m³/a ○ Groundwater abstraction through borehole for domestic purposes – 5500 m³/a ○ Taking water from Madadeni Opencast pit for reuse in the processing plant - 3650 m³/a ○ Taking water from underground working as make up water (Mangweni Underground)-54750 m³/a ○ Abstraction of water from the north void for re-use in the processing plant-407 000 m³/a • Section 21(c) – Impeding or diverting the flow of water in a watercourse and Section 21(i) – Altering the bed, banks, course, or characteristics of a watercourse. <ul style="list-style-type: none"> ○ Pipeline crossing across the Nkomati River, transporting water from the North void and Mangweni Underground Mine to the processing plant. ○ Diversion of Madadeni natural drainage channel ○ Block L opencast mine within 500m of wetland ○ Block L opencast mine overburden stockpiles within 500m of a wetland • Section 21(f) – Discharging waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit. <ul style="list-style-type: none"> ○ Discharge of treated mine void water into the Komati River-1 500 000 m³/a • Section 21(g) – Disposing of waste in a manner which may detrimentally impact a water resource. <ul style="list-style-type: none"> ○ ROM stockpile at the Mangeni Mining area – 200 000t/a ○ Dry discard disposal area (filter cake)- 135 920.88 m³/a ○ Disposal of sewage into conservancy tank (plant)- 216 m³/a ○ Disposal of sewage into conservancy tank Madadeni- 5000 m³/a ○ Anthracite Stockpile area (Product Stockpiling area)-360 000 t/a ○ Dust Suppression-80 300m³/a ○ Water abstraction for dust suppression (Open cast-Madadeni)-65000 m³/a ○ Disposal of dry slurry into a dry slurry stockpiling area-28 800 m³/a ○ Disposal of excess water into South void-25000 m³/a ○ Disposal of water from mine void into the South Void-37 670 m³/a ○ Backfilling of old Void Pit 1 with overburden material-135 920.88 m³/a ○ Backfilling of old Void Pit 2 with overburden material-135 920.88 m³/a ○ Hard and Fine Discard Stockpile (co-disposal)-360 000 t/a ○ Plant Storm Water Sump 1-4036 m³/a ○ Plant Storm Water Sump 2-5313 m³/a ○ Plant ROM Stockpile-360 000 t/a ○ Storage of water in Void 2-80 300 m³/a ○ Stockpile of ROM and product coal on the Madadeni Stockpile Area-160 000 m³/a ○ Backfilling of Madadeni opencast pit with overburden material-135 920.88 m³/a ○ Backfilling of Block L open pit with overburden material-298 2340 m³/a ○ Stockpiling of overburden material-1006 223- m³/a • Section 21(j) – Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people. <ul style="list-style-type: none"> ○ Removal of water found underground for continuation of mining activities-54 750 m³/a ○ Removal of water found in Mangweni Mini pit for continuation of mining activities 407 000 m³/a ○ Removal of water from Madadeni opencast pit for continuation of mining activities-3650 m³/a ○ Removal of water found in Madadeni Underground for continuation of mining activities-80 300 m³/a ○ Removal of water found in Block L opencast pit for continuation of mining activities-51 100 m³/a
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6.5.1.2 Water Uses to be applied for as part of the proposed mining activities

The table below records the anticipated water uses to be applied for in terms of the NWA to support the various proposed mining projects. This application (Water Use Licence Application (WULA) in terms of NWA) will run in parallel with the EIA Process.

Table 6-3: Anticipated Section 21 Water Uses

Section 21 Water Use	Activity which requires the Water Use Licence
(a) Taking Water from a water resource	<ul style="list-style-type: none"> • Re-use of fissure water from the underground workings in process – volume will be confirmed with the completion of the hydrogeological impact assessment.
(c) Impeding or diverting the flow of water in a watercourse (i) Altering the bed, banks, course or characteristics of a watercourse	<ul style="list-style-type: none"> • Overburden stockpiles • Opencast mining areas • Haul Road • Berms

(g): Disposing of waste in a manner which may detrimentally impact on a water resource	<ul style="list-style-type: none"> • Storage slurry in the Discard Dump • Overburden Stockpiles • Backfilling of the opencast areas
(j) Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people	<ul style="list-style-type: none"> • Dewatering of fissure water from the underground workings – volume will be confirmed with the completion of the hydrogeological impact assessment.

6.5.1.3 Regulations on the use of water for Mining and related activities aimed at the protection of water resources - GN704 dated 4 June 1999

The Minister of Department of Water and Sanitation (DWS) is responsible for the protection, use, development, conservation, management, and control of the water resources of South Africa on a sustainable basis.

As such the DWS has gazetted regulations specifically aimed at the use of water for mining and related activities aimed at the protection of water resources. These requirements prescribed in terms of the regulations must be seen as minimum requirements to fulfil this goal.

In terms of Regulation 3 of the Act the Minister may in writing authorise an exemption from the requirements of regulations 4, 5, 6, 7, 8, 10 or 11 of the Act on his or her own initiative or on application, subject to such conditions as the Minister may determine.

The table below records the anticipated GN704 exemptions required and to be applied for in terms of the NWA to support the proposed projects. This application (GN704 Exemption Motivation in terms of NWA) will run in parallel with the EIA and WULA Process.

Table 6-4: GN704 Requirements

GN 704	Condition	Applicability to the proposed Project
4 a	Locate or place any residue deposit, dam, reservoir, together with any associated structure within 1:100 year flood-line or within a horizontal distance of 100 m of a watercourse or borehole, excluding boreholes drilled specifically to monitor the pollution of ground water, or on ground likely to become water-logged, undermined, unstable or cracked	<ul style="list-style-type: none"> • The proposed opencast mining areas, overburden stockpiles, berms and access roads will be situated within 100m from the identified wetlands on site.
4b	Except in relation to a matter contemplated in regulation 10, carry on any underground or opencast mining, prospecting or any other operation or activity under or within the 1:50 year flood-line or within a horizontal distance of 100 meters from any watercourse or estuary, whichever is the greatest;	<ul style="list-style-type: none"> • The proposed opencast mining areas, will be situated within 100m from the identified wetlands on site.

GN 704	Condition	Applicability to the proposed Project
4 c	No placement or disposal of any residue or substance which causes or is likely to cause pollution of a water resource, in the underground workings or opencast excavation, prospecting diggings, pit or any other excavation.	<ul style="list-style-type: none"> • Use overburden material for backfilling of the opencast area during concurrent rehabilitation and upon closure.
5	May not use any residue or substance which causes or is likely to cause pollution of water resource for the construction of any dam or other impoundment or any embankment, road or railway or for any other purpose which is likely to cause pollution of a water resource	<ul style="list-style-type: none"> • Use overburden material for backfilling of the opencast area during concurrent rehabilitation and upon closure.

6.6 OTHER APPLICABLE LEGISLATION

Various National, Regional and Local legislation (in addition to NEMA, NEM:WA and NWA) will be taken into consideration for applicability to support the lawful commencement of the various proposed projects on site. These National, Regional and Local legislation will be assessed in terms of assessing triggered activities, additional possible permit requirements, specialist assessments (criteria) and mitigation measure development and will be discussed in detail in each of the respective reports / applications. The list below highlights only a few of the additional legislation assessed for the proposed projects:

- National Environmental Management Air Quality Act, 2008 (AQA) (Act 39 of 2004) as amended.
- National Heritage Resources Act, 1999 (NHRA) (Act 25 of 1999)
- Conservation of Agricultural Resources Act, 1983 (CARA) (Act 43 of 1983)
- National Environmental Management: Biodiversity Act, 2008 (NEMBA) (Act No 10 of 2004)
- Spatial Planning and Land Use Management Act, 2013 (SPLUMA) (Act No 16 of 2013) (SPLUMA)
- Nkomazi Local Municipality By-Laws
- Elanzeni District Municipality By-Laws

Permits in terms of all applicable National, Regional and Local legislation will be obtained prior to the commencement of the activities on site.

7 ENVIRONMENTAL STATUS QUO (Baseline)

NOTE: The Environmental Status Quo Baseline has been compiled utilizing specialist studies previously undertaken in the area. This section will be updated accordingly with the completion of the Specialist Studies undertaken to support the EIA Regulatory Process as to represent the most up to date information.

7.1 TOPOGRAPHY

The topography of the region is characterised by the Lebombo Mountain Range to the East and the Mananga Mountain Range to the South. The mine falls within the area occupied by the plains of the Lebombo Mountain Range, consisting of a gently undulating surface with a general westerly to north-westerly slope.

7.2 CLIMATE

7.2.1 Temperature

Temperatures in this climate zone are generally moderate to high, although low minima can be experienced during the winter months due to clear night skies. Temperature can vary between 39°C (maximum) to 4°C (minimum) in summer and 36°C (maximum) to -2°C in winter.

7.2.2 Rainfall

Nkomati Anthracite Mine falls within the summer rainfall region of South Africa, in which more than 80% of the annual rainfall occurs from October to March; 85% of the rainfall falls during summer thunderstorms. Such thunderstorms generally occur every 3-4 days in summer. They occur as conventional thunderstorms and are usually scattered and of short duration and intensity. The rainfall events are highly localised and can vary markedly over short distances. The gross annual "A" pan evaporation for the region, measured at Barberton, is 1635 mm. During the seven summer months from September to March the mean monthly evaporation is 157 mm. This equates to 67% of the total mean annual evaporation. Evaporation is lowest between the months of May to July when the average monthly evaporation of 90 mm occurs (GCS, 2012). Fog can occur throughout the year although the highest tendency occurs during November to December. The annual prevailing wind direction, during the day, summer and winter months, is northeasterly.

7.2.3 Evaporation

The gross annual "A" pan evaporation recorded at Piet Retief, 150km south-west of the mine is 1 635 mm. It is evident that there is a monthly moisture deficit throughout the year; this results in an average annual deficit of 870 mm. Furthermore, it is also observed that the maximum potential water loss occurs during August, September and October.

Table 7-1: Climatic Data for the Area

Month	Mean Rainfall (mm)	No. of days >10mm	Evaporation (mm)	Mean (°C)	Mean Daily Max. (°C)	Mean Daily Min. (°C)	Extreme Max. (°C)	Extreme Min. (°C)
Jan	124	3.3	182	26.9	32.9	20.8	43.9	27.2
Feb	111	2.9	156	26.8	32.6	21.0	43.8	25.6
Mar	107	3.0	151	25.8	31.8	19.8	43.3	24.8
Apr	42	1.4	117	23.8	30.8	16.9	39.9	23.9
May	19	0.6	97	20.5	28.9	11.9	40.5	20.8
Jun	7	0.2	82	17.4	26.4	8.3	36.1	18.3
Jul	10	0.2	92	17.5	26.5	8.4	35.0	17.8

Month	Mean Rainfall (mm)	No. of days >10mm	Evaporation (mm)	Mean (°C)	Mean Daily Max. (°C)	Mean Daily Min. (°C)	Extreme Max. (°C)	Extreme Min. (°C)
Aug	9	0.4	119	19.6	28.3	11.0	39.3	20.1
Sep	24	0.6	150	21.9	29.6	14.2	46.7	22.8
Oct	46	1.9	162	24.4	31.6	17.2	44.8	27.5
Nov	85	2.7	169	25.3	31.9	18.9	44.8	27.8
Dec	89	3.1	181	26.7	33.2	21.2	47.7	27.8
Annual Mean	56.08	1.69	138	23.1	30.4	15.8	47.7	27.8

7.3 GEOLOGICAL SETTING

The geological map of the study area is shown in **Figure 7-1**. The geology in general comprise of green, fine-grained mafic lava of the Letaba Formation of the Lebombo group of the Karoo Sequence. It also includes the Tshipise member cream-coloured, fine grained, massive sandstones of the Clarens Formation of the Lebombo Group of the Karoo Sequence. There are undifferentiated Karoo Sequence sandstones below the above mentioned Letaba sandstones which make up a large portion of the project area. Further away and not directly related to the project area potassic gneiss and migmatite of the Nelspruit Suite can be found (none of this lithology was found in the borehole logs from the newly drilled boreholes).

Faulting occurs generally in a north – south direction with displacements up to and exceeding 50 metres. In addition dykes intruded in the fault panes and sills displaced and burnt the anthracite seams. The Middle Ecca Formation thins from the south to the north on strike as shown by the sandstone partings between the different anthracite seams. In the southern area, the Upper and Middle Seams are separated by 50 metres of sediments, while the Middle and Lower are separated by 20 metres of sediments. In the northern area this decreases to 8.5 and 0.7 metres respectively. From west to east, however, the succession thickens.

The anthracite seams have a tendency to thicken from south to north on a regional scale while a thinning is normally encountered from west to east in the area of the KaNgwane Coalfield and may consist of up to five benches of different appearance and quality. Seam 4 varies in thickness between 2.5 m and 6.5 m; the coal is predominantly dull. Seam 5 consists of predominantly bright coal and has an average thickness of about 1.8 m.

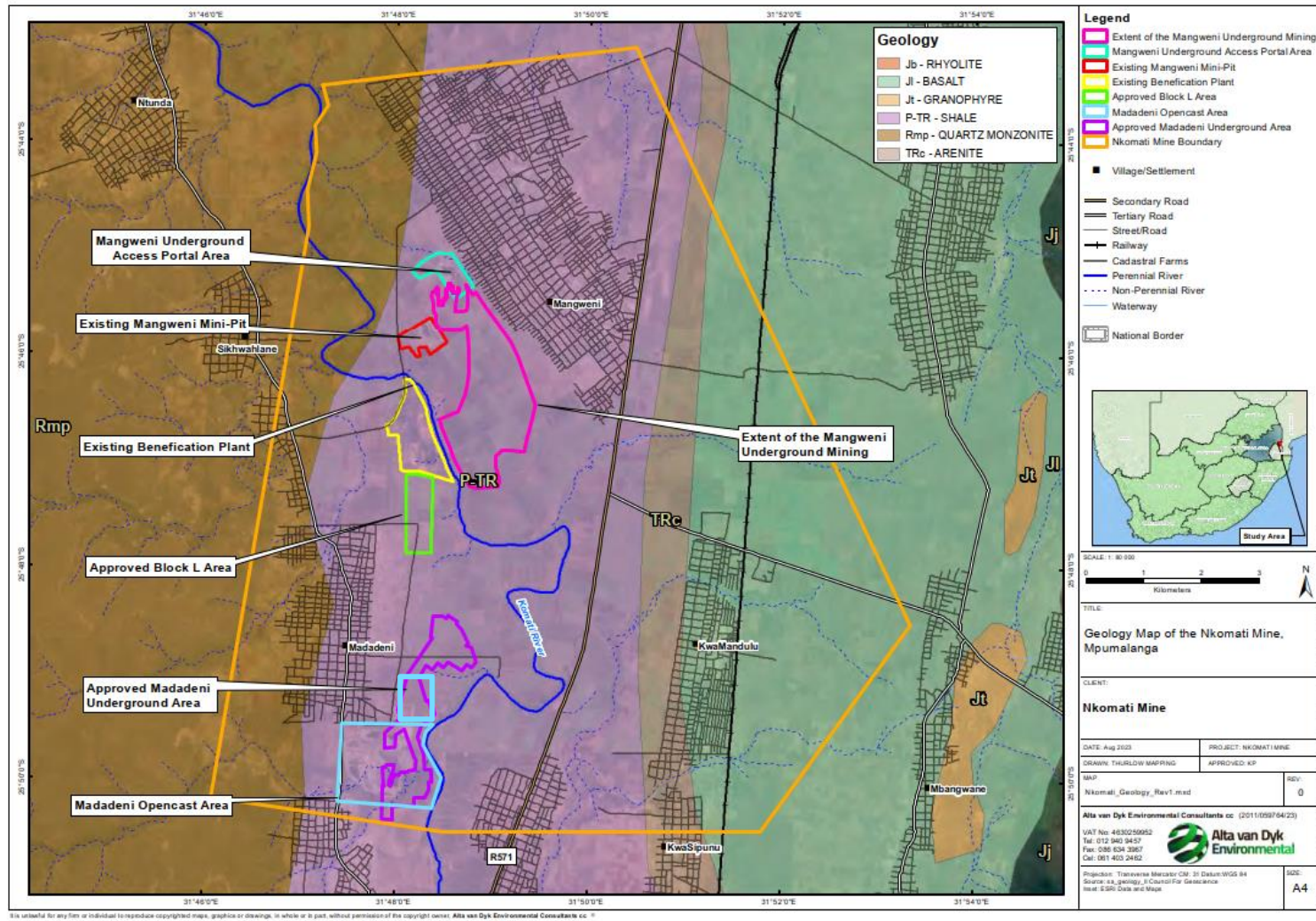


Figure 7-1: Geology of the Mining Right Area

7.4 SOILS, LAND USE AND LAND CAPABILITY

7.4.1 Soils

There are four dominant soil groupings that characterise the area of study. These groupings include a number of dominant and sub dominant forms (**Figure 7-2**). The dominant soil forms are closely associated with the lithologies (geology) from which the soils are derived (in-situ formation), the general geomorphology of the site, the effects of slope and attitude of the landforms (topography). These factors combined contribute to and affect the soil pedogenesis and ultimately the soil forms classified and mapped.

The flat to undulating topography has resulted in the in-situ formation of all but the alluvial derived materials found associated with the N'Komati River flood plains. The climate also has an influence on the soil forming processes and outcomes, with the negative hydrological balance for the area (evaporation > rainfall) resulting in the development of evaporites within the soil profile, the accumulation of carbonate, iron and magnesium precipitates resulting in the development of nodules of ferrous oxide and calcium carbonate that become cemented over time into layers or "banks" of calcrete and laterite (hard plinthite, oukclip/hard pan ferricrete).

These inhibiting layers form barriers to the vertical infiltration of water down the profile and the accumulation of clay and fine materials which in turn results in further accumulations of relic ferric oxide and carbonate over time. These restrictions in combination with the high clay contents contributes to the lateral flow and poor infiltration and the development of wet based soils. These waters contribute to the "base-flow" of the rivers and are an important contributor to the wetlands and more sensitive and important ecological and biodiversity balance of the area.

7.4.2 Land Use / Land Capability

The study area has been classified into four distinctly different and recognisable classes (**Figure 7-3**).

Arable Land

There are very limited areas that classify or rate as arable lands, the deep red coloured fine to medium grained sandy loams and moderate to deep weakly structured sandy clay loams returning variables that rate as having a moderate potential.

Grazing Land

The classification of grazing land covers the more shallow and transitional zone soils, and although not always free draining to a depth of 750mm, they are capable of sustaining palatable plant species. A significant portion of the study area classifies in this category as moderate or poor intensity grazing land.

Wilderness / Conservation Land

The shallow to very shallow and rocky areas are characteristically poorly rooted and support at best low intensity grazing, or more realistically are of a wilderness character and rating.

Wetland (Areas with wetland status soils)

The wetlands have been mapped and classified as part of the Wetland Assessment.

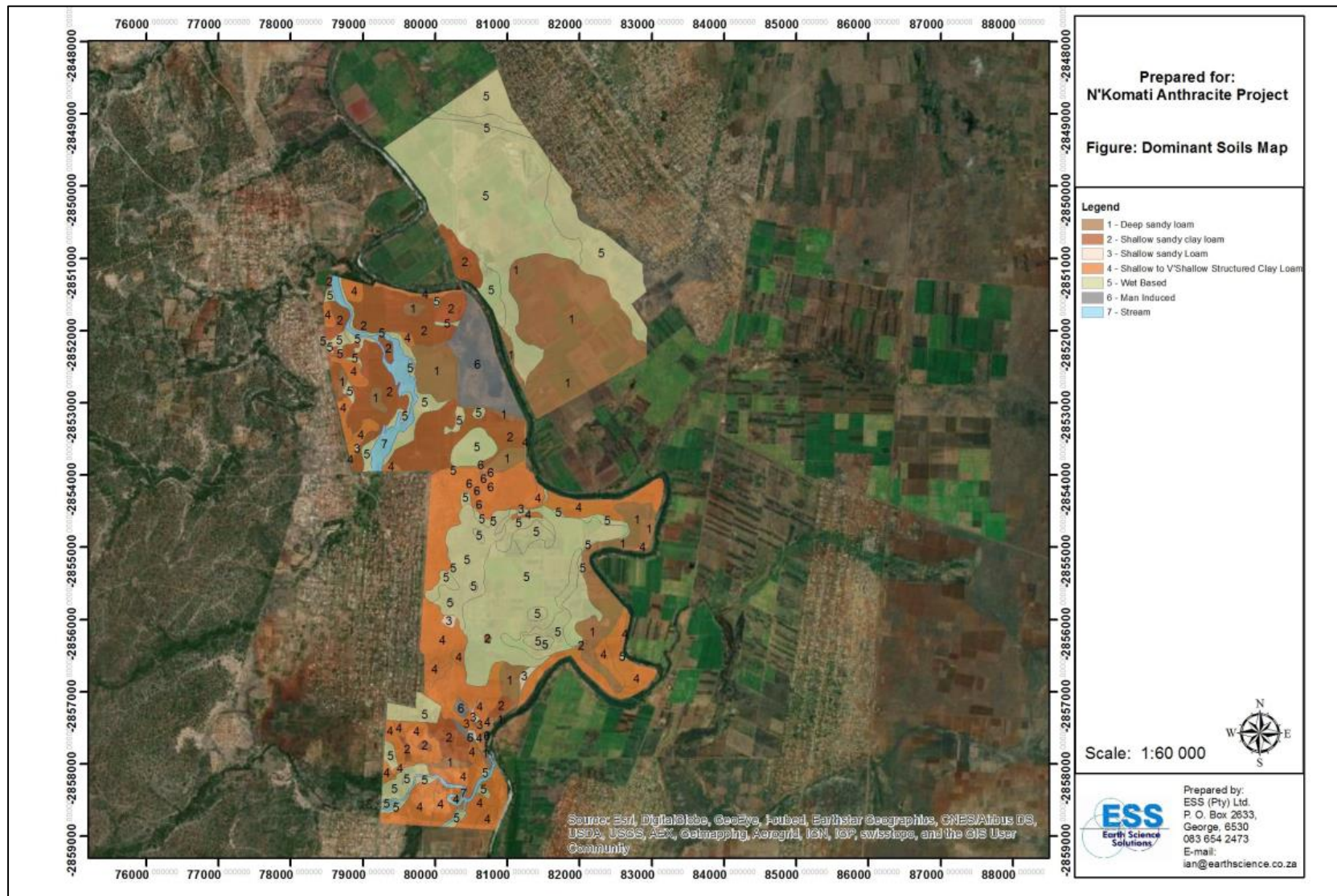


Figure 7-2: Dominant Soils Map (ESS, 2022)

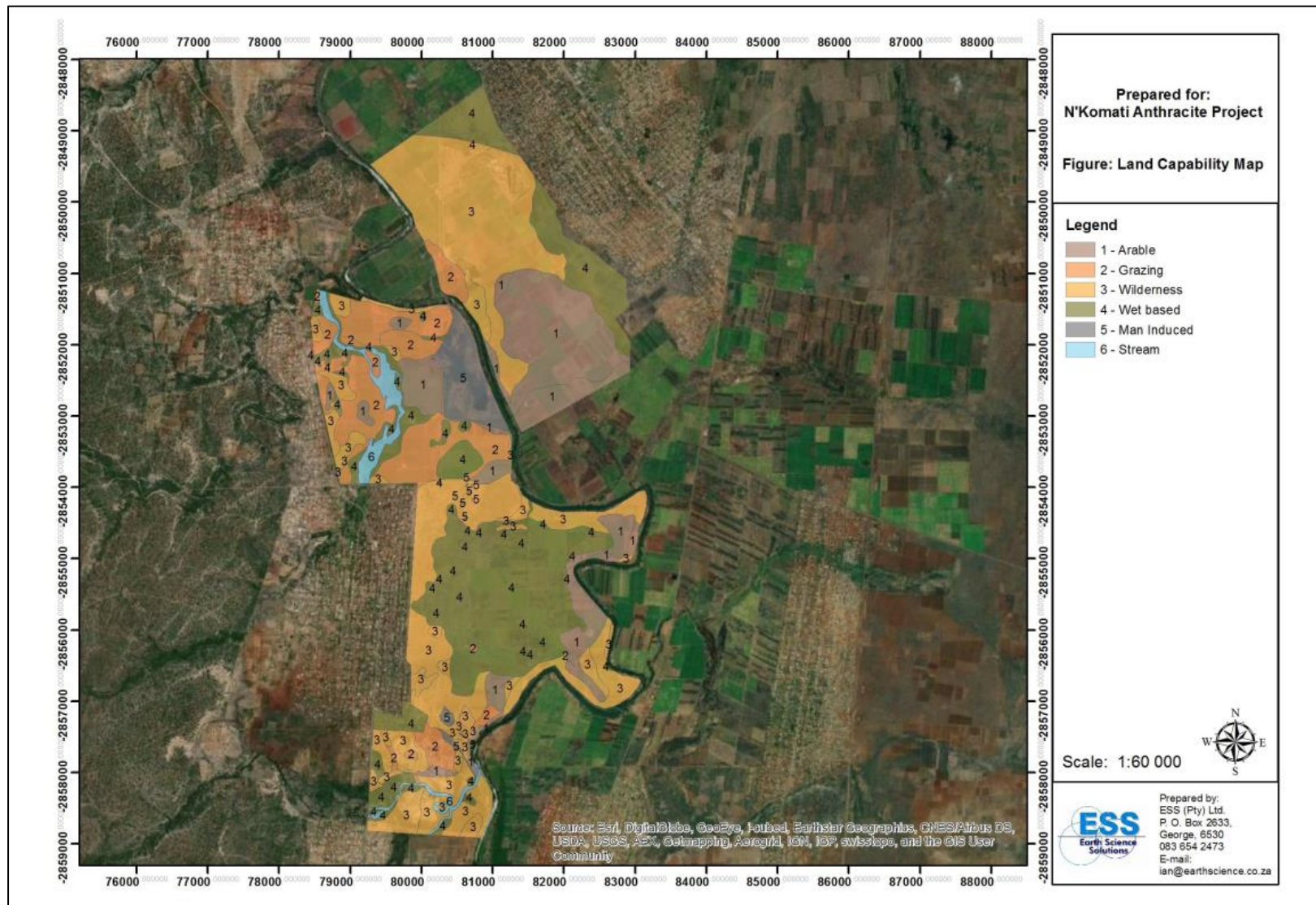


Figure 7-3: Land Capability Map (ESS, 2022)

7.5 BIODIVERSITY

According to the Vegetation Map of South Africa, Lesotho and Swaziland (Mucina and Rutherford, 2006), the study area falls within the Savanna Biome and the Lowveld Bioregion. The dominant vegetation type found on site is Zululand Lowveld (SVI23) (**Figure 7-4**).



Figure 7-4: Vegetation Map (WCS Scientific, 2022)

Under the National List of Ecosystems that are Threatened and in Need of Protection (GN1002 of 2011), the southern portions of the mine lease area, including the NE Extension area, fall within the Mananga-Lebombo Thornveld vegetation type, which is considered Endangered (**Figure 7-5**).

In terms of the Mpumalanga Biodiversity Sector Plan 2013 (**Figure 7-6**), the following was noted:

- The bulk of the mine lease area is classified predominantly as “Modified” or “Modified – Old Lands
- Only small, fragmented areas of “Other Natural Areas” remain on site, most significantly associated with the Komati River.
- A critical Biodiversity Area (CBA) Optimal occurs within the 500m buffer to the northwest of the mine lease area and marginally extends into the mine lease area.

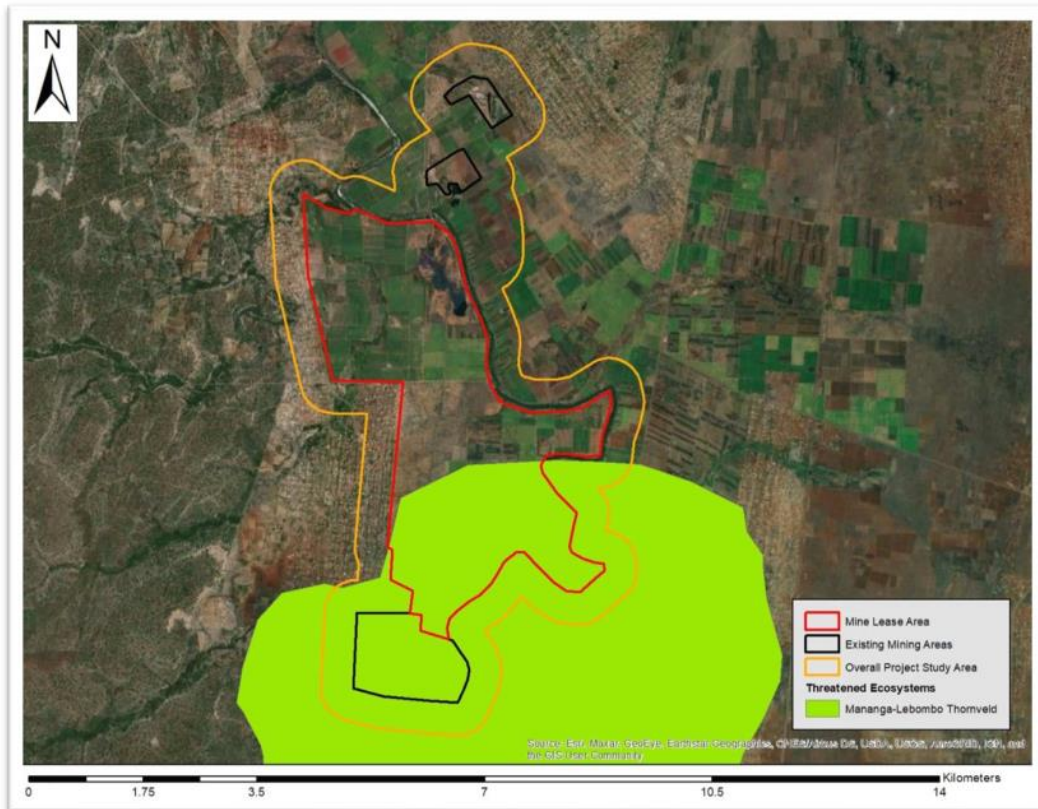


Figure 7-5: Vegetation Types in terms of the National List of Threatened Ecosystems

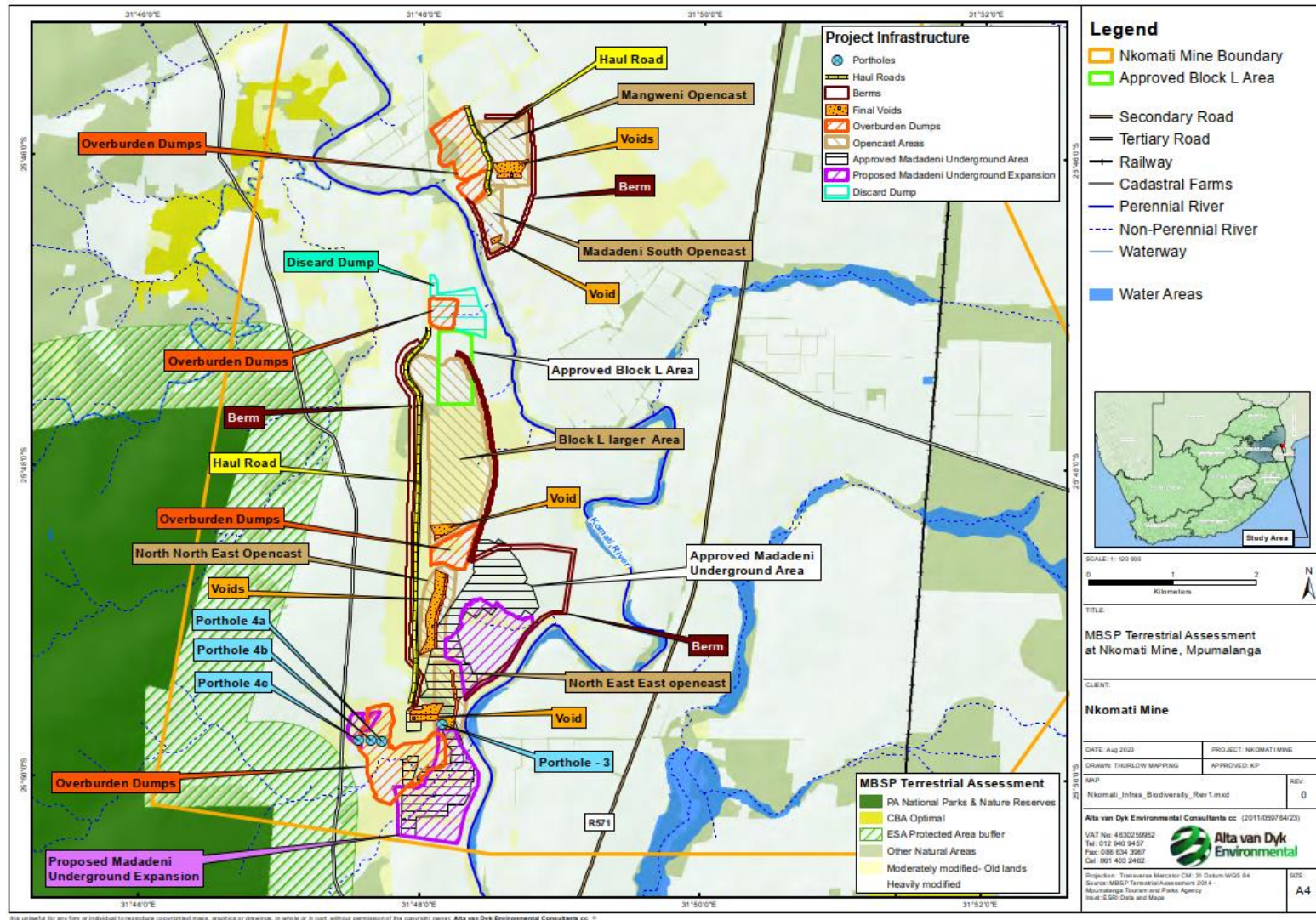


Figure 7-6: Mpumalanga Biodiversity Sector Plan (2013)

7.6 SURFACE WATER

The N’Komati Anthracite mining lease area study area is located within the Primary Catchment X and predominantly within quaternary catchment X13J, which is drained by the Komati River and its tributaries the Mzinti, Mgobode and Mbiteni (**Figure 7-7**).

The affected sub-quaternary reach (SQR) of the Komati River was considered to be Seriously Modified (PES E) and of Moderate ecological importance (EI) and High ecological sensitivity (ES) during the 2014 desktop PES assessment undertaken by the Department of Water and Sanitation (DWS, 2014). A prior assessment undertaken as part of the NFEPA Project considered the Komati River within the affected reach to be Largely Modified (PES D).

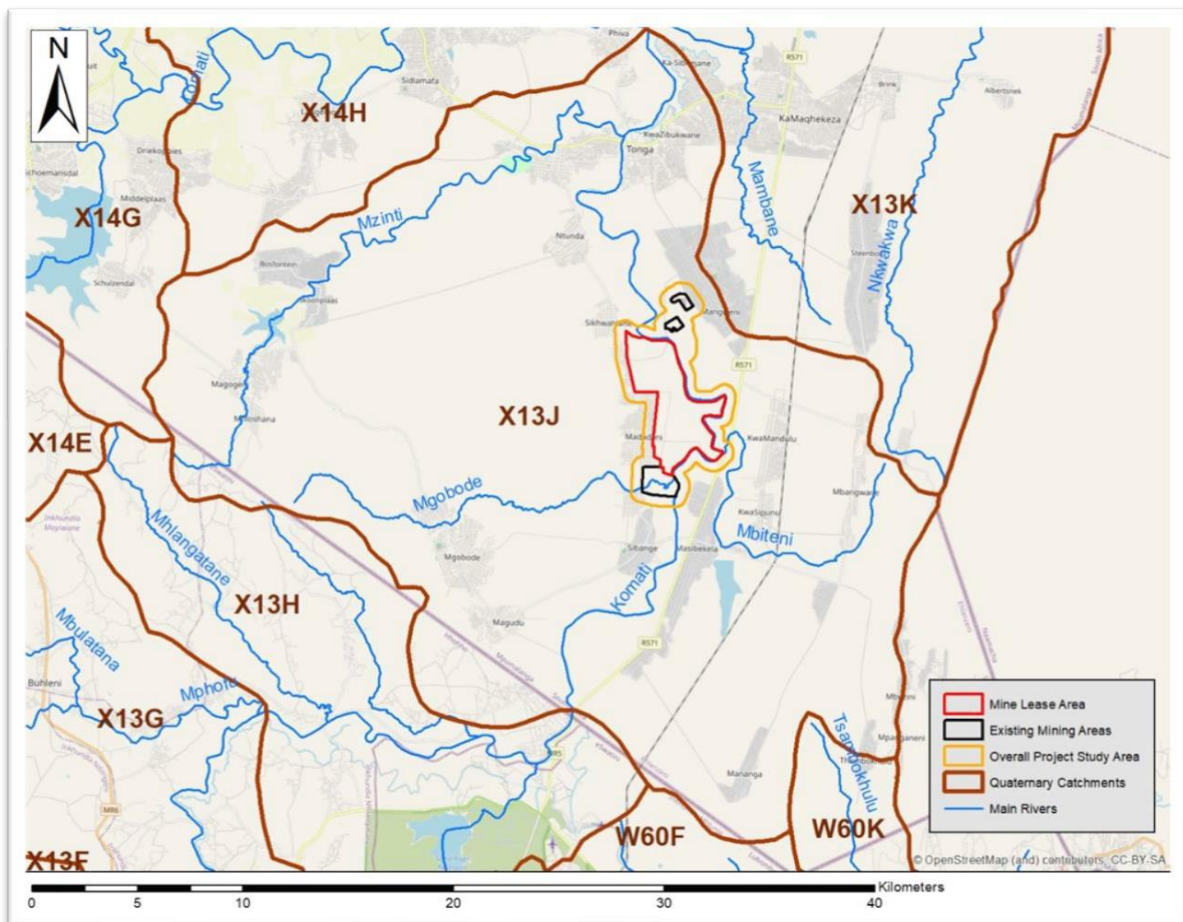


Figure 7-7: Map Showing the Study Area in Relation to Quaternary Catchments and Larger Rivers

According to previous studies wetland assessments undertaken within the Study area, seven (7) watercourse types have been identified (**Figure 7-8**). These include the following:

- Artificial wetlands
- Depression
- Riparian habitat
- Seep wetlands
- Watercourse
- Wetland flats

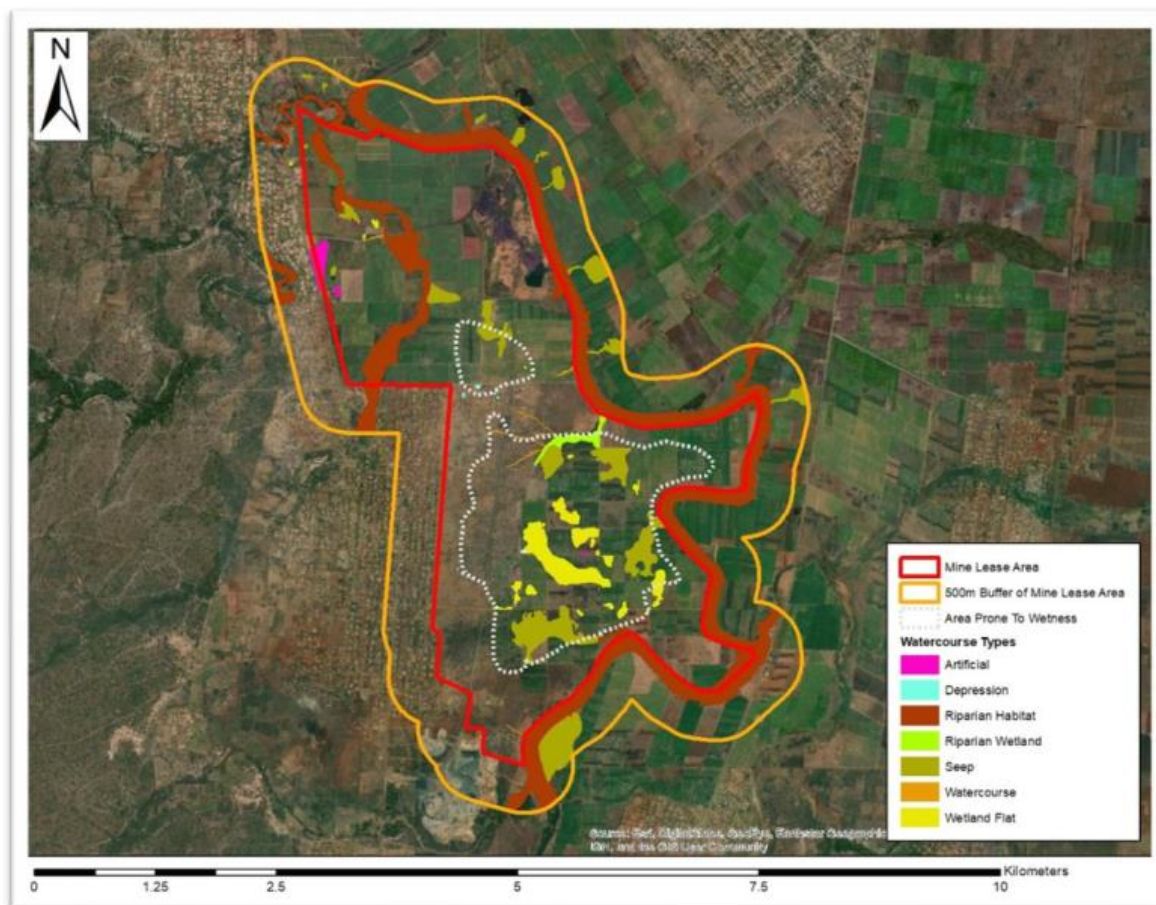


Figure 7-8: Delineated Watercourses and Features

7.7 GROUNDWATER

Four aquifers occur in the area. These four aquifers are associated with a) the weathered material, b) the underlying shallow slightly weathered fractured rock material, c) the deeper more competent less weathered fractured rock, and d) the alluvial sands along the Komati River. The anthracite horizon will also act as a fractured aquifer within the deeper fractured rock environment, however little hydraulic information on this layer exists. The following is a description of the natural aquifer systems in the area.

Upper weathered material aquifer

The upper aquifer forms due to the vertical infiltration of recharging rainfall through the weathered material being retarded by the lower permeability of the notable clay content in the weathered material. Groundwater collecting above the weathered / clayey material contact migrates down gradient along the contact to lower lying areas. In places where the contact is near surface the groundwater can daylight on surface as springs. The topsoil and weathered material in the west, away from the Komati River have an average thickness of approximately 7 to 9 m. Close to the Komati River, in the flood plain the depth ranges up to 25 to 32 m. Reference to the Groundwater Resource Assessment report (Department: Water Affairs and Forestry, 2006) shows that recharge from rainfall into the X13J quaternary catchment is 5.58 %. Aquifer transmissivities are in the order of 0.3 to 1.1 m²/day.

Upper fractured rock aquifer

Although the lower permeability of the competent rock material will retard vertical infiltration of groundwater some of the water in the upper aquifer will recharge the lower aquifer. The geological map does indicate major faults or fractures in the area, which will also help recharge the lower aquifers. The average aquifer thickness is around 30 to 40 m.

Groundwater flows in the upper fractured rock aquifer are associated with the secondary fracturing in the competent rock that was formed by the major north / south striking faulting seen from the geological maps. As such groundwater flows and contaminant transport will be along discrete pathways associated with the fractures. The general transmissivity of the competent rock material is around 0.1 m²/day (Grobelaar, Usher, Cruywagen, de Necker, & Hodgson, 2004).

Lower fractured rock aquifer

The lower fractured rock aquifer is associated with the more competent fractured rock below 50 m where there is little indication of weathering. Recharge is from the upper fractured rock aquifer through discrete fractures and faults. Transmissivities could range between 0.01 to 0.4 m²/day. The average extinction depth of this layer is expected to be approximately 80 m below surface where the weight of the overlying rocks will close the fractures.

Alluvial aquifer

The aquifer is associated with the alluvial sands along the Komati River. The sands are expected to have a relatively high storage capacity (around 20 %), as well as a high transmissivity. Due to the high storage and constant recharge from the Komati River this aquifer can hold a significant volume of water. However, because the sands are confined to the vicinity of the Komati River it does not play a major role in the regional groundwater flows.

7.7.1 Groundwater Levels

The hydrocensus of the 2019 study (Future Flow GPMS cc, November 2019) was updated. The hydrocensus covered the area in a 2 km radius around the proposed mining activities. The aim of this hydrocensus was to collect information on privately owned groundwater boreholes around the mine. During this process privately owned boreholes in the area were identified, the groundwater levels measured, and the groundwater use (type and volume) recorded. Most of the properties in the area obtain water from the Komati River; therefore, there is a sparsity of boreholes that are used for water supply. Only 1 privately owned groundwater point was identified in the field due to landowners obtaining water from the Komati River. In addition to the hydrocensus data existing boreholes at Nkomati mine as well as the newly drilled groundwater monitoring boreholes are also taken into account.

Results from the 2019 study (Future Flow GPMS cc, November 2019) showed that there is a separation between the groundwater levels associated with the weathered material aquifer and those of the fractured rock aquifer. At the time the measured groundwater levels showed that the depth to groundwater level in the weathered material aquifer ranged between 2 and 4 m while the depth to groundwater level in the fractured rock aquifer ranged between 7 and 14 m. This separation between the two aquifers was attributed to the presence of a clay layer. The clay layer acts as an aquitard that reduces groundwater flow between the two aquifers. Results from the current hydrocensus do not show such a clear distinction in the groundwater levels, although a number of the boreholes are the same boreholes that were visited during 2019. During this hydrocensus the depth to groundwater level ranged between 3.78 and 10.77 m.

Looking at the following figures, it can be seen that there is no clear grouping for different aquifers in the measured groundwater levels. Taking into consideration that the clay layer is still present regionally, and that many of the boreholes are located close to existing mining areas, it is concluded that removal of the clay layer as part of the existing opencast mining operations created a better hydraulic connection between the two aquifers.

Borehole NKBH4 shows a depth to groundwater level of 34.02 m. The borehole was newly drilled and the aquifer test results show a very low transmissivity and only 5 % recovery of the groundwater level after completion of the pumping phase. Based on this, it is concluded that the anomalously deep groundwater level is due to the low permeability around the borehole and the associated slow rate of rise of the groundwater level within the borehole after drilling was completed. It is expected that the groundwater level will eventually stabilise between

4 and 10 m below surface. In areas where there are no large scale external impacts on the groundwater environment, such as the lowering of groundwater level through dewatering, and where the geology and aquifer interactions are not excessively complex it is expected that the groundwater level contours will reflect topographical contours, although at a moderated gradient. The depth to groundwater level in the two aquifers against topography shows a 96.25 % correlation. Based on this it is concluded that groundwater levels in the study area mimic topography.

Bayesian interpolation is used to interpolate the regional groundwater levels throughout the study area for the weathered material aquifer. Regionally, groundwater flow from the west towards the Komati River in the east. Close to the existing opencast and underground mine areas the groundwater levels in the weathered material aquifer is expected to remain near surface. It is possible that the groundwater level in the fractured rock aquifer underneath the clay layer will be drawn down locally around the mining areas due to mine dewatering, although that is not seen in the groundwater levels in the existing monitoring boreholes. The impact on the groundwater levels in the fractured rock aquifer is potentially mitigated by seepage from the weathered material aquifer due to the dividing clay layer between the weathered material aquifer and the underlying fractured rock aquifer being disturbed by the mining excavations.

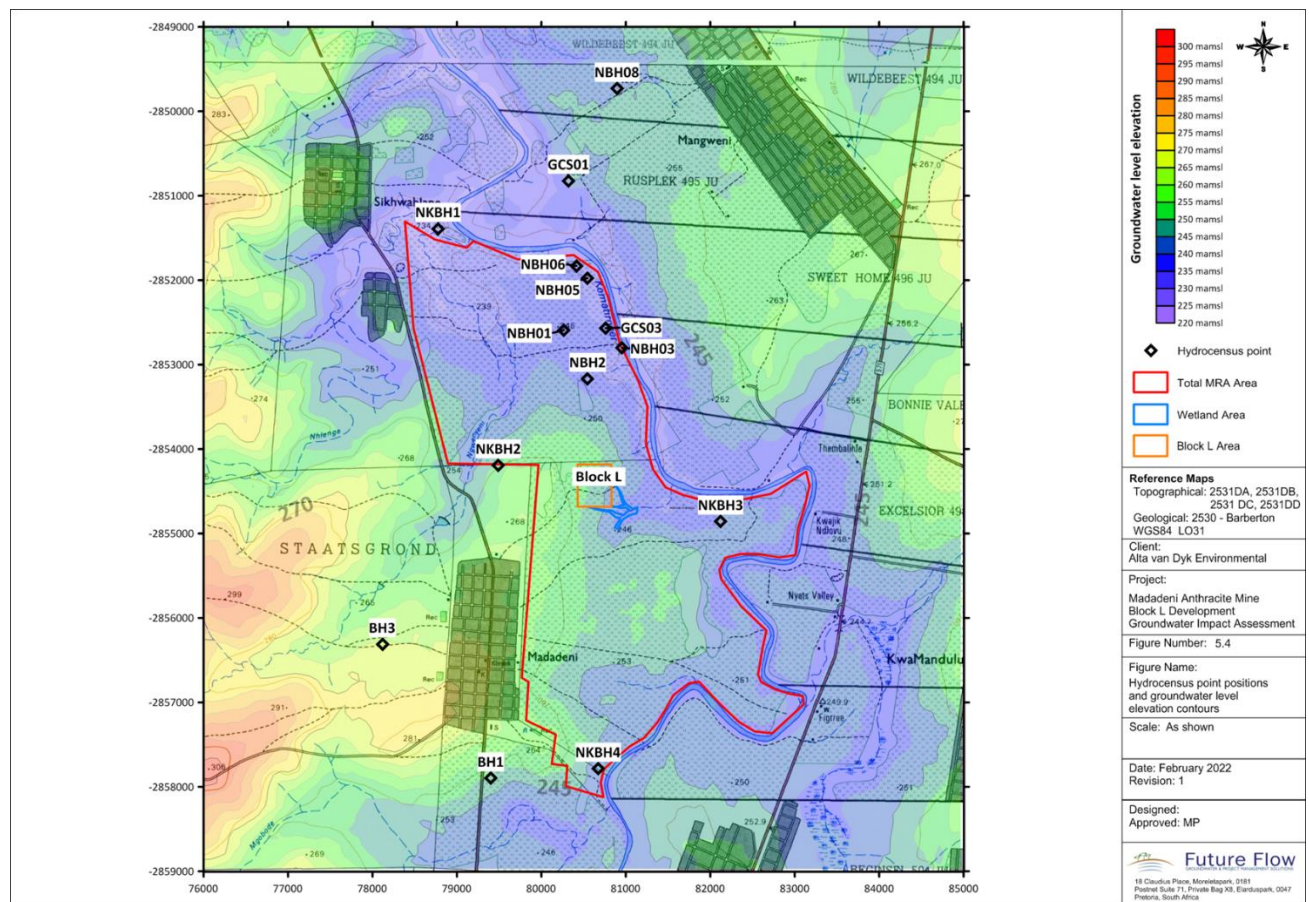


Figure 7-9: N'Komati Groundwater Level Elevations

7.7.2 Groundwater Flow

The upper weathered material aquifer is present throughout the whole of the study area and is heavily dependent on rainfall and therefore yields from the aquifer vary seasonally. During the dry season sections of the aquifer will be dry due too little to no recharge from rainfall occurring. In low lying areas, close to streams, the aquifer can be expected to contribute to stream flow volumes through baseflow contribution during the rainy season. It is possible that during the dry season the flow direction can change at perennial streams and the

river will then recharge the underlying and surrounding weathered material aquifer. The transmissivity of the aquifer is between 0.3 and 1.1 m²/day.

The underlying upper and lower fractured rock aquifers are associated with secondary fracturing that occurred during formation of the numerous north / south striking structures in the area. The majority of the groundwater flows in the aquifer are along discrete fractures. In the upper fractured rock aquifer zone flows can be expected to be more widespread due to a higher fracture density and fracture interconnection while groundwater flows in the lower fractured rock aquifer will be more discrete. The upper weathered fractured aquifer has an average thickness of between 30 and 40 m. The lower unweathered fractured rock is expected to have an extinction depth of around 80 mbgl. The general transmissivity of the competent rock material is around 0.1 m²/day. The transmissivity of the lower fractured rock aquifer ranges between 0.01 to 0.4 m²/day.

The alluvial aquifer is associated with the sands along the Komati River channel and are expected to have a relatively high storage capacity (around 20 %), as well as a high transmissivity. Due to the high storage and constant recharge from the Komati River this aquifer can hold a significant volume of water. However, because the sands are confined to the vicinity of the Komati River it does not play a major role in the regional groundwater flows.

The depth to groundwater level ranges between 3.78 and 10.77 m. There is no clear grouping for different aquifers in the groundwater levels. With the clay layer present regionally, and with many of the boreholes located close to existing mining areas, it is concluded that removal of the clay layer as part of the existing opencast mining operations created a better hydraulic connection between the weathered material and fractured rock aquifers.

Regionally, groundwater flow from the west towards the Komati River in the east. Close to the existing opencast and underground mine areas the groundwater levels in the weathered material aquifer is expected to remain near surface. It is possible that the groundwater level in the fractured rock aquifer underneath the clay layer will be drawn down locally around the mining areas due to mine dewatering, although that is not seen in the groundwater levels in the existing monitoring boreholes. The impact on the groundwater levels in the fractured rock aquifer is potentially mitigated by seepage from the weathered material aquifer due to the dividing clay layer between the weathered material aquifer and the underlying fractured rock aquifer being disturbed by the mining excavations.

Rainfall recharges into the aquifers. Long term rainfall data show an average rainfall figure of 673 mm/a. The Groundwater Resource Assessment report shows that recharge from rainfall into the X13J quaternary catchment is 5.58 %.

7.7.3 Groundwater Monitoring

A water monitoring program with focus on the possible sources of impact is in place at Nkomati Mine. The sources of impacts include the existing and historic opencast and underground mining areas as well as surface stockpile areas. The monitoring program follows a quarterly interval with parameters and elements monitored. These quarterly reports are submitted to the relevant departments and this practice will be continued. The groundwater monitoring points and variables are provided in **Table 7-2** and **Table 7-3**.

Table 7-2: Groundwater Monitoring Points

Ref	Description
GCS01	Nkomati washing plant, U/G operations
GCS02	Nkomati U/G workings
GCS03	Nkomati U/G workings
GW01	Nkomati groundwater seepage at U/G entrance
MGCS04	Down gradient of Madadeni Opencast area, close to Komati
MGCS05	Down gradients of Madadeni Opencast area

Ref	Description
MGCS06	Up gradient of Madadeni O/C
MGCS07	Down gradient of Madadeni Opencast Washing Pit
NBH01	Nkomati production B/H in wash plant area, West of O/C
NBH02	Nkomati South West of O/C void
NBH03	Nkomati North East of O/C void, between void and Komati River
NBH05	Nkomati down gradient of make-up water and slurry dams
NBH06	Nkomati North of make-up water and slurry dams
NBH07	East bank of Komati River, N'Komati Underground Operations
NBH08	North of Nkomati U/G operations

Table 7-3: Groundwater Monitoring Variables

Variable	Unit
pH @ 25°C	pH
Electrical conductivity @ 25°C	mS/m
Total dissolved solids (TDS)	mg/l
Calcium (Ca)	mg/l
Magnesium (Mg)	mg/l
Sodium (Na)	mg/l
Potassium (K)	mg/l
Total alkalinity	mg CaCO ₃ /l
Chloride (Cl)	mg/l
Sulphate (SO ₄)	mg/l
Fluoride (F)	mg/l
Nitrate (NO ₃) as N	mg/l
Nitrate as NO ₃	mg/l
Copper (Cu)	mg/l
Iron (Fe)	mg/l
Manganese (Mn)	mg/l
Silicon (Si)	mg/l
Zinc (Zn)	mg/l
Oil and grease (SOG)	mg/l

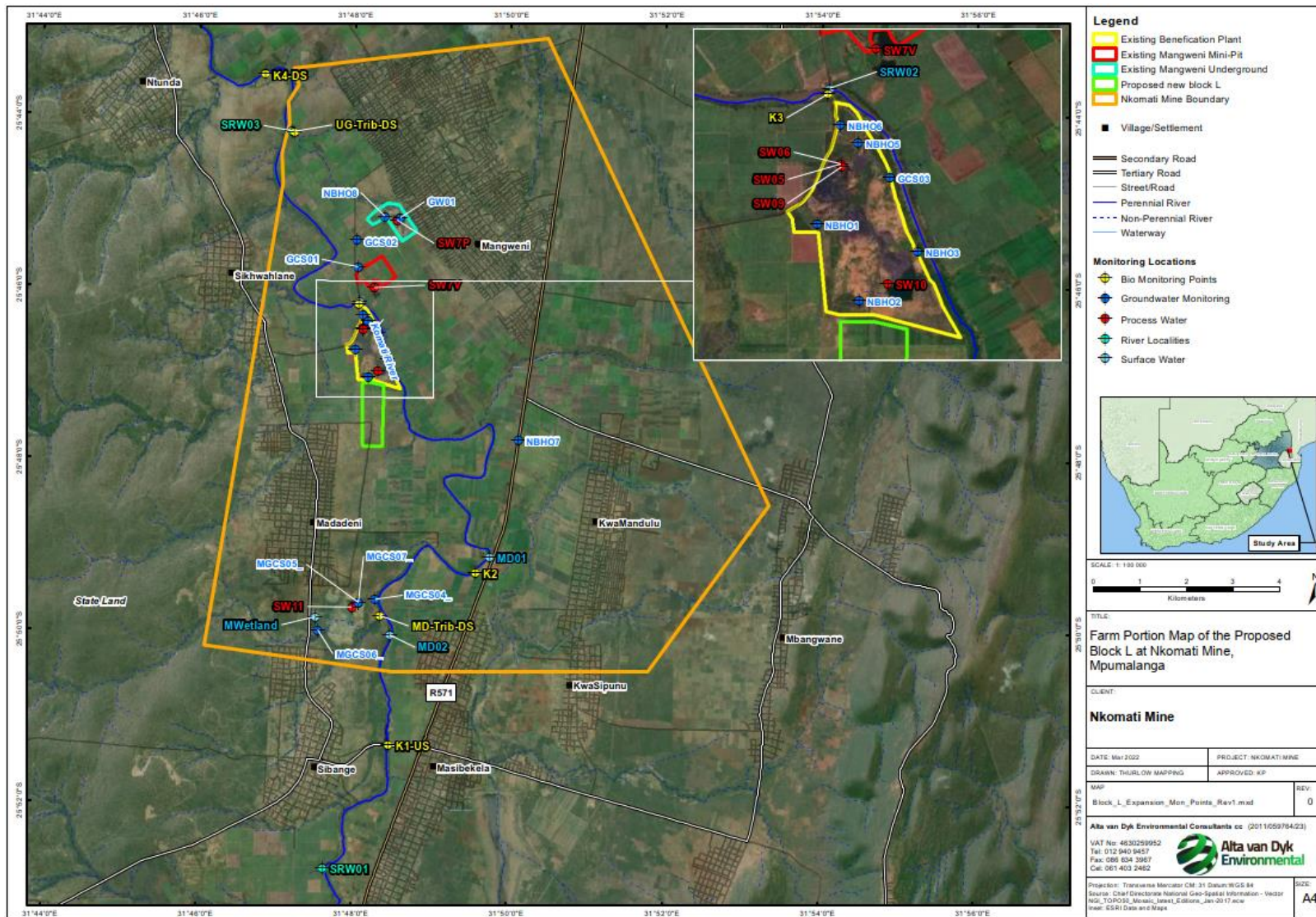


Figure 7-10: N’Komati Mine Summary of Monitoring Points including biomonitors, surface, and groundwater points

7.8 AIR QUALITY

There are no significant sources of air pollution in the area surrounding the three Nkomati Anthracite Mine sites. There is no industrial activity in the municipality and the area might be described as being relatively rural and predominantly under agriculture besides the towns of Ntunda and Tsonga to the north, eMangweni immediately to the east of the underground works, Sibange and Madadeni to the west and south of the Madadeni Opencast Mine. The dependence on wood and coal as an energy source has reduced significantly and is illustrated by the increased use of electricity for lighting from 47.6% in 2001 to 83.3% in 2011.

In 2011 65.4% of all homes used electricity for cooking and 50.6% for heating. Wood is still used in 28.3% of homes for cooking and 10.6% for heating. The use of coal is limited. Wood is a relatively dirty fuel and results in emissions of mostly particulates and carbon monoxide and smaller amounts of oxides of nitrogen (NOX) and sulphur dioxide (SO₂). Emissions of these pollutants from domestic wood burning will influence local ambient air quality. It is not possible to quantify the effect without any ambient monitoring in the area.

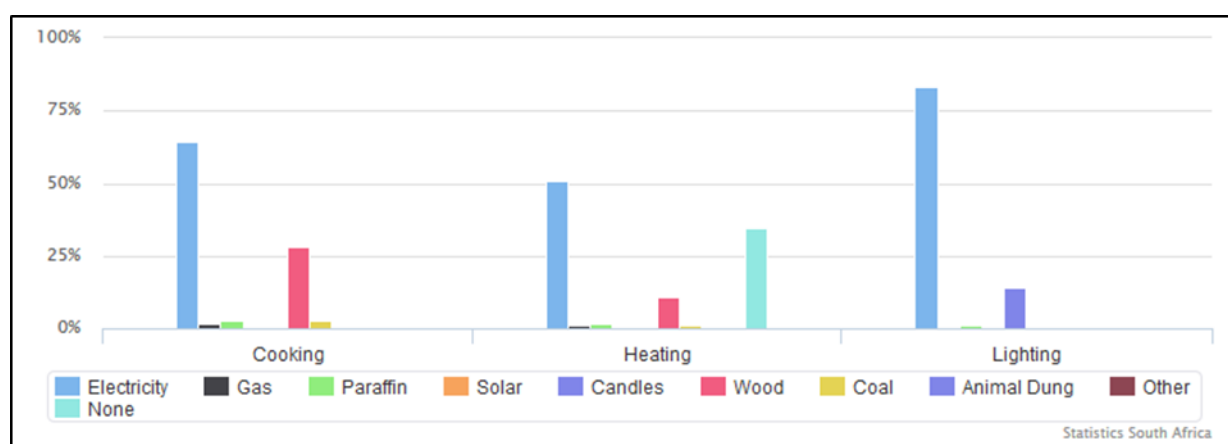


Figure 7-11: Energy Use Statistics for Nkomazi Municipality for Cooking, Heating and Lighting

Nkomati Anthracite Mine measures dust fallout at a number of sites. Dust fallout monitoring is done according to the SANS 1929:2005 and ASTM Standard, D1739-98: Standard Test Method for the Collection and Measurement of Dust fall (Settleable Particulate Matter). Dust fallout gauges are exposed for a month at a time, and the collected samples are weighed in the gravimetric laboratory and then converted to dust fallout in g/m²/day. Dust fallout (DFO) monitoring started at Nkomati Anthracite Mine in February 2018. A network of 12 DFO monitoring sites was established in the underground mining area, at the processing plant and at one site in the north opencast area. In 2019 an additional site was added at the north opencast area. The highest DFO in 2018 and 2019 was recorded at two sites in the plant area (10S and 11S) and in the north opencast pit area (14N) where the limit value of the National Dust Standard of 1 200 mg/m²/month for non-residential areas was exceeded. The Standard provides for two exceedances of the limit value per year, implying that the standard was exceeded at these three monitoring points.

In 2020 the DFO monitoring was reduced to seven monitoring sites and no exceedances of the National Dust Standard were reported. In 2021 it was expanded to 13 monitoring points with sites around the Mangweni Mini Pit. The National Dust Standard was not exceeded in 2021, but some exceedances of the limit value were recorded at the Mini Pit.

Table 7-4: Number of Monthly Exceedances of the National Dust Standard for Non-Residential Areas (uMoya-Nilu, 2022)

Site name	Site area	2018	2019	2020	2021
01E	East Underground Area	0	0	0	0
02N	North Underground Area	0	0	0	0
03W	West Underground Area	0	0	0	0

04S	South Underground Area	0	0	0	0
05NW	North-West Underground Area	0	0	0	0
06N	North Underground Area	0	0	0	0
08E	Surface/Plant Area	0	0	0	0
09W	Surface/Plant Area	0	0	0	0
10S	Surface/Plant Area	3	7	0	2
11S	Surface/Plant Area	1	3	0	2
12E	Surface/Plant Area	0	0	0	0
13E	East O/C Pit Area	0	0	0	1
13E	Opencast Pit East	0	0	0	1
14N	North O/C Pit Area	5	7	0	0
15N	Opencast Pit North	0	0	0	0
16W	Opencast Pit West	0	0	0	0
DB 1	Mini Pit Main Gate	0	0	0	2
DB 2	Mini Pit View Point	0	0	0	1
DB 3	Mini Pit Underground	0	0	0	0
DB 4	Mini Pit Community	0	0	0	0

In summary, it appears that ambient air quality in the vicinity of the Nkomati Anthracite Mine operations is relatively good. The influence of the mining activities is localised and complies with the dust standards at most of the monitoring sites. The influence of wood burning is likely to be localised.

7.9 ARCHAEOLOGICAL, CULTURAL AND HERITAGE

7.9.1 Cultural Heritage

A Heritage Impact Assessment will be commissioned as part of the EIA phase of the project to determine any features of Cultural and Heritage Significance associated with the proposed project.

7.9.2 Paleontological

According to the South African Heritage Resources Agency (SAHRA) Paleontological (fossil) Sensitivity map, the study area (indicated in yellow) **Figure 7-12**. The associated assessment will be undertaken during the EIA phase of the project.

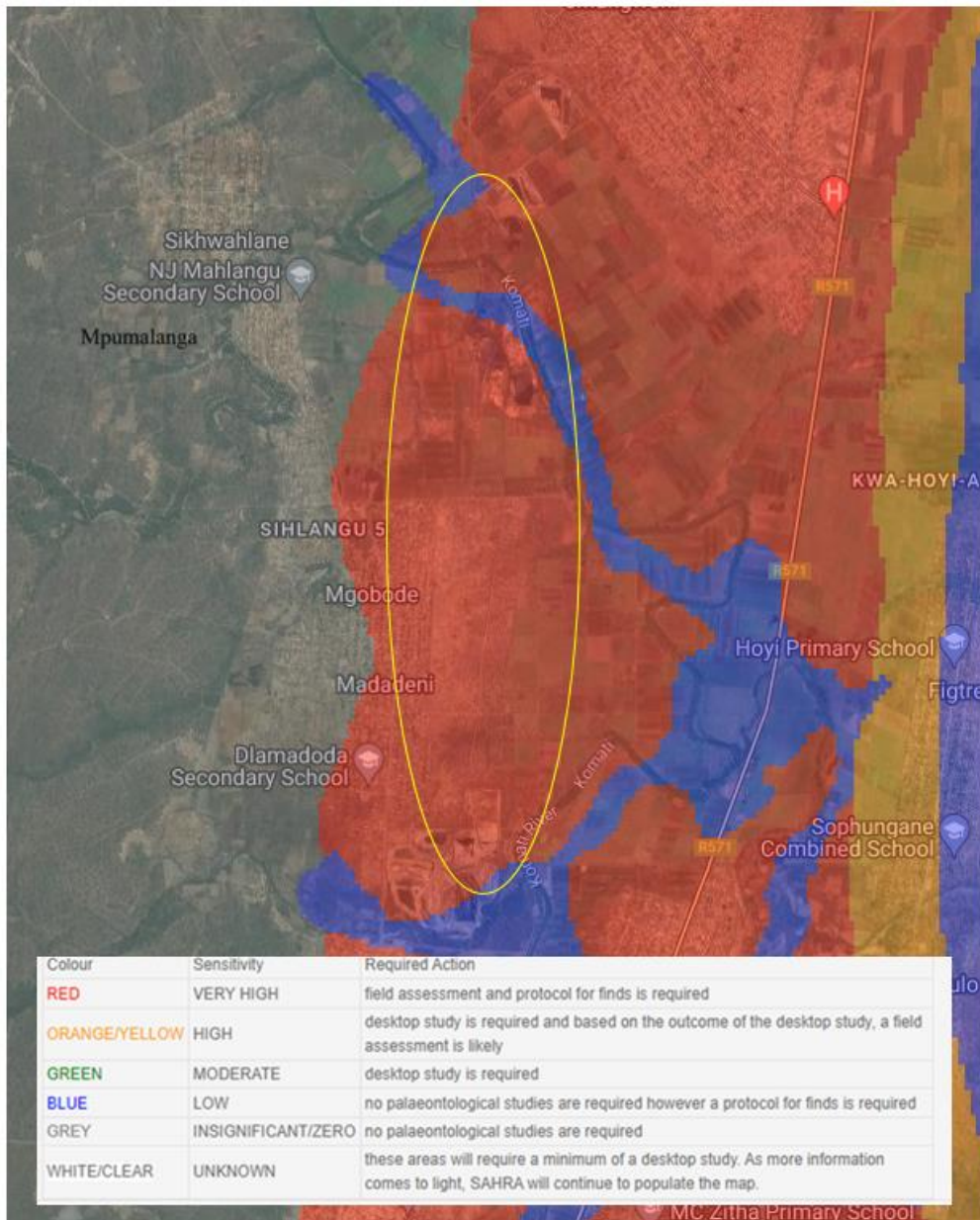


Figure 7-12: SAHRA Palaeontological Map

7.10 NOISE

The main noise sources within and beyond the boundaries of the proposed mining right area are:

- Traffic noise along the feeder roads east of the mining right area
- Intermittent traffic noise along the gravel roads
- Haulage along existing haul roads
- Existing Nkomati mine activity noises
- Agricultural type noises during the different seasons
- Farmhouses/residential properties in the vicinity of the mining right area
- Animal and bird noises; and
- Wind noise.

7.11 VISUAL

The proposed mining operations will be situated on an area within the current mining right area. Majority of the proposed site has no infrastructure present and is in a semi-natural state as it has been modified by sugar cane farming, livestock grazing and previous mining. The proposed location is surrounded by mining infrastructure and associated features (i.e. void, stockpiles, haul road etc.). The current mining area is not visible from the Mzinti-Madadeni tar road or from the neighboring towns.

7.12 SOCIO-ECONOMIC

7.12.1 Municipal and Traditional structure

Nkomazi Local Municipality (NLM) is located in Mpumalanga Province and is one of the five local municipalities that make up the Ehlanzeni District Municipality (EDM). The town of Malelane is the administrative seat of the NLM. The municipality is strategically placed between Swaziland (north of Swaziland) and Mozambique (east of Mozambique). It is linked with Swaziland by two provincial roads the R570 and R571 and with Mozambique by a railway line and the main national road (N4), which forms the Maputo Corridor.

The NLM is divided into 33 (thirty-three) municipal wards. The main urban areas include Malelane, Hectorspruit, KaMaqhekeza, Tonga, Kaapmuiden, Koomatipoort and Kamhlushwa. The NLM also consists of 8 (eight) Traditional Authorities (TA) situated in the southern section of the municipal area. The below table lists the different traditional authorities and the respective settlements or villages under their control. The study area is located in Mawewe TA.

Table 7-5: Traditional Authority Areas within Nkomazi Local Municipality

No	Traditional Authority	Settlement Area
1	Mlambo Tribal Authority	Mabidozini, Samora Park, Emacambeni, Mbangwane; Ekusulukeni, Khombaso; Tsambokhulu; Mananga; Masibekela; Mandulo; Mthatha, New Village, and Hlahleya.
2	Hhoyi Tribal Authority	Hhoyi, Ericsville and Goba.
3	Siboshwa Tribal Authority	Part of KaMaqhekeza; Block A (KwaZibukwane); Block B (KwaSibhejane); Block C (Esibayeni); Tonga and Los My Cherry, Ngwenyeni and Dlunduma
4	Kwa-Lugedlane Tribal Authority	Mangweni and Steenbok
5	Mawewe Tribal Authority	Magudu; Mgobodzi; Madadeni; Sibange; Phakama.
6	Matsamo Tribal Authority	Jeppes Reef; Schoemansdal; Buffelspruit; Driekoppies; Middelpaas; Schulzental, Mzinti; Ntunda; Phiva; Mdladla; Phosaville; Langelooop; Ekuphumuleni; Sikhwahlane.
7	Mhlaba Tribal Authority	Magogeni; Boschfontein; Skoonplaas.
8	Lomshiyo Tribal Authority	Louisville; Shiyalongubo, Sincobile

7.12.2 Socio-Economic Structure

7.12.2.1 Population

The population of the NLM in 2016 was 410 907 (Community Household Survey 2016). Of this total, 47.1% were under the age of 18, 49.3% were between 18 and 64, and the remaining 3.6% were 65 and older. The figures for the economically active age group of 18-65 for the EDM and Mpumalanga were 52.2% and 56.6% respectively.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services. The national dependency ratio in 2011 was 52.7%, while Mpumalanga was 56%. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people

falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the NLM and EDM in 2016 were 103% and 92% respectively. The high dependency ratios reflect the limited employment and economic opportunities in the area. As indicated above, the high dependency ratios place a severe burden on the ability of the local and district municipalities to fund the provision of basic services.

In terms of race groups, Black Africans made up 98.8% of the population on the NLM, followed by Whites, 0.9% and Coloureds, 0.2%. The figures for the EDM are similar, namely, Black Africans made up 97.1% of the population, followed by Whites, 2.1% and Coloureds, 0.6%. The main first language spoken in both the NLM and EDM was Siswati, 90.6% and 59.2% respectively.

7.12.2.2 Households and House Types

There were a total number of 103 963 (2016) households in the NLM, which comprises approximately 20% of the households in the EDM. Of these 82.8% were formal houses, 6.5% were flats in backyards and 6.4% were shacks. The majority of the dwellings in the NLM are therefore formal structures. The majority of the formal structures in the NLM (81.1%) were also owned and fully paid off. This indicates a stable and settled population. Approximately 45% of the households in the NLM were headed by women, which is higher than the figure for the EDM (43.7%) and Mpumalanga (39.7%). The high percentage of women headed households reflects the limited employment opportunities in the area, specifically the tribal areas and the need for people to seek employment outside the NLM. Traditionally the men are the members of the households that move to seek work elsewhere and salaries are repatriated to support families. From a social perspective women headed households tend to be more vulnerable.

7.12.2.3 Household Income

Based on the data from the 2011 Census, 17% of the households in the NLM had no formal income, 7% earned less than R 4 800, 12.7% earned between R 5 000 and R 10 000 per annum, 23% between R 10 000 and R 20 000 per annum and 19.8% between R 20 000 and 40 000 per annum (2016). The figures for the EDM were, 15% of the households had no formal income, 6.4% earned less than R 4 800, 10.7% earned between R 5 000 and R 10 000 per annum, 20.8% between R 10 000 and 20 000 per annum and 20.3% between R 20 000 and 40 000 per annum (Census 2011).

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 79.5% of the households in the NLM and 73.2% in the EDM live close to or below the poverty line. The low-income levels reflect the rural nature of the local economy and the limited formal employment opportunities outside in the area. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the NLM and EDM. This in turn impacts on the ability of the NLM to maintain and provide services.

7.12.2.4 Employment

The official unemployment rate in the NLM in 2016 was 15.9%, while 30.5% of the economically active sector of the population (15-64) were employed, and 46.1% were regarded as not economically active. The figures for the EDM in 2011 were 17.7% unemployed, 33.7% employed and 41.7% not economically active. The unemployment rates for the NLM are lower than the Provincial rate of 17.3% and the district rate of 17.7%. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world. The youth unemployment rate is in the region of 64%.

7.12.2.5 Education

In terms of education levels, the percentage of the population over 20 years of age in the NLM and EDM with no schooling was 17.7% and 13.8% (2016) respectively, compared to 11.3% for Mpumalanga. The percentage of the population over the age of 20 with matric was in the NLM and EDM was 31.1% and 36.2% respectively, compared to 36.1% for Mpumalanga. The lower education levels are likely to be linked to rural nature of the area.

8 POSSIBLE ENVIRONMENTAL IMPACTS

In respect of environmental matters, the Department of Forestry, Fisheries, and the Environment (DFFE), is responsible for drafting all relevant legislation and regulations governing mining and environmental issues. The DMRE, in turn, is responsible for implementing these laws and regulations insofar as the laws/regulations pertain to the mining industry.

As per the legislative chapter, the Constitution of the Republic of South Africa, 1996 is the supreme law of the Republic. The common law will apply to the extent that the MPRDA does not regulate a specific issue but the provisions of the MPRDA will prevail to the extent of any inconsistency. Other relevant statutes include, but are not limited to the following:

- National Environmental Management Act (107/1998) (NEMA)
- National Environmental Management: Waste Act (59/2008) (NEMWA);
- The National Environmental Management: Air Quality Act (39/2004) (NEMAQA);
- National Water Act (36/1998) (NWA);
- National Environmental Management: Protected Areas Act (57/2003) (NEMPAA);
- National Environmental Management: Biodiversity Act (10/2004) (NEMBA);
- National Heritage Resources Act (25/1999) (NHRA); and
- Mine Health and Safety Act (29/1996) (MHSA)

Table 8-1 provides identification and description of anticipated environmental impacts that may result from the proposed development of the underground operation during each of the phases of the project.

- Possible anticipated impacts during the Construction Phase;
- Possible anticipated impacts during the Operational Phase; and
- Possible anticipated impacts during the Decommissioning and Closure Phase

For each phase the possible activities and possible impacts have been identified. These tables merely aim to provide for possible impacts and how these are managed and controlled through the various legislation listed above and more. To identify all possible impacts, the following specialist studies have been identified as necessary to the undertaking of the Environmental Impact Assessment (EIA). Each specialist will identify, independently, all possible impacts at each stage of the proposed project (Construction, Operational, Decommissioning and Closure Phases), coupled with the identification of the best suitable alternatives and mitigations measures moving forward:

- Air Quality Impact Assessment.
- Blasting Impact Assessment
- Financial Quantum Provision Assessment.
- Heritage Impact Assessment.
- Paleontological Impact Assessment
- Noise Impact Assessment.
- Hydrology
- Social Impact Assessment.
- Soils and Land Capability
- Wetland Assessment and Delineation
- Geohydrological Assessment

Table 8-1: Possible Anticipated Impacts for proposed project during the CONSTRUCTION PHASE, OPERATION, DECOMMISSIONING AND CLOSURE Phases of the project

Component	Possible Impacts
Surface Water	Rainwater / surface water run-off from mining related impacted areas
	Inadequate clean and dirty water separation infrastructure.
	Inadequate capacity and locality requirements of dirty water containment facilities
	Impacts on the surface resource due to spillages and on-site incidents
	Impact on the surface water resource that could increase water and waste related diseases in the downstream communities and impacts on livelihoods
Groundwater	Seepage of contaminated leachate from discard and duff disposal facilities
	Impact of mining on the ambient groundwater levels and adjacent water users in the area – lowering of groundwater levels
	Impacts on the groundwater resource due to spillages and on-site incidents
	Incorrect handling, accumulation, and disposal of general and hazardous waste on site could have an impact on the environment
Soils	Topsoil Stripping - Loss of topsoil through erosion, loss of the seed bed through compaction, contribution to windblown dust if managed incorrectly and sedimentation of watercourses
Fauna and Flora	Vegetation and faunal destruction due to the development of infrastructure on undisturbed areas
	Impact of mining activities outside of the dedicated mining lease area on areas used by communities or subsistence farming
	Alien and invasive species encroachment
Air Quality	Generation of fugitive dust through removal of vegetation, vehicle movement and air blown dust
	Health impacts due to poor air quality - Increased dust levels due to an increase in on-site construction activities. Fugitive dust generation
Visual	Visual Impacts caused through the construction of additional surface infrastructure
	Visual impact caused by air blow dust associated within mining and residue disposal activities
	Impact on the topography through the creation of infrastructure and mineral residue disposal facilities
Noise	Health issues related to noise and vibration
Socio-economic	Reduced effectiveness of community leadership structures and engagement
	Intensification of low levels of trust within and between communities and the Municipal Council
	Rise in anti-social behaviour, social ills and crime
	Unplanned physical expansion and procurement opportunities
	Growth of informal settlements
	Increased pressure on healthcare services
	Housing shortage
	Increased pressure for water, sanitation, and refuse
	Increased pressure on emergency services
	Constraint government capacity to meet needs of the communities as it relates to services such as water and sanitation
	Failure of community infrastructure services
	Open voids-safety issue for cattle and children
	The landowners and legal occupants will experience loss of land for grazing and cultivation
	Local Employment Opportunities
	Mining is actively contributing to local and regional economies
	Opportunities for Skills Development and Training
	Implementation of the Social and Labour Plan Commitments that could lead to community based infrastructure i.e., schools, clinics, and other social infrastructure such as roads
Reduction in scarce resources and livelihood opportunities	
Key contributor to local government revenue and infrastructure in the region	
Multiplication factor – secondary positive impacts through the creation of local business opportunities	
Cultural Heritage	Dilution of traditional beliefs, values, norms and practices
	Destruction of potential graves

Component	Possible Impacts
	Destruction of stone age sites
	Damage to cultural heritage sites
	Hindered access to cultural sites

Further impact identification will be undertaken by the specialist during the completion of the specialist studies.

8.1 IMPACT ASSESSMENT METHODOLOGY TO BE USED

The environmental impact assessment forms the basis for the Environmental Management Programme (EMPr). The main purpose of the EMP is to ensure that effective management measures are tabled, that will ensure through the practical implementation thereof that all potential impacts are either avoided, successfully managed or mitigated to such an extent that it does not lead to environmental degradation or contamination.

The significance of the identified impacts will be determined using an accepted methodology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998. As with all impact methodologies, the impact is defined in a semi-quantitative way and will be assessed according to methodology prescribed in the following section.

Table 8-2: Scale utilized for the evaluation of the Environmental Risk Ratings

Evaluation Component	Rating	Scale	Description / criteria
MAGNITUDE of negative impact (at the indicated spatial scale)	10	Very high	Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.
	8	High	Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.
	6	Medium	Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.
	4	Low	Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.
	2	Very low	Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.
	0	Zero	Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	10	Very high	Positive: Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.
	8	High	Positive: Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.
	6	Medium	Positive: Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.
	4	Low	Positive: Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.
	2	Very low	Positive: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.
	0	Zero	Positive: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
DURATION	5	Permanent	Impact in perpetuity. –
	4	Long term	Impact ceases after operational phase/life of the activity > 60 years.
	3	Medium term	Impact might occur during the operational phase/life of the activity – 60 years.
	2	Short term	Impact might occur during the construction phase - < 3 years.
	1	Immediate	Instant impact.
EXTENT (or spatial scale/influence of impact)	5	International	Beyond the National boundaries.
	4	National	Beyond provincial boundaries, but within National boundaries.
	3	Regional	Beyond 5 km of the proposed area and within the provincial boundaries.
	2	Local	Within a 5 km radius of the proposed area.
	1	Site-specific	On site or within 100 meters of the site boundaries.
	0	None	Zero extent.
IRREPLACEABLE loss of resources	5	Definite	Definite loss of irreplaceable resources.
	4	High potential	High potential for loss of irreplaceable resources.
	3	Moderate potential	Moderate potential for loss of irreplaceable resources.
	2	Low potential	Low potential for loss of irreplaceable resources.
	1	Very low potential	Very low potential for loss of irreplaceable resources.
	0	None	Zero potential.
REVERSIBILITY of impact	5	Irreversible	Impact cannot be reversed.
	4	Low irreversibility	Low potential that impact might be reversed.

	3	Moderate reversibility	Moderate potential that impact might be reversed.
	2	High reversibility	High potential that impact might be reversed.
	1	Reversible	Impact will be reversible.
	0	No impact	No impact.
PROBABILITY (of occurrence)	5	Definite	>95% chance of the potential impact occurring.
	4	High probability	75% - 95% chance of the potential impact occurring.
	3	Medium probability	25% - 75% chance of the potential impact occurring
	2	Low probability	5% - 25% chance of the potential impact occurring.
	1	Improbable	<5% chance of the potential impact occurring.
	0	No probability	Zero probability.
Evaluation Component	Rating scale and description / criteria		
CUMULATIVE impacts	<p>High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>		

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

$$SS \text{ (Significance Score)} = (\text{magnitude} + \text{duration} + \text{extent} + \text{irreplaceable} + \text{reversibility}) \times \text{probability.}$$

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per Table 8-3 below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

Table 8-3: Significance Score utilized for the evaluation of the Environmental Risks Rating

Significance Score	Environmental Significance	Description / criteria
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked at.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect and is likely to contribute to positive decisions about whether or not to proceed with the project.

9 Plan of Study for Environmental Impact Assessment (EIA)

9.1 National Environmental Screening Tool

In accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA, a Site Sensitivity Verification has been compiled to provide a rationale for the specialist studies undertaken as part of the environmental authorisation process. This section addresses the findings of the Screening Tool Report (Appendix C), generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

Based on the environmental sensitivities of the proposed project area summarized, the following list of specialist assessments were identified by the Screening Tool Report (Table 1). A motivation by the EAP has been provided where a study has not been undertaken. The DFFE screening report is provided in **Appendix C**.

Table 9-1: Specialist studies required as per the Screening Tool Report and relevant motivations

Specialist study	Undertaken/not undertaken	Motivation
Agricultural Impact Assessment	Undertaken	The baseline Soils and Land Capability Assessment to be updated to include the proposed project. refer to Table 9-2
Landscape/Visual Impact Assessment	Not Undertaken	The concept of a Visual Impact Assessment (VIA) plays a significant role in the understanding of how a project influences the visual attributes of the landscape and how these changes influence the community within the area. The initial establishment of the Mining operations and its associated infrastructure has already altered the visual landscape of the area.
Archaeological and Cultural Heritage Impact Assessment	Undertaken	Undertaken, refer to Table 9-2
Palaeontology Impact Assessment	Undertaken	Undertaken, refer to Table 9-2
Terrestrial Biodiversity Impact Assessment	Not Undertaken	The landscape is currently dominated by agricultural (planting of sugar cane, as well as subsistence agriculture) activities and these land uses have had a significant influence on the current extent and condition on the biodiversity. Majority of the area has been entirely converted to sugar cane with no natural vegetation remaining. while many of their catchments are also extensively cultivated. The Wetland Delineation and Impact Assessment will cover the riparian and wetland habitats with the associated vegetation.
Aquatic Biodiversity Impact Assessment	Not Undertaken	A Wetland Assessment and Delineation will be undertaken.

Specialist study	Undertaken/not undertaken	Motivation
Hydrology Assessment	Undertaken	Undertaken , refer to Table 9-2
Noise Impact Assessment	Undertaken	Undertaken, refer to Table 9-2
Radioactivity Impact Assessment	Not undertaken	A radioactivity impact assessment is not required as the material being mined (anthracite) is not considered radioactive.
Traffic Impact Assessment	Not undertaken	Internal mine access roads will be utilised for transporting material to the processing plant.
Geotechnical Assessment	Not Undertaken	Undertaken as part of the engineering scope of work.
Climate Impact Assessment	Not undertaken	A specific Climate Impact Assessment will not be undertaken, but the climate will be assessed in the Air Quality Impact Assessment, and flood events will be assessed as part of the Hydrological Assessment.
Health Impact Assessment	Not undertaken	A specific Health Impact Assessment is not required at this stage as Air Quality and Noise impact assessments are undertaken
Socio-Economic Assessment	Undertaken	Undertaken, refer to Table 9-2
Ambient Air Quality Impact Assessment	Undertaken	Undertaken, refer to Table 9-2
Seismicity Assessment	Not undertaken	A Blasting Impact Assessment is undertaken, refer to Table 9-2
Plant Species Assessment	Undertaken	Undertaken as part of the Wetland Assessment and Delineation.
Animal Species Assessment	Not Undertaken	The landscape is currently dominated by agricultural (planting of sugar cane, as well as subsistence agriculture) activities and these land uses have had a significant influence on the current extent and condition on the Biodiversity. Majority of the area has been entirely converted to sugar cane with no natural vegetation remaining. while many of their catchments are also extensively cultivated.

9.2 Plan of Study for EIA

Table 9-2 below provides the Plan of Study for the Specialist Studies to be conducted in support of the EIA Process.

Table 9-2: Plan of Study for Specialist Studies

Specialist Study	Plan of Study for EIA
<u>Air Quality Assessment</u> (Atmospheric Impact Report (AIR))	<ul style="list-style-type: none"> Emission inventory Total suspended particles (TSP), PM₁₀, PM_{2.5} and dust fallout dispersion model

Specialist Study	Plan of Study for EIA
<p><i>uMoya- NILU Consulting - Dr Mark Zunckel</i></p>	<ul style="list-style-type: none"> • Air quality impact assessment
<p><u>Blasting Impact Assessment</u> <i>Blast Management and Consulting – JD Zeeman</i></p>	<ul style="list-style-type: none"> • Site review and information capture • Modelling • Report including: <ul style="list-style-type: none"> ○ Ground vibration explanation, ○ Air blast explanation, ○ Fly-rock • Impact assessment
<p><u>Financial Provision Assessment</u> <i>Hydrological Environmental Engineering Solutions Deon van de Merwe</i></p>	<ul style="list-style-type: none"> • Review of the Environmental Management Plan with specific emphasis on the risks that must be mitigated • Compilation of an annual rehabilitation plan and end of life rehabilitation, decommissioning and closure plan • Compilation and update of the rates for rehabilitation • Compilation of a Financial Provisioning for the proposed rehabilitation measures
<p><u>Wetland Assessment and Delineation</u> WCS Scientific (Pty) Ltd Dieter Kassier</p>	<ul style="list-style-type: none"> • Review of available wetland data for the study area from published sources as well as previous wetland assessment studies (if available). • Desktop delineation and assessment of the wetland using latest available aerial imagery and available datasets on biophysical characteristics of the study area (e.g. VEGMAP2018, MPHG Wetlands, Gauteng C-Plan etc.). • Field survey to identify and delineate wetlands. Use will be made of the delineation methodology detailed in the DWAF (2005) wetland delineation guidelines. • Delineated wetlands will be subdivided and typed into hydro-geomorphic wetland units as per the Level 4 classification (Ollis et al., 2013). • Present Ecological State of all wetland units identified within the project study area will be undertaken using the WET-Health Version 2 Level 1b assessment tool. • Wetland Importance and Sensitivity (IS) will be determined for all wetland units identified within the project study area using the DWA (2012) methodology. • A wetland functional assessment will be undertaken for each of the different wetland. • Types recorded on site using the WET-EcoServices assessment tool. • Review of the already present and proposed project activities. • Identification and assessment of impacts. • Development of suitable mitigation and management measures to avoid, minimize and mitigate impacts to wetlands. • Development of a wetland monitoring plan. • Compilation of a specialist wetland assessment report.
<p><u>Heritage Assessment</u> <i>PGS Heritage Wouter Fourie & Shannon Hardwick</i></p>	<ul style="list-style-type: none"> • Field Investigation • Adherence to the content requirements for specialist reports in accordance with Appendix 6 of the EIA Regulations 2016, as amended • Adherence to all best practice guidelines, relevant legislation and authority requirements • Cumulative impact identification and assessment as a result of other renewable energy (RE) developments in the area (including; a cumulative environmental impact statement, review of the specialist reports undertaken for other RE developments and an indication of how the recommendations, mitigation measures and conclusion of the studies have been considered). • Assessment of the significance of the proposed development during the Pre-construction, Construction, Operation, Decommissioning Phases.

Specialist Study	Plan of Study for EIA
	<ul style="list-style-type: none"> • Comparative assessment of alternatives (infrastructure alternatives will be provided). • Recommend mitigation measures in order to minimise the impact of the proposed development. • Implications of specialist findings for the proposed development (e.g. permits, licenses etc).
<u>Groundwater Assessment</u> <i>Future Fow</i> <i>Martiens Prinsloo</i>	<ul style="list-style-type: none"> • Characterisation of the baseline groundwater environment • Groundwater impact assessment using the numerical groundwater flow and contaminant transport models • Groundwater report
<u>Noise Impact Assessment</u> <i>dBAcoustics</i> <i>Barend van der Merwe</i>	<ul style="list-style-type: none"> • Determine the mine boundaries and noise sensitive areas • Day and night-time noise surveys • Daytime vibration monitoring • Analysis of the results • Noise impact assessment and report writing • Noise modelling
<u>Hydrological</u> <i>Hydrological</i> <i>Environmental</i> <i>Engineering Solutions</i> <i>Deon van de Merwe</i>	<ul style="list-style-type: none"> • Surface hydrology investigation • Stormwater management plan • Surface water impact assessment
<u>Social Impact Assessment</u> <i>Tony Barbour</i>	<ul style="list-style-type: none"> • Identification of key social issues. • Understanding of local social and economic conditions. • Activities communities are involved with. • Identification of potential risks and opportunities. • Focus on how to enhance benefits for local communities and reduce/avoid impacts. • Undertake an impact assessment.
<u>Soils and Land Capability Study</u> <i>Earth Science Solutions</i> <i>Ian Jones</i>	<ul style="list-style-type: none"> • Undertake a desktop assessment and assimilation of the existing information and any available specialist studies. • Carry out the field investigation (classification and characterisation) of the areas delineated in the ToR supplied on a detailed grid base that will satisfy the requirements of the authorities (Environmental, Agriculture and water Affairs. • Assessment and reporting on the hydrogeological considerations across the study area. • Assessment of the impact significance. • The development of a soil management/utilisation plan for the changes being proposed.
<u>Palaeontology Impact Assessment</u> Banzai Environmental – Elize Butler	<p>The purpose of the PIA is: 1) to identify the palaeontological importance of the rock formations in the footprint; 2) to evaluate the palaeontological magnitude of the formations; 3) to clarify the impact on fossil heritage; and 4) to suggest how the development might protect and lessen possible damage to fossil heritage</p>

10 PUBLIC PARTICIPATION PROCESS

The objectives of the Stakeholder Engagement process include the following:

- To identify the relevant Interested and Affected Parties (I&APs) for this project
- To provide opportunities for the public and stakeholders involved to gain a better understanding of the proposed project and its possible impacts;
- Provide an opportunity as to draw knowledge and experience from the stakeholders to improve planning and decision-making;
- To build relationships with the public and stakeholders that lead to mutual support and confidence; and
- To enable N’Komati Anthracite Mine to meet its legal and regulatory responsibilities.

At a high level, the Project EIA process is undertaken in four key phases, in accordance with the EIA Regulations (GNR. 326) of April 2017 as amended.

- **Application Phase** – identify listed activities that are triggered by the Project and submit an application for Environmental Approval (EA) to the competent authority.
- **Scoping Phase** - identify interactions of project activities and environmental and social resources to determine which should be included in the scope of the impact assessment.
- **Environmental Impact Reporting Phase** - the characteristics of the potential effects of project activities on bio-physical and social resources and features are evaluated and quantified to determine potential impact significance (or importance) taking into account the sensitivity of the particular resource or receptor. This phase also includes the identification of mitigation/management measures and the development of an Environmental Management Programme (EMP).
- **Competent Authority Decision** – the decision on the Project will be distributed to all project interested and affected parties and informed of the appeal process.

Before submission of the Final Scoping Report, allowance is made to give potential I&AP access to, and an opportunity to comment on the Draft Scoping Report, as well as Register as a Registered I&APs.

The public consultation activities undertaken during the EIA process is described in detail under each phase below. The Project is currently at the Scoping Phase.

The Stakeholder Engagement Report detailing the activities undertaken as part of the Public Participation Process is provided in Appendix B.

10.1 NOTIFICATION TO POTENTIAL INTERESTED AND AFFECTED PARTIES (I&APs)

In accordance with the EIA Regulations, the applicant / environmental assessment practitioner (EAP) must give notice to all potential I&APs of the application. AvD Environmental notified I&AP’s by means of the following methods:

10.1.1 Notification Letters and Background Information Document (BID)

The purpose of the Background Information Document (BID) is to provide a brief description of the project with a locality map as well as indicate the application processes that will be followed, and to obtain initial comments and contributions from IA&P’s on the issues relating to the proposed development.

The BID’s will be distributed during the Scoping Phase Focus Group meetings and electronically using the details available on the I&AP database. The BID will be accompanied by a comment sheet. This comment sheet will allow I&AP’s to register as well as provide any concerns or comments and advise on the details on any other I&AP that should be consulted with the proposed project.

All notifications to I&APs will highlight the availability of Draft Scoping Report that will be placed in the public domain for comment with the associated response period of 30 calendar days – **28 August to 28 September 2023**. A copy of the BID is provided in **Appendix B**.

10.1.2 Site Notices

The placement of Site Notices is a requirement in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the Publication of Public Participation Guide in terms of NEMA EIA Regulations (2017). Based on the EIA Regulations, the minimum size for the notice boards must be 60cm by 42cm (A2) and must display the required information in lettering and in a format as may be determined by the Competent Authority.

Site notices will be placed at clearly visible areas along the main road, mine access road, mine notice board and prominent places within surrounding towns. Proof of placement will be included in the Stakeholder Engagement Report as an Annexure to the Final Scoping Report.

10.1.3 Newspaper Advertisement

A newspaper advertisement will be placed in both English and Siswati in the Lowvelder Newspaper. The information within this advert included a brief explanation of the project; the authorisations to be undertaken; and the availability of the Draft Scoping Report for review and comment. Proof of placement of the newspaper advert will be included in the Final Scoping Report.

10.1.4 Community Meetings / Focus Group Meeting

Focus group meetings are small-group discussions to gather a specific group's comments or opinions on the proposed project. Sessions will be set aside during the scoping phase consultation period for these focus group meetings. Focus group meetings with the Sugarcane Farmers and the Traditional Council will be held during the Scoping Phase. Proof of such meetings will be included in the Final Scoping Report.

10.1.5 Interested and Affected Party Database

From the onset of the project, a database of persons, organizations and organs of state identified as Interested and Affected Parties (I&APs) or registered as I&APs was opened and is updated as and when required. A copy of the database is provided in Appendix B.

10.2 PLACEMENT OF DRAFT SCOPING REPORT IN THE PUBLIC DOMAIN

Before submission of the Final Scoping Report, allowance must be made to give potential I&AP's access to, and an opportunity to comment on the Draft Scoping Report, as well as Register as a Registered Interested and Affected Party (I&AP). A Registered I&AP is entitled to comment on all draft documents placed in the public domain and to bring to the attention of the EAP any issues which the I&AP believe may be of significance to the consideration of the application. These comments will be submitted within the specified timeframes. The Department's reference number will be quoted in all correspondence.

The Draft Scoping Report was placed at the following public places for public viewing and commenting from the **28th of August until the 28 September 2023**.

- N'Komati Anthracite Mine Security Office, Mpumalanga.
- Mawewe Tribal Authority Offices.
- Matsamo Tribal Authority Offices.
- Kwalugedlane Tribal Authority Offices.

- Mangweni Youth Advisory Centre
- Malelane Public Library, Park Street, Malelane, Mpumalanga.
- Offices of Alta van Dyk Environmental Consultants, 4 Garcia Peak, Midlands Estate, Centurion, Gauteng.
- Website: www.altavandykenvironmental.co.za

10.3 PLACEMENT OF THE DRAFT EIA & EMP REPORT WITHIN THE PUBLIC DOMAIN

Once a decision has been taken by the Regulatory Authority on the Scoping Phase, the project may continue into the EIA and EMP phase.

The purpose of the impact assessment is to identify and evaluate the likely significance of the potential impacts on identified receptors and resources according to defined assessment criteria, to develop and describe measures that will be taken to avoid, minimize, reduce, or compensate for any potential adverse environmental effects, and to report the significance of the residual impacts that remain following mitigation.

The Draft EIA and EMP will be made available for public review for a period of 30 calendar days at the same public places as the Scoping phase.

Comments obtained throughout the project will be included in the Comments and Response Report.

Specialist studies in support of the EIA and EMP will be annexed to the Draft EIA and EMP as well as the Final EIA and EMP and will be included in the documents set out in the public domain during the commenting period. Once the 30-calendar day comment period has closed, the Final EIA and EMP will be prepared for submission to the Regulatory Authorities. Once a decision has been taken, all I&APs will be informed of the decision and allowed an opportunity to appeal the decision, if need be.

11 CONCLUSION

The aim of the Draft Scoping Report is to identify the possible environmental, social and economic risks and impacts as well as impacts which might be associated with the establishment of the proposed Project.

This Draft Scoping Report also forms part of the start of the Public Participation Process where the public gets the opportunity to register as I&AP's as to receive further information about the project and form part of the decision-making process for the project.

This stage similarly also forms part of the process where plan of studies for specialist studies to be undertaken are determined as part of the Environmental Impact Study. Potential impacts will then be identified, and these will be assessed in the Impact Assessment Phase.

The main focus of the Scoping Phase is centered around alignment of the environmental assessment with important issues to ensure that the significant issues are addressed, and reasonable alternatives examined.

I&APs have the opportunity to comment on this Report. Comments should be forwarded to:

Alta van Dyk Environmental Consultants cc

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0140

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12 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

UNDERTAKING REGARDING LEVEL OF AGREEMENT

I, Kirthi Peramaul, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.

Peramaul

Signature of the EAP

:

13 REFERENCES

Alta van Dyk Environmental Consultants, Nkomati Anthracite (Pty) Ltd: Nkomati Anthracite. Basic Assessment for the N'Komati Mine Block L Opencast and Amendment of the EMPr for Mangweni Operations and Plant Area. Dated April 2022.

Earth Science Solutions, N'Komati Anthracite (Pty) Ltd Consolidated Mining Lease Area, Baseline Investigation & Impact Assessment Specialist Soils, Land Capability and Hydropedological Studies. Dated May 2022

DMRE,2020. Environmental Authorisation in terms of the national Environmental management Act, 1998 (NEMA) as amended and the Environmental Impact Assessment (EIA) Regulations, 2014 for underground mining and overburden stockpile in respect of portion of Unsurveyed State Land, the Farms Grobler 479 JU, Guillame 480 JU, Wildebeest 494 JU, Rusplek 495 JU, Sweetrhome 496 JU, Bonnie Vale 497 JU, Excelsior 498 JU, Murray 502 JU, Fig Tree 503 JU and Beginsel 504 JU, Situated in the Magesyerial District of Barberton in Mpumalanga Region.

GCS Water and Environmental, Nkomati Anthracite (Pty) Ltd: Madadeni Opencast Section. Environmental Impact Assessment and Environmental Management Plan Report. Final for DEA and Public Review. Project Number: 11-375. Dated July 2012.

WCS Scientific (Pty) Ltd N'Komati Anthracite Wetland Delineation and Impact Assessment. Report reference: 5234-2021. Dated 20222

SRK Consulting, 2011. An Independent Competent persons, Report on Material Coal Assets of Sentula Mining Limited Report No 431395.

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