ALTA VAN DYK ENVIRONMENTAL CONSULTANTS (PTY) LTD

Project Reference Number: 5502111876

Sibanye Rustenburg Platinum Mines (Pty) Ltd

FINAL BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME: BLOCK D UNDERGROUND MINING PROJECT

JULY 2026

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PROJECT DETAILS

CLIENT NAME:	SIBANYE RUSTENBURG PLATINUM MINES (PTY) LTD
PROJECT NAME:	BLOCK D UNDERGROUND MINING PROJECT
REPORT DETAIL:	FINAL BASIC ASSESSMENT REPORT
ALTA VAN DYK CORPORATE GROUP SUBSIDIARY	ALTA VAN DYK ENVIRONMENTAL CONSULTANTS (PTY) LTD

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The opinions expressed in this Report have been based on the information supplied to Alta van Dyk Environmental Consultants (Pty) Ltd (AvDE), a subsidiary of Alta van Dyk Corporate Group (AvDCG), by company officials. The opinions in this Report are provided in response to a specific request from company officials to do so. AvDCG has exercised all due care in reviewing the supplied information. Whilst AvDCG has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. AvDCG does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of AvDCG's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which AvDCG had no prior knowledge nor had the opportunity to evaluate.

APPROVED BY: REATA COLYN

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

FINAL BASIC ASSESSMENT REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT ACTIVITIES

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, AND 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)

NAME OF APPLICANT:	Sibanye Rustenburg Platinum Mines (Pty) Ltd
PROJECT:	Block D Underground Mining Project
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DMRE REFERENCE NO.:	NW30/5/1/1/2/80 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 ("EIA") and an Environmental Management Programme report ("EMPr") 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 ("EA") being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner ("EAP") 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.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process-

a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
b) identify the alternatives considered, including the activity, location, and technology alternatives;
c) describe the need and desirability of the proposed alternatives;
d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
    (i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
    (ii) The degree to which these impacts-
        aa) can be reversed;
        bb) may cause irreplaceable loss of resources; and
        cc) can be managed, avoided or mitigated;
e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to
    (i) identify and motivate a preferred site, activity and technology alternative;
    (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
    (iii) identify residual risks that need to be managed and monitored

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.

"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 Programme (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.

"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.

"Interested and Affected Parties (I&APs)" 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.

"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 (P3 or PPP)" 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 (RoM)" A term used loosely to describe ore of average grade.

"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.

ABBREVIATIONS

Abbreviation	Term
AMD	Acid Mine Drainage
AvDE	Alta van Dyk Environmental Consultants
BA	Basic Assessment
BAR	Basic Assessment Report
BIC	Bushveld Igneous Complex
BID	Background Information Document
CA	Competent Authority
CRR	Comment and Response Report
DBAR	Draft Basic Assessment Report
DFO	Dust fallout
DMPR	Department of Mineral and Petroleum Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
GDP	Gross Domestic Product
GN	Government Notice
HGM	Hydrogeomorphic
I&APs	Interested and Affected Parties
LC	Leachable Concentration
LCT	Leachable Concentration Threshold
LHD	Load, Haul, Dump
LoM	Life of Mine
MPRDA	Mineral and Petroleum Resources Development Act
MR	Mining Right
NBA	National Biodiversity Assessment
NEM: AQA	National Environmental Management: Air Quality Act
NEM:WA	National Environmental Management: Waste Act
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGOs	Non-governmental organizations
NHRA	National Heritage Resources Act
NWA	National Water Act
NWDC	North West Development Corporation
PES	Present Ecological State
PGMs	Platinum Group Metals

POIs	Points of Interest
PPP	Public Participation Process
PPV	Peak Particle Velocity
PSA	Pooling and Sharing Agreement
REC	Recommended Ecological Category
RMO	Recommended Management Objective
RPM	Rustenburg Platinum Mines
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SEP	Stakeholder Engagement Programme
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SPLUMA	Spatial Planning and Land-Use Management Act
SRPM	Sibanye Rustenburg Platinum Mines
SWMP	Stormwater Management Plan
SWSA	Strategic Water Source Areas
TC	Total Concentration
TCT	Total Concentration Threshold
TSF	Tailings Storage Facility
USBM	United States Bureau of Mines
WRD	Waste Rock Dump
WUL	Water Use Licence
WULA	Water Use Licence Application

Sibanye Rustenburg Platinum Mines (Pty) Ltd (SRPM)

Sibanye Rustenburg Platinum Mines (Pty) Ltd (SRPM) is a subsidiary entity of Sibanye-Stillwater Limited Group of companies. SRPM currently mines, processes, refines and markets Platinum Group Metals (PGMs) and associated base metals at various operations near Rustenburg, in the North West Province.

It is the intention of SRPM to expand its current approved Mining Right Area (NW 30/5/1/2/2/80 MR) (MR80) through the incorporation of the proposed Block D underground mining area. The proposed Block D Underground Mining Project is situated on the eastern boundary of the town of Rustenburg, within the jurisdiction of the Rustenburg Local Municipality and Bojanala Platinum District Municipality, in the North West Province. SPRM plans to mine Block D by means of underground mining methods, from its existing K6 Shaft (MR80) as well as from the Bathopele Shaft, that falls within SPRM Mining Right Area NW 30/5/1/2/2/82 MR (MR82).

In order to expand the existing Mining Right MR80 (and associated mining work programme), SRPM will submit a Section 102 Application to the Department of Mineral and Petroleum Resources (DMPR). In terms of the National Environmental Management Act (Act No.107 of 1998) Environmental Impact Assessment Regulations, General Notice 327, 2017 (as amended), a Basic Assessment process is required for the amendment of a Mining Right and associated Mining Work Programme, as the amendment of these triggers listed activities which requires environmental authorisation.

Project Description of the Block D Underground Mining Project

It is the intention of SRPM to access the proposed Block D mining area from its K6 Shaft (MR80) as well as from the Bathopele Shaft (MR82), The Block D Underground Mining Project comprises of approximately ~45 ha.

Both the K6 and Bathopele operations are currently experiencing a production decline, resulting in the urgent need to find additional ounces of PGMs for the K6 and Bathopele operations to maintain a sustainable production profile.

The underground mining methods will entail bord and pillar mining methods through the use of mechanised mining equipment. Underground mining activities are planned to start from 30m below surface, then mining will progress deeper. All mining activities will take place on the reef horizon, and mined ore will be transported to the Bathopele or K6 Shafts via an existing underground conveyor system.

Waste rock will be removed in order to reach the ore. This material will be retained underground and utilised for backfilling to enhance the stability within the mined-out underground areas. No waste rock will be transported to the surface for deposition on the existing Waste Rock Dumps.

No new surface infrastructure will be required as the existing K6 and Bathopele Shafts will be utilised to access Block D. The existing infrastructure associated with the K6 and Bathopele Shafts, such as ventilation shafts, transportation routes, stockpile areas, Concentrators and Tailings Storage Facilities (TSFs), will be utilized for the mining of the Block D underground mining area.

The expected Life of Mine for the proposed Block D mining area is seven (7) years

Regulatory Approval Process

Before SRPM may commence with the development of the proposed Block D Underground Mining Project, the following environmental related approvals are required:

- A Basic Assessment (BA) environmental authorisation process in terms of the National Environmental Management Act (NEMA) (Act Nr. 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations.
    - The competent authority for this process is the North West Department of Mineral and Petroleum Resources (DMPR).
- A Waste Management Licence in terms of the National Environmental Management Waste Act (Act 59 of 2008) (NEM:WA).
    - A combined environmental authorisation application in terms of NEMA and NEM:WA will be submitted to the DMPR.
- A Water Use Licence Application (WULA) in terms of the National Water Act (Act Nr. 36 of 1998) (NWA).
    - The Competent Authority for this process is the Department of Water and Sanitation (DWS).
- Approval of the Heritage Impact Assessment in terms of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA).
    - The competent authority for this application is the South African Heritage Resources Agency (SAHRA).

Environmental Assessment Practitioner

Alta van Dyk Environmental Consultants (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioners (EAP) for the project by SRPM to undertake the Basic Assessment process. The Basic Assessment process entails, amongst others, site surveys, potential impact identification, identifying and describing alternatives, conducting public participation, undertaking the impact assessment and providing mitigatory measures for these potential impacts.

Specialist Studies

As part of the Basic Assessment process as well as the Water Use Licence Application process, a team of independent specialists have been appointed 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 to manage or mitigate these impacts and provide the required monitoring and auditing requirements. The specialist studies undertaken include the following:

- Freshwater/wetland assessment (The Biodiversity Company)
- Hydropedological assessment (The Biodiversity Company)
- Groundwater assessment (MvB Consulting)
- Noise assessment (Enviro Compliance)
- Heritage assessment (Johnny van Schalkwyk)
- Palaeontological assessment (Marion Bamford)
- Blast and vibration assessment (Blast Management & Consulting)
- Social assessment (Sehuno_ZA Social Consulting Services)

Public Participation

Public participation has been undertaken during the Basic Assessment Process as per the requirements of the EIA Regulations, as follows:

- Placement of site notices around the proposed project area
- Distribution of Background Information Documents via email and knock and drop exercise
- Distribution of Notification Letters / Emails indicating the availability of the Draft Basic Assessment Report for public comment (30 days)
- Placement of a Newspaper Advertisement indicating the availability of the Draft Basic Assessment Report for public comment (30 days)
- The Draft Basic Assessment Report was made available for public comment from 06 March to 14 April 2026
- Placement of the Draft Basic Assessment Report on Alta van Dyk Environmental Consultants website
- Placement of the Draft Basic Assessment Report at the following venues for public review:
    - Eastend Community Library (Rustenburg)
    - Rustenburg Library (Rustenburg)
    - K6 Shaft Security Office (Rustenburg)
    - Bathopele Shaft Security Office (Rustenburg)
    - Alta van Dyk Environmental Consultants Offices (Centurion)

Additional public participation activities undertaken include the following:

- Pre-application meetings with the DMPR, DWS, ward councillors and Block D Committee
- Placement of the Draft Basic Assessment Report on the Sibanye-Stillwater Ulwazi data free app
- A public meeting was undertaken on 12 March 2026 at the Sibanye-Stillwater Recreational Club in Rustenburg to provide feedback to stakeholders on the findings of the specialist studies and Basic Assessment Report. This meeting was not completed as members of the public left the meeting prior to the conclusion of the meeting.
- Focus Group Meetings with the Ward 18 Committee and Block D Committee
- A public meeting was undertaken on 30 May 2026 at the David Brink Primary School in Eastend to provide feedback to stakeholders on the findings of the specialist studies and Basic Assessment Report.
- The Draft Basic Assessment Report was made available for an additional 30 days for public comment from 01 June to 01 July 2026.

All comments received has been captured in the Comment and Response Report which is submitted as part of the Final BAR to the DMPR for consideration in the decision-making process. The Final Basic Assessment Report will also be made available on the Alta van Dyk Environmental Consultants' website.

Identified Environmental Impacts

The Environmental Impact Assessment (EIA) is a tool used to assess the significant effects of a project or development proposal on the receiving environment.

Potential impacts associated with the development of the project have been identified. The Environmental Risk Ratings have been evaluated for each potential environmental impact, and a Significance Score for each potential environmental impact was calculated. The Significance Score is then used to rate the Environmental Significance of each potential environmental impact. The Significance Score used to evaluate the Environmental Risk Rating is indicated in the Table below.

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.

The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

The outcomes of the impact assessment are summarised in the table below.

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Topography			
Operation	Potential subsidence due to underground mining activities	Medium (-)	Low (-)
Closure	No impact on Topography is expected during the closure phase of the project.		
Soils			
Operation	The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on soil resources.		
Closure			
Biodiversity (Fauna and Flora)			
Operation	The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no direct impacts expected on terrestrial biodiversity.		
Closure			
Freshwater and wetlands			
Operation	Impact on wetland baseflow	Medium – High (-)	Medium – High (-)
Operation	Surface Water Contamination	Medium (-)	Low (-)
Operation	Alteration of surfacy hydrology due to subsidence (ground movement)	Medium-High (-)	Low (-)
Closure	Changes in wetland hydrology	Medium (-)	Medium (-)

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Closure	Residual surface water contamination	Medium (-)	Low (-)
Hydropedology			
Operation	Potential decrease in subsurface lateral flow and return flow	Medium (-)	Low (-)
Closure	Potential decrease in subsurface lateral flow and return flow	Low (-)	Low (-)
Groundwater			
Operation	Reduction in the groundwater levels	Medium-High (-)	Low (-)
Operation	Contamination of groundwater due to contaminant seepage from the mining operations	Medium (-)	Low (-)
Closure	Deterioration of groundwater quality	Low (-)	Low (-)
Closure	Recovery of the groundwater levels	Medium (+)	Medium (+)
Air Quality			
Operation	The proposed Block D Underground Mining Project does not constitute of surface infrastructure as the existing K6 and Bathopele shaft areas will be used as well as existing surface infrastructure. There are no additional impacts expected on Air Quality.		
Closure			
Noise			
Operation	Mining activities in Block D will be conducted entirely using existing underground and surface infrastructure, specifically accessed from the K6 Shaft and the Bathopele Shaft, both of which are currently operating. There is no additional noise impact foreseen.		
Closure			
Heritage			
Operation	Given that mining will occur below ground, there will be no impact on any surface or low buried cultural heritage resources.	Low (-)	Low (-)
Closure		Low (-)	Low (-)
Blasting and Vibration			
Operation	Ground vibration: Blasting impact to structures directly above mining area (Shallow)	Medium-high (-)	Low (-)
Operation	Ground vibration Blasting impact to structures above mining area. (Deep)	Low (-)	Low (-)
Operation	Ground vibration: Blasting impact to private houses and structures outside the mining area	Medium (-)	Low (-)
Operation	Ground vibration: Blasting impact to structures outside the mining area.	Medium (-)	Low (-)
Operation	Ground vibration: Blasting impact to private houses.	Medium (-)	Low (-)
Operation	Perceptible ground vibration	Medium-high (-)	Low (-)

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Closure	As there will be no blasting during the closure phase, no impacts on blast and vibration is expected during the closure phase.		
Social			
Operation	Job Retention and household stability	Medium (+)	Medium (+)
Operation	Sustained Local Economic Support	Medium (+)	Medium (+)
Operation	Continued Procurement Opportunities	Medium (+)	Medium (+)
Operation	Community Development Commitments	Medium (+)	Medium (+)
Operation	Employment and economic expectations	Medium-high (-)	Medium (-)
Operation	Limited employment and business opportunities resulting in decline in economic growth	Medium-high (-)	Medium (-)
Operation	Community Health Concerns - Air Quality	Medium (-)	Medium (-)
Operation	Blasting and noise impact	Medium (-)	Medium (-)
Operation	Land use and stability concerns	Medium (-)	Medium (-)
Operation	Economic dependency on mining	Medium (-)	Medium (-)
Operation	Persistent migration and informal settlements	Medium-high (-)	Medium (-)
Closure	Employment Loss and Household Destabilisation	High (-)	Medium-high (-)
Closure	Local Economic Decline	High (-)	Medium-high (-)
Closure	Reduction of Social and Labour Plan (SLP) contributions	Medium (-)	Medium (-)
Closure	Sudden decline in regional social and economic stability due to abrupt withdrawal of mine benefits	Medium (-)	Medium (-)

From the impact assessment, the following main impacts have been identified:

- **Ground vibration due to blasting that could impact on structures:** The proposed Block D underground mining area and a radius of 750m were evaluated for expected levels of ground vibration from a maximum charge mass (44kg). The expected ground vibration levels were compared to the recommended limits from the United States Bureau of Mine (USBM) for the various structures identified within the Block D underground mining area and associate radius.

  Only one structure (Transnet building) at a distance of 36m from the roof of the mining area, shows ground vibration levels predicted above the limit for the said structure (predicted ground vibration of 34.8mm/s, recommended limit for structure of 25mm/s). All other structures are located such that the levels of ground vibration predicted from the charge will be acceptable regarding structure response.

By implementing the recommended mitigation measures, the ground vibration levels at the Transnet building will be reduced to ~19.7 mm/s, which will fall within the recommended ground vibration limit for this structure (25mm/s).

- **Perceptible ground vibration:** On a human perception scale, several points of interest were identified where vibration levels, based on the maximum charge, may be perceptible, unpleasant or intolerable. Based on the maximum charge and ground vibration predicted over distance, it was identified that up to a distance of 508m people may experience levels of ground vibration as perceptible, up to 188m as unpleasant and intolerable at 85m.

  By implementing the recommended mitigation measures, the expected human perception ground vibration levels will be managed effectively.

  Mitigation measures include the following:

  - Changed blast design for K6 area closest to the Eastend Residential Area.
  - Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels.
  - Implement a monitoring programme for recording blasting operations.
  - Undertaking of photographic survey of all structures up to 190m from the edge of the Block D underground mining area.
  - Install clear, visible, and appropriately placed signage in proximity to blasting areas to ensure it is easily noticeable to community members.

- **Reduction in groundwater levels:** The groundwater level is expected to drop approximately 12 m, directly over the mining area. Water levels at privately owned boreholes are expected to drop between 1 and 4m. The potentially impacted area is localised, and the private boreholes are not expected to be noticeably impacted due to the depth of the boreholes (32m to 50m). Mitigation measures include the following:

  - Including three to five additional monitoring boreholes within the potentially affected area to monitor the groundwater levels.
  - If a reduction in groundwater supply is confirmed through monitoring activities, Sibanye-Stillwater should replace the groundwater source by drilling new or deeper boreholes as an alternative water supply.

- **Positive social impacts associated with the Block D Underground Operation, which will ensure employment retention and sustained economic support:** the most significant benefit will be the safeguarding of livelihoods, stabilising local economies, and ensuring the continuation of Sibanye-Stillwater's Social and Labour Plan (SLP) for SRPM.

- **Social impacts associated with decommissioning and closure:** The closure phase remains the period of greatest risk, with job losses, reduced household income, economic decline, and the decline in community development contributions likely to destabilise communities, households and businesses. Mitigation measures include the following:

  - Develop retrenchment packages that include financial support, retraining, and job placement services.

- Partner with government and Non-governmental organizations (NGOs) to create alternative employment pathways.
- Begin closure planning and engagements with affected employees and Future Forums early to avoid sudden shocks.

This Basic Assessment has provided a comprehensive assessment of the potential impacts associated with the proposed Block D Underground Mining Project, which is an expansion project of the SRPM's existing K6 and Bathopele underground mining operations. No new surface infrastructure is proposed as part of this application, as existing surface infrastructure associated with the K6 and Bathopele operations will be utilised.

A number of potential medium to high impacts have been identified that are associated with the operational and closure phases of the proposed project. These include impacts of ground vibration to structures and perceptible ground vibration, groundwater levels and social impacts associated with the decommissioning and closure. Where impacts were found to be potentially significant, various mitigation measures to manage these impacts and monitoring of these the impacts have been proposed.

Taking into consideration the findings of the impact assessment, the project benefits outweigh the potential negative impacts provided that proposed mitigation measures are applied effectively. The employment opportunities afforded at both the K6 and Bathopele mining operations already contribute towards maintaining and improving employment opportunities within the Rustenburg Local Municipality. Mine revenue will facilitate fund allocation to local economic development through the implementation of projects identified in the SLP.

Should the DMPR grant authorisation for this proposed project, it should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the project specific EMPr and with all other regulatory requirements.
- The project specific EMPr should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the Basic Assessment and the EMPr.
- Adhere to all monitoring requirements as detailed in this project specific EMPr.
- All requirements and permits required in terms of the Mine Health and Safety Act (Act No. 85 of 1993) must be applied for.
- Changed blast design for K6 area closest to the Eastend Residential Area
- Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels.
- Implement a monitoring programme for recording blasting operations.
- Undertaking of photographic survey of all structures up 190m from the Block D underground mining area.
- Install clear, visible, and appropriately placed signage in proximity to blasting areas to ensure it is easily noticeable to community members.
- Including three to five additional monitoring boreholes within the potentially affected area to monitor the groundwater levels.

CONTENTS

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STRUCTURE OF THE REPORT

The Final Basic Assessment Report has been structured as follows:

Chapter	Content
Chapter 1	Introduction and Background
Chapter 2	Project Description
Chapter 3	Legal Framework
Chapter 4	Needs and Desirability
Chapter 5	Project Alternatives
Chapter 6	Public Participation Process
Chapter 7	Environmental Status Quo (Baseline)
Chapter 8	Environmental Impact Assessment
Chapter 9	Environmental Management Programme
Chapter 10	Closure and Financial Provision
Chapter 11	Conclusion and Recommendations

The DBAR has been compiled in accordance with the requirements as specified in Government Gazette No 38282 dated 04 December 2014, Regulation 982.

These requirements and the sections of this Final BAR in which they are addressed, are summarised in Table 1.

TABLE 1: REQUIREMENTS OF THE FINAL BASIC ASSESSMENT REPORT

No	Description	Reference
3 (1)	A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include-	
a)	details of:	
	the EAP who prepared the report; and	Section 1
	the expertise of the EAP, including a Curriculum Vitae;	Section 1 and Appendix A
b)	The location of the activity, including:	
	the 21-digit Surveyor General code of each cadastral land parcel	Section 1
	where available, the physical address and farm name;	Section 1
	where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Not Applicable
c)	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale	Section 2
d)	A description of the scope of the proposed activity, including:	
	All listed and specified activities triggered and being applied for	Section 3
	A description of the associated structures and infrastructure related to the development	Section 2

No	Description	Reference
e)	A description of the policy and legislative context within which the development is proposed including	
	an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report;	Section 3
	how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 3
f)	A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location	Section 4
g)	A motivation for the preferred site, activity and technology alternative	Section 5
h)	A full description of the process followed to reach the proposed development footprint within the approved site, including:	
	Details of all the alternatives considered;	Section 5
	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 6
	A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them	Appendix B9
	the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 7
	The impacts and risks identified, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated	Section 8
	the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives	Section 8
	positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Section 8
	The possible mitigation measures that could be applied and level of residual risk;	Section 8 and 9
	The outcome of the site selection matrix	Not Applicable
	If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Not Applicable
	A concluding statement indicating the preferred alternatives, including preferred location of the activity	Section 5
i)	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including:	
	A description of all environmental issues and risks that were identified during the environmental impact assessment process	Section 8
	An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 8
j)	An assessment of each identified potentially significant impact and risk, including:	
	Cumulative impacts	Section 8
	The nature, significance and consequences of the impact and risk	

No	Description	Reference
	The extent and duration of the impact and risk	
	The probability of the impact and risk occurring	
	The degree to which the impact and risk can be reversed	
	The degree to which the impact and risk may cause irreplaceable loss of resources; and	
	The degree to which the impact and risk can be avoided, managed or mitigated	
k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section 8
l)	An environmental impact statement which contains-	
	A summary of the key findings of the environmental impact assessment	Section 11
	A map at an appropriate scale which superimposes the proposed activity and its associated structures and the infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers	Section 1
	A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives	Section 11
m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section 8 and 9
n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Section 11
o)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 1
p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 11
q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised	Section 11
r)	An undertaking under oath or affirmation by the EAP in relation to The correctness of the information provided in the reports The inclusion of comments and inputs from stakeholders and I&APs The inclusion of inputs and recommendations from the specialist reports where relevant; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Section 12
s)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Section 10
t)	Where applicable, any specific information required by the competent authority; and	Not applicable
u)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	Not applicable

Introduction and Background

1. INTRODUCTION AND BACKGROUND

Sibanye Rustenburg Platinum Mines (Pty) Ltd (SRPM) is a subsidiary entity of Sibanye-Stillwater Limited Group of companies. SRPM currently mines, processes, refines and markets Platinum Group Metals (PGMs) and base metals at various operations near Rustenburg, in the North West Province.

It is the intention of SRPM to expand its Mining Right Area (NW 30/5/1/2/2/80 MR) (MR80) through the incorporation of the proposed Block D underground mining area (~45ha). The proposed expansion area lies at the border of the SRPM mining right (MR80). SPRM plans to mine Block D by means of underground mining methods, from its existing K6 Shaft (MR80) as well as from the Bathopele Shaft, that falls within SPRM Mining Right Area NW 30/5/1/2/2/82 MR (MR82).

In order to expand the existing Mining Right MR80 (and associated mining work programme), SRPM must submit a Section 102 Application to the Department of Mineral and Petroleum Resources (DMPR). In terms of the National Environmental Management Act (Act No.107 of 1998) Environmental Impact Assessment Regulations General Notice 327, 2017 (as amended), a Basic Assessment process is required for the amendment of a Mining Right and associated Mining Work Programme.

Before SRPM may commence with the development of the proposed Block D underground mining expansion, the following legislative requirements are required.

- A Basic Assessment (BA) environmental authorisation process in terms of the National Environmental Management Act (NEMA) (Act Nr. 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations.
    - The competent authority for this process is the North West Department of Mineral and Petroleum Resources (DMPR).
- A Waste Management Licence in terms of the National Environmental Management Waste Act (Act 59 of 2008) (NEM:WA).
    - A combined environmental authorisation application in terms of NEMA and NEM:WA will be submitted to the DMPR.
- A Water Use Licence Application (WULA) in terms of the National Water Act (Act Nr. 36 of 1998) (NWA).
    - The Competent Authority for this process is the Department of Water and Sanitation (DWS).
- Approval of the Heritage Impact Assessment in terms of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA).
    - The competent authority for this application is the South African Heritage Resources Agency (SAHRA).

Alta van Dyk Environmental Consultants (Pty) Ltd (AvDE) have been appointed as the Environmental Assessment Practitioner for the proposed project to undertake the environmental related authorisations and associated public participation process.

1.1 Objective of the BAR

In terms of Section 38A of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) as amended (MPRDA), the Department of Minerals and Petroleum Resources (DMPR) is the responsible authority for the implementation of provisions of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) in respect to mining.

A Basic Assessment (BA) environmental authorisation process will support the expansion of the Mining Right Area and mining of the proposed Block D. The DMPR Klerksdorp office is the Competent Authority (CA) in respect of the application for Environmental Authorisation.

This Basic Assessment Report (BAR) is in a format prescribed by the DMPR and has been compiled in support of the Environmental Authorisation process. The Final BAR documents the steps undertaken during the BA process to assess the significance of impacts and determine measures to mitigate the potential impacts identified and enhance the benefits (or positive impacts) of the proposed project. The report presents the findings of the impact assessment and a description of the public participation undertaken that forms part of the Basic Assessment process. More specifically, the objectives of this Final BAR are to:

- Inform the stakeholders about the proposed project and the basic assessment process followed.
- Obtain contributions from stakeholders (including the applicant, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented and addressed.
- Assess in detail the potential environmental and socio-economic impacts of the project.
- Identify environmental and social mitigation measures to address the impacts assessed; and
- Produce a BAR that will assist the competent authority, the DMPR to decide whether (and under what conditions) to authorise the proposed project.

1.2 Background to the Applicant

1.2.1 Background to Sibanye-Stillwater

Sibanye-Stillwater Limited is a multinational mining and metals processing group with a diverse portfolio of operations, projects and investments across five continents. Sibanye-Stillwater's South African Platinum Group Metal (PGM) Operations consists of underground mining operations, surface sources and concentrators at its Kroondal, Rustenburg and Marikana Operations, located in the North West Province. Refer to Figure 1.

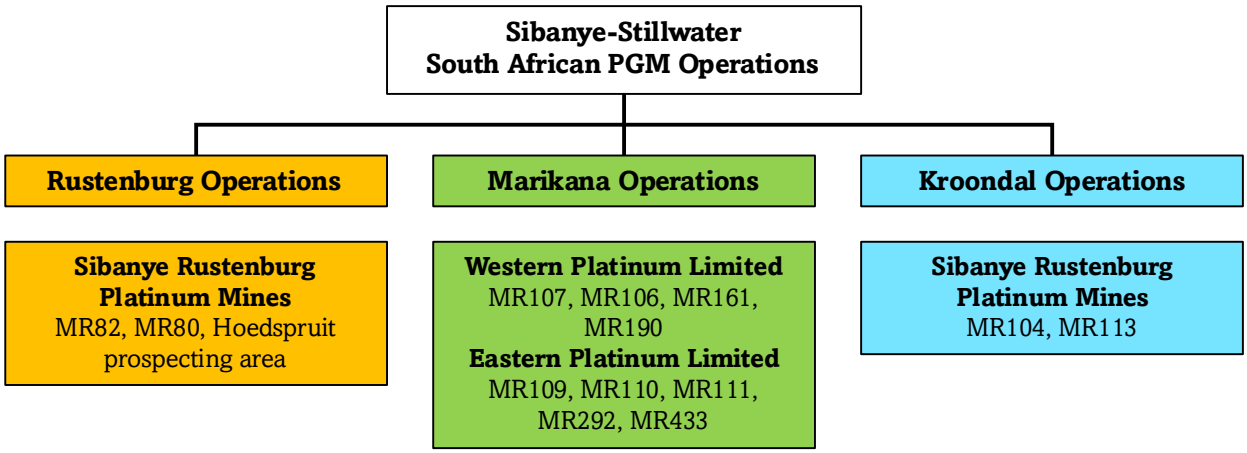


FIGURE 1: SIBANYE-STILLWATER SOUTH AFRICAN PGM OPERATIONS

The proposed Block D Underground Mining project will form part of the Rustenburg Operations and will make use of existing supporting infrastructure within the Rustenburg and Kroondal Operations.

1.2.1.1 Sibanye-Stillwater Rustenburg Operations

The Rustenburg Operations are owned and operated by Sibanye Rustenburg Platinum Mines (Pty) Ltd (SRPM).

SRPM is the holder of a converted mining right under DMPR reference number NW30/5/1/2/2/82MR (MR82), measuring 153km² in extent and the holder of converted mining right under DMPR reference number NW30/5/1/2/2/80 MR (MR80) measuring 32km². Both the SRPM mining rights are valid from 29 July 2010 to 28 July 2040. Refer to Figure 2.

Mining Right 82 includes 10 (ten) shafts of which four are currently operational, one on care and maintenance and the remainder demolished and currently being rehabilitated. The operational shafts include Bathopele Shaft, Siphumelele 1 Shaft, Thembelani 1 Shaft and Khuseleka 1 Shaft. Khomanani 1, Khuseleka 2 and Siphumelele 2 &3 shafts and Thembelani 2 shaft have been infilled, and shaft footprint rehabilitation has commenced. The shaft on care and maintenance is the Khomanani 2 Shaft. Rustenburg Operations has two concentrator plants, which are operational (Waterval/UG2 and the Waterval Retrofit Concentrators) In addition, there is also a tailings retreatment plant, the Western Limb Tailings Retreatment Plant (WLTRP). There are also four Tailings Storage Facilities (TSFs) namely the Paardekraal TSF, Waterval East TSF, Waterval West TSF, and Hoedspruit TSF.

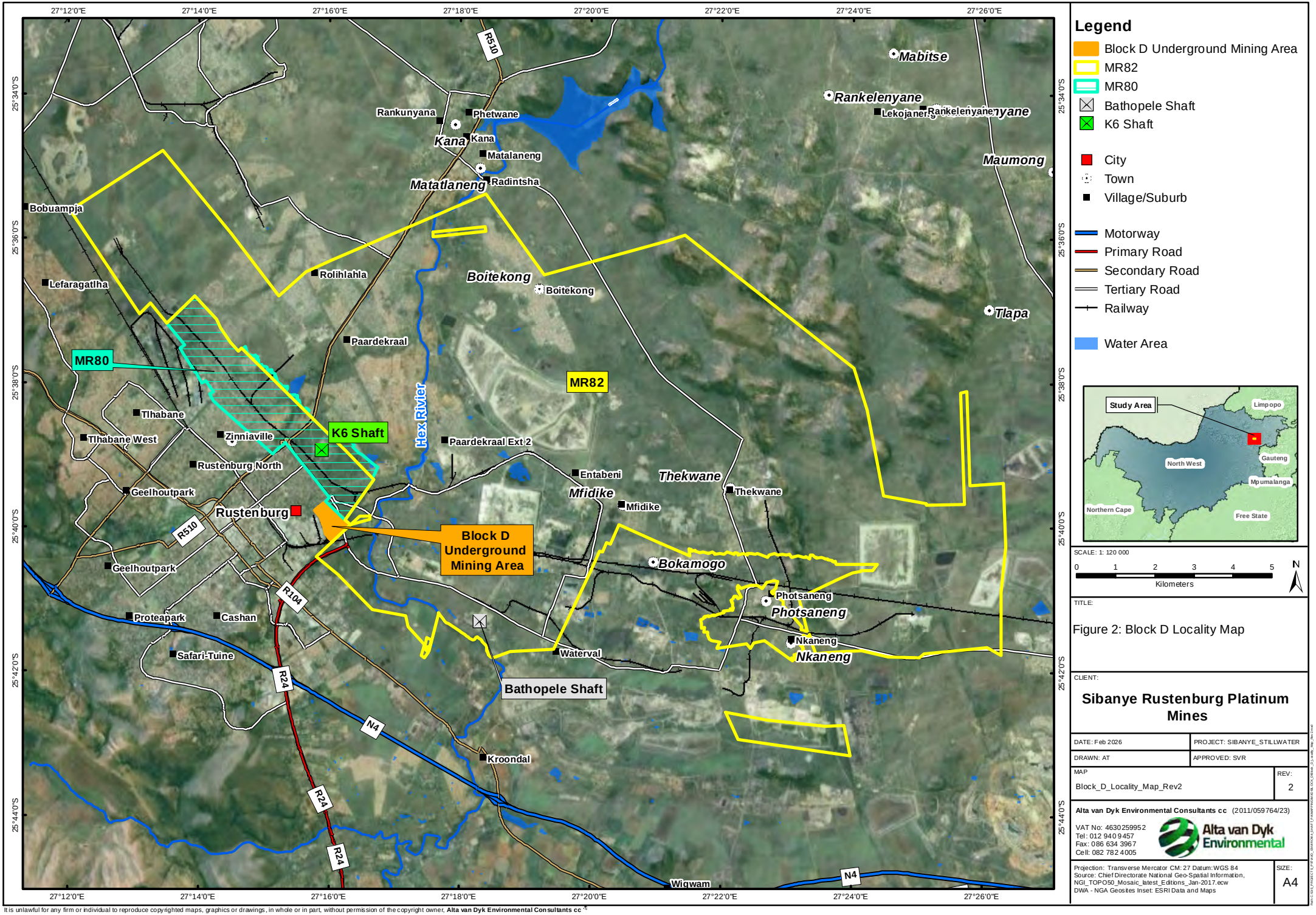
Mining Right 80 includes two shafts, which are operational, Kwezi and K6 and the Klipfontein Opencast Operation.

1.2.1.2 Sibanye-Stillwater Kroondal Operations

The Kroondal Operations were owned and operated by Kroondal Operations (Pty) Ltd. In January 2025, Sibanye Rustenburg Platinum Mines (Pty) Ltd (SRPM) received regulatory approval to acquire all the assets and liabilities of Kroondal Operation (Pty) Ltd.

SRPM is now the holder of a converted mining right under DMPR reference number: NW30/5/1/2/2/104MR (MR104), in respect of a mining area totalling approximately 17.0km², as well as a further mining right under DMPR reference number: NW30/5/1/2/2/113MR (MR113), in respect of a mining area totalling approximately 25.1km², both valid from 17 October 2006 to 16 October 2022. Renewal applications in respect of these rights were submitted during 2022, within the official administrative window, and a successful outcome was granted on 23 July 2024, renewing the mining rights from 1 October 2024 to 30 September 2039.

The Kroondal Operation consists of three shallow, operational, mechanised shafts (including Kopaneng, Simunye and Bambanani Shafts. The UG2 Reef is accessed from surface using decline systems; underground mining takes place at depths of between 250m and 550m below surface. Ore is processed by two concentrator plants (K1 and K2). Tailings Storage Facilities include the K1, K150, K2 and Marikana TSFs.



Legend

- Block D Underground Mining Area
- MR82
- MR80
- Bathopele Shaft
- K6 Shaft

- City
- Town
- Village/Suburb

- Motorway
- Primary Road
- Secondary Road
- Tertiary Road
- Railway

- Water Area

SCALE: 1: 120 000

0 1 2 3 4 5 Kilometers

N

TITLE:

Figure 2: Block D Locality Map

CLIENT:

Sibanye Rustenburg Platinum Mines

DATE: Feb 2026	PROJECT: SIBANYE_STILLWATER
DRAWN: AT	APPROVED: SVR
MAP: Block_D_Locality_Map_Rev2	REV: 2

Alta van Dyk Environmental Consultants cc (2011/059764/23)

VAT No: 4630259952
Tel: 012 940 9457
Fax: 086 634 3967
Cell: 082 782 4005

Alta van Dyk Environmental

Projection: Transverse Mercator CM: 27 Datum: WGS 84
Source: Chief Directorate National Geo-Spatial Information, NGI_TOPO50_Mosaic_latest_Editions_Jan-2017.ecw
DWA - NGA Geosites Inset: ESRI Data and Maps

SIZE: A4

1.2.1 Details of the Applicant

Sibanye Rustenburg Platinum Mines (Pty) Ltd is the applicant for this project. Further details are provided in Table 2.

TABLE 2: DETAILS OF THE APPLICANT

Name	Sibanye Rustenburg Platinum Mines (Pty) Ltd
Postal Address	Private Bag X508, Marikana 0284
Responsible Person	Phillip Ramphisa
Email	Phillip.Ramphisa@sibanyestillwater.com
Contact Number	014 495 1010

1.3 Locality of the Block D Underground Mining Project

Table 3 highlights the locality details of the proposed Block D Underground Mining project. Figure 2 illustrates the regional location of the proposed project.

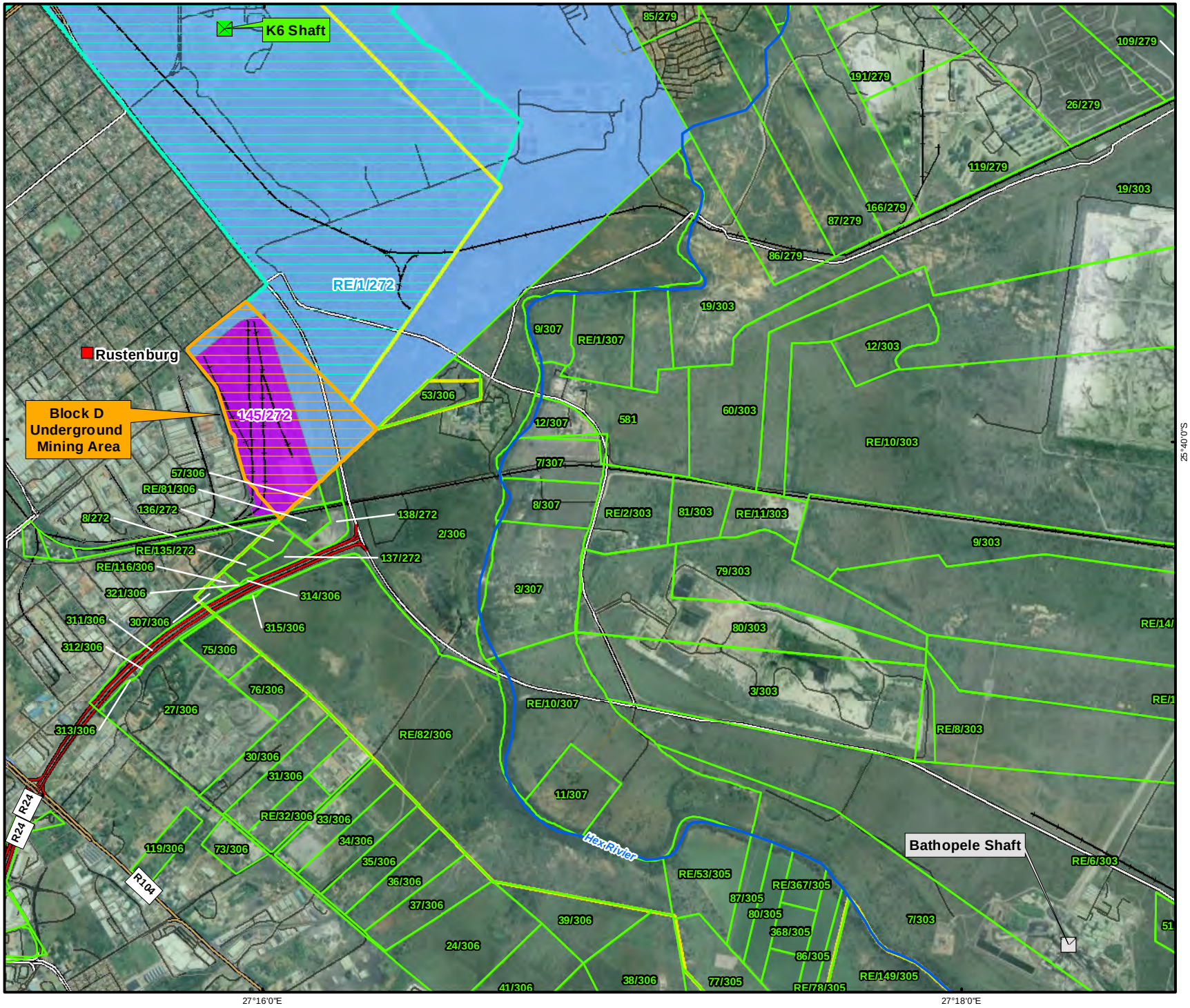
TABLE 3: LOCATION OF OVERALL ACTIVITY

Farm Name	Portion of Portion 1 of Town and Townlands of Rustenburg 272 JQ	Portion 145 of Town and Townlands of Rustenburg 272 JQ
Application area (Ha)	~45ha	
Magisterial district	Rustenburg Local Municipality and Bojanala Platinum District Municipality	
Distance and direction from nearest town	~2,5km Southeast of Rustenburg	
21-digit Surveyor General Code for each farm portion	T0JQ00000000027200001	T0JQ00000000027200145

The applicable landowners of Block D Underground Mining project are detailed in Table 4 and Figure 3 illustrates the properties associated with the project.

TABLE 4: LANDOWNERS APPLICABLE TO THE PROPOSED PROJECT

Farm Name and Number	Portion	Landowner	SG Code
Town and Townlands of Rustenburg 272 JQ	1	Rustenburg Local Municipality	T0JQ00000000027200001
Town and Townlands of Rustenburg 272 JQ	145	Transnet Ltd	T0JQ00000000027200145

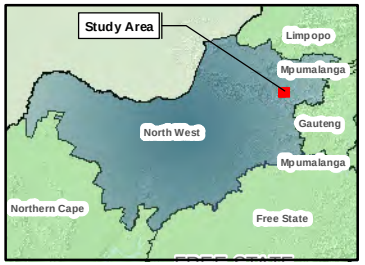


Legend

- Block D Underground Mining Area
- MR82
- MR80
- Bathopele Shaft
- K6 Shaft
- City
- Primary Road
- Secondary Road
- Tertiary Road
- Street/Road
- Track
- Railway
- Perennial River

Intersecting Properties

- 145/272
- RE/1/272
- Neighboring Properties
- Erven



SCALE: 1: 25 000

0 500 1 000 Meters

N

TITLE:

Figure 3: Block D Property Map

CLIENT:

Sibanye Rustenburg Platinum Mines

DATE: Jan 2026	PROJECT: SIBANYE_STILLWATER
DRAWN: AT	APPROVED: SVR
MAP: Block_D_Property_Map_Rev1	REV: 1

Alta van Dyk Environmental Consultants cc (2011/059764/23)

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Tel: 012 940 9457
Fax: 086 634 3967
Cell: 082 782 4005

Alta van Dyk Environmental

Projection: Transverse Mercator CM: 27 Datum: WGS 84
Source: Chief Directorate National Geo-Spatial Information, NGI_TOPO50_Mosaic_latest_Editions_Jan-2017.ecw
DWA - NGA Geosites Inset: ESRI Data and Maps

SIZE: A4

1.4 Details of the Environmental Assessment Practitioner (EAP)

The National Environmental Act, 1998 (Act 107 of 1998) NEMA regulations require the Environmental Assessment Practitioner (EAP) to be 'independent; and have expertise in conducting environmental impact assessments, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity. Sibanye Rustenburg Platinum Mines (Pty) Ltd has appointed Alta van Dyk Environmental Consultants (Pty) Ltd as the Environmental Assessment Practitioner to undertake the environmental related authorisations and associated public participation process. Table 5 provides the details of the EAP.

TABLE 5: DETAILS OF THE EAP

Environmental Assessment Practitioner	**Suzanne van Rooy**	**Reata Colyn**	**Tamica Govender**
Company	Alta van Dyk Environmental (Pty) (Ltd)		
Qualifications	Bachelor of Science in Geography and Zoology Bachelor of Science with Honours in Aquatic Health MPhil Environmental Management	B.Sc. in Human Physiology, Genetics and Psychology Master of Science in Environmental Toxicology and Pollution Control	BSc in Animal, Plant and Environmental Science BSc Honours in Biological Science
Professional Registrations	Pr.Sci.Nat (SACNASP Reg Nr 400378/11) Registered EAP (EAPASA Reg Nr 2019/1079)	Registered Candidate EAP (EAPASA Reg 2020/1534) Toxicology Society of South Africa (TOX0187)	-
Postal Address	Postnet Suite # 745 Private Bag X 1007 Lyttelton 0140		
Telephone number	012 940 9457		
Fax number	086 634 3967		
Email address	suzanne@avde.co.za	reata@avde.co.za	tamica@avde.co.za

1.4.1 Summary of EAP Experience:

Suzanne van Rooy

Suzanne van Rooy holds a master's degree in environmental management from the University of Stellenbosch. In terms of professional affiliation, Suzanne is registered with the South African Council for Natural Scientific Professions (SACNASP) in the Environmental Science field of practice (Registration Number: 400378/11). Suzanne is also a registered Environmental Assessment Practitioner (EAP) with the Environmental

Assessment Practitioners Association of South Africa (EAPASA) (Ref Nr. 2019/1079). Suzanne's expertise is in the mining industry sector, focusing on Environmental Impact Assessments, Water Use Licence Applications, environmental performance assessments, water use licence audits, public participation and closure cost assessments. Her involvement in such projects varies from project management and coordination to the compilation and review of technical and environmental documents and reports. She has been involved in environmental authorisations for both underground and open-cast mining operations, as well as the associated activities such as waste disposal facilities, conveyor routes, access roads, pollution control and other dams, undermining of wetlands and river crossings.

Reata Colyn

Reata Colyn holds a Master of Science in Environmental Toxicology and Pollution Control from Ulster University in North Ireland and a Bachelor of Science in Human Physiology, Psychology and Genetics from University of Pretoria. Her professional affiliations include registration with the Environmental Assessment Practitioners Association of South Africa (Reference: 2020 • Ref: 2020/1534) and the Toxicology Society of South Africa.

Reata has been involved as an environmental consultant in various EIA's in terms of the National Environmental Management Act (NEMA) (No 107 of 1998), Water Use Applications in terms of the National Water Act (NWA) (No 36 of 1998) and external audits. Reata's responsibilities include the overall management of projects, financial management and the identification and assessment of environmental impacts.

Tamica Govender

Tamica Govender is a Junior Environmental Assessment Practitioner with a solid academic foundation in Environmental Science and Sustainability from the University of The Witwatersrand. Although at the early stages of her career, her education has equipped her with a thorough understanding and the required theoretical underpinnings necessary for effective environmental assessments and the ability to apply academically gained knowledge to real-world applications under the guidance of seasoned industry professionals.

Her role involves actively participating in environmental related tasks to gain hands-on experience allowing for professional growth through a proactive approach to learning from industry veterans positioning her as a valuable asset within their team.

Refer to **Appendix A** for the Curriculum Vitae of the EAPs.

1.5 Specialists Studies

To enhance the EAP's independence, a multi-disciplinary specialist team has been appointed to conduct the various specialist studies to determine the possible impacts that the proposed development of the Block D Underground Mining project might have on the environment and what possible mitigation measures can be implemented to reduce the possible risks. Details of the various specialists are shown in Table 6.

TABLE 6: DETAILS OF SPECIALIST STUDIES

Specialist Study and Company	Specialist	Qualification and professional registrations
Groundwater Assessment *MvB Consulting*	Marius van Biljon	PhD Environmental Sciences M.Sc. Geohydrology/Hydrology Pr.Sci.Nat (400177/13)
Palaeontology Impact Assessment *Marion Bamford Consulting*	Marion Bamford	PhD Palaeontology
Heritage Impact Assessment *J.A. van Schalkwyk*	J.A. van Schalkwyk	D Litt et Phil
Freshwater Assessment *The Biodiversity Company*	Namitha Singh	B.Sc. Hons Environmental Science Pr. Sci. Nat. (157927)
Hydropedology *The Biodiversity Company*	Matthew Mamera	PhD Soil Science (Hydropedology, Sanitation and Water quality management) Pr.Sci.Nat 116356
Blasting Impact Study *Blast Management & Consulting*	Danie Zeeman	National Higher Diploma: Explosives Technology, Advanced Certificate in Blasting
Noise Impact Assessment *Enviro Compliance*	Chris de Bree	BSc Honours Geography Pr.Sci.Nat 114753
Social Impact Assessment *Sehuno_ZA Social Consulting Services (Pty) Ltd*	Adel Malebana	MSc Development Planning

1.6 Assumptions and Limitations

The assumptions and limitations pertaining to this Final BAR are presented in Table 7.

TABLE 7: ASSUMPTIONS AND LIMITATIONS

Aspect	Assumptions and Limitations
General	• It is assumed that AvDE has been provided with all relevant project information and that it was correct and valid at the time it was provided. • There will be no significant changes to the project description or surrounding environment between the completion of the BA process and implementation of the proposed project that could substantially influence findings and recommendations with respect to mitigation and management.

Aspect	Assumptions and Limitations
	• The assessment of the mitigated scenario assumes that the design controls and recommended mitigation would be implemented adequately. • The potential impacts assessed in this report in relation to the proposed project is based on the assumption that the activities as provided in **Section 8** of this report will be undertaken. Should there be substantial changes to the project scope, potential impacts may need to be re-evaluated. • The identification of listed activities in terms of the National Environmental Management Act (Act 107 of 1998) Environmental Impact Assessment ("EIA") Regulations and Waste Management Activities Government Notice 921 in Government Gazette 37083 dated 29 November 2013 in terms of the National Environmental Management Waste Act (Act 59 of 2008) were based on the existing information provided by the client and the fact the existing approvals are in place for all current activities on site.
Cumulative assessment	• All identified impacts are considered in a cumulative manner such that the impacts of the current activities on and surrounding the site and those potentially associated with the proposed project are discussed and assessed together. The baseline conditions reflect the effects of these current activities.
Freshwater assessment (The Biodiversity Company)	• It has been assumed that the spatial files provided to the specialist is accurate; • Only the proposed boundary of the Block D mining area was provided as a layout; • The seasonality of the surveys is not considered to be a limiting factor with regard to the identification and delineation of wetlands; • Freshwater features within the larger 500m Project Area of Influence were delineated and assessed via desktop; • Areas characterised by external wetland attributes were the focus for this assessment, where potential wetlands were thereafter confirmed by soil form indicators; • Representative sampling within the assessment area was conducted and by its nature would result in some areas of the assessment area not being covered on foot. However, the results derived were sufficient to derive a meaningful baseline of the study area in the context of freshwater ecosystems; • The identified features (natural and artificial) within the Project Area of Influence currently receive substantial artificial water inputs (e.g., from adjacent hardened surfaces), making it unclear whether they would have supported wetland habitat or functioned as rivers or drainage lines under natural, pre-disturbance conditions. Due to the lack of historical aerial imagery predating disturbance activities within the area, the natural classification of these systems remains uncertain, and these areas were therefore classified as artificial systems with no further ecological assessments being undertaken; • Although the obvious artificial systems identified within the Project Area of Influence were delineated and presented in the report to provide site context, several other artificial features exist (e.g. drainage trenches) or artificial wetness resulting from minor excavations and, these features were not delineated as part of this report; • The GPS used for water resource delineations is accurate to within five metres. Therefore, the wetland delineation plotted digitally may be offset by a maximum of five metres to either side.
Hydropedology (The Biodiversity Company)	The following aspects were considered as limitations during the Hydropedological assessment: • Only the slopes affected by the project have been assessed; • It has been assumed that the extent of the project area provided by the responsible party is accurate; and • The GPS used for ground truthing is accurate to within five meters. Therefore, the observation soil site's delineation plotted digitally may be offset by up to five meters to either side.

Aspect	Assumptions and Limitations
Hydrogeological Study (MvB Consulting)	• The Hydrogeological Specialist has made the following assumptions in relation to the available field data which is required for the development of the assessment: o The top of the aquifer is represented by the generated groundwater heads. o The available geological/ geohydrological information was used to describe the different aquifers. The available information on the geology and field tests was considered as correct. o Many aquifer parameters have not been determined in the field and therefore had to be estimated • For the specialist to develop a model of an aquifer system, certain assumptions were made. This included the following assumptions: o The system is initially in equilibrium and therefore in steady state even though natural conditions have been disturbed. o No abstraction boreholes were included in the initial model. o The boundary conditions assigned to the model are considered correct. o The impacts of other activities (e.g. agriculture) have not been considered. The specialist has further noted that a numerical groundwater model is a representation of the real system. It is therefore at most an approximation and the level of accuracy depend on the quality of the data that is available. This implies that there are always errors associated with groundwater models due to uncertainty in the data and the capability of numerical methods to describe natural physical processes.
Noise Impact Assessment (Enviro Compliance)	• The Noise Impact Assessment reports on the findings of the environmental sound level survey and specialist study undertaken during January 2026 only, so is not a complete annual study that would accurately account for seasonal variance. • Propagation of sound energy is affected by seasonal weather patterns. The key factors are air density (related to temperature) and winds. Winter conditions are typically most conducive to sound propagation through the boundary layer, since the air is cooler and therefore the density is higher. It is also calm and stratified, allowing effective sound transmission in straight line (line of sight). In summer, apart from the air being warmer and less dense, there is also more convective movement in the boundary layer which reduces sound transmission in a straight line. • With respect to the survey reported in the noise assessment, only days that complied with conditions suggested SANS 10103:2004 were used for surveys; i.e. all measurements reported in this assessment were taken during conditions when: o Wind speed did not exceed 5m/s; and o Under effectively dry surface conditions. • Furthermore, the weather conditions during all measurements were recorded and evaluated in context as best possible. Seasonal monitoring should be considered if numerous complaints are reported during a particular season for which data was reported in this assessment cannot be considered representative. This is a common practical limitation of environmental noise surveys, but does not invalidate the findings, if they are considered in appropriate context. • In the Noise Impact Assessment, various assumptions were made and limitations experienced that may impact on the results obtained. These include: o The information provided regarding the proposed mining activities and location is understood to be representative of what will occur in reality; o The comments received from interested and affected parties have been included as a consideration in the report; o As per Government Notice 320 of the NEMA, night-time monitoring took place over a minimum of two nights.

Aspect	Assumptions and Limitations
Heritage Impact Assessment (Johnny van Schalkwyk)	• It is assumed that the description of the proposed project, provided by the client, is accurate; • It is assumed that the public consultation process undertaken as part of the Basic Assessment process is sufficient and that it does not have to be repeated as part of the HIA; • It is assumed that the information contained in existing databases, reports and publications is correct; • The unpredictability of buried archaeological remains; • No subsurface investigation (i.e. excavations or sampling) was undertaken, since a permit from SAHRA is required for such activities, however for this proposed project a subsurface investigation was not deemed necessary; • The vegetation cover encountered during a site visit can have serious limitations on ground visibility, obscuring features (artefacts, structures) that might be an indication of human settlement; • None of the available maps or aerial images reflects the current development on the site, with the exception of Google Earth.
Blasting Impact Study (Blast Management & Consulting)	• The project uses existing infrastructure to access the proposed mining area, with no new surface developments required; • The blast impact is calculated from the charge mass per delay determined by the blast design received; • No more than two (2) panels will be blasted simultaneously; • The anticipated levels of influence estimated in the Blast Impact Assessment are calculated using standard accepted methodology according to international and local regulations; • The predictions are a good estimate with significant safety factors to ensure that expected levels are based on worst case scenarios. These will have to be confirmed with actual measurements once the operation is active; • The report produced is based on the author's knowledge and information provided by the project applicant.
Social Impact Assessment (Sehuno_ZA Social Consulting Services)	• Different sources of data were used to compile the SIA, and the specialist assumed that the information obtained (e.g., Stats SA) and discussed was correct at the time of writing the SIA; • The specialist has assumed that the technical information provided by the project proponent was accurate at the time of writing this report; • The specialist has acknowledged that some information used in this report, such as Stats SA 2016 community data is outdated. Where available, the 2022 Census data and 2024 provincial government and local municipality data were utilised; • The specialist has acknowledged a lack of consistency in socio-economic indicators from 2011, 2016 and 2022 for the Stats SA data, which made it difficult to make a comparative analysis of trends and patterns; • Preliminary impacts identified in the SIA are based on Municipal data and might not necessarily reflect the views of directly and/ or indirectly impacted stakeholders. These stakeholders will be engaged during the next phase of the SIA, and the impacts revised accordingly; • The SIA ratings presented in this assessment are based on a standardised environmental risk evaluation framework. However, the framework does not fully accommodate complex social impacts, particularly those related to perceptions, trust, and community expectations as these are difficult to quantify. These social risks may carry significance beyond the numerical scores assigned and should be interpreted with caution.

Project Description

2. Project Description

2.1 Project Overview

The proposed Block D Underground Mining Project comprises an area of approximately 45ha. The Block D mining area will be accessed from SRPM's existing K6 Shaft, as well as from its existing Bathopele Shaft.

The proposed project will utilise bord and pillar underground mining methods, which is currently implemented at both the K6 and Bathopele operations. All mining activities will take place on the reef horizon, and mined ore will be transported to the Bathopele or K6 Shafts via an existing underground conveyor system. Refer to Figure 4 for the location of the Block D underground mining area in relation to the K6 and Bathopele Shafts.

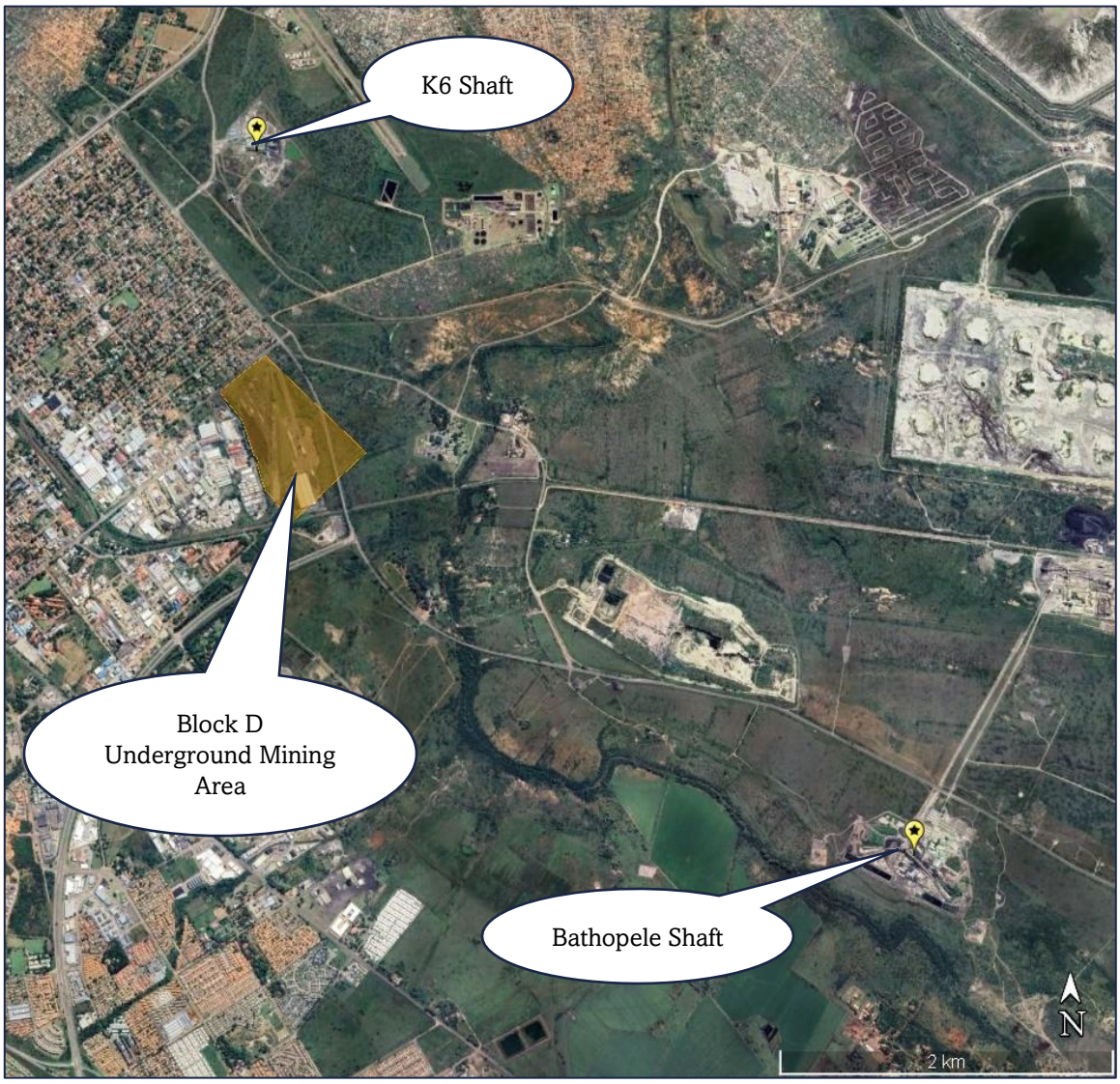

FIGURE 4: LOCATION OF BLOCK D UNDERGROUND MINING AREA IN RELATION TO K6 AND BATHOPELE SHAFTS

During the underground mining activities, waste rock will be removed in order to reach the ore. This material will be retained underground and utilised for backfilling to enhance the waste rock will remain underground and will be used in backfilling to promote stability within the mined- out underground areas. No waste rock will be transported to the surface for deposition on the existing Waste Rock Dumps.

No new surface infrastructure will be required, as the existing K6 and Bathopele shaft areas will be utilised to access the Block D underground mining area. The existing infrastructure associated with the K6 and Bathopele Shafts, such as underground conveyor belt, stockpile areas, ventilation shafts, transportation routes, concentrators and Tailings Storage Facilities (TSFs), will be used for the mining of the Block D area. Refer to Figure 5 for a process flow diagram for the proposed Block D Underground Mining project.

The expected Life of Mine for the proposed Block D mining area is approximately seven (7) years.

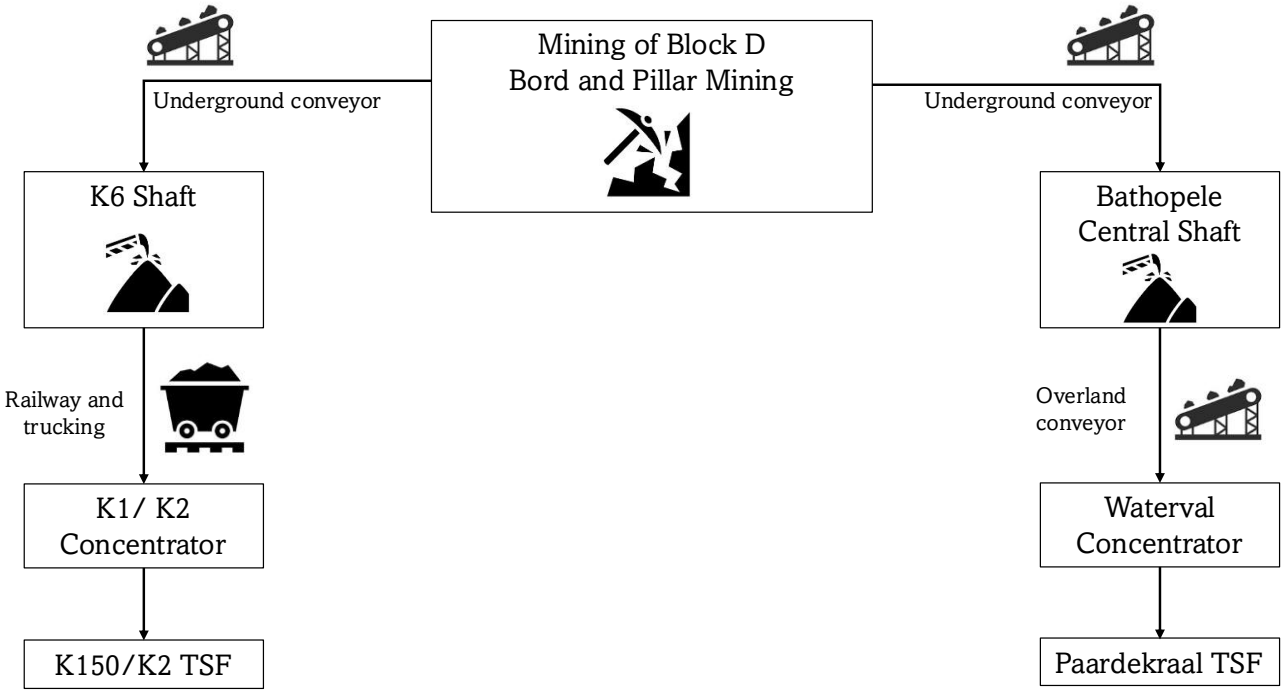

FIGURE 5: PROJECT PROCESS FLOW DIAGRAM FOR THE PROPOSED BLOCK D UNDERGROUND MINING PROJECT

2.2 Description of existing activities associated with the Bathopele Operations

2.2.1 Bathopele Mine Complex[1]

SRPM's Bathopele Mining Complex is located approximately 6km east of the town of Rustenburg. The Bathopele Operations forms part of Mining Right Area NW 30/5/1/2/2/82 (MR82) (refer to Figure 2). MR82 consists of various mining and process operations, highlighted in Table 8.

[1] Authorised in Consolidated Environmental Management Programme (NW30/5/1/2/2/82 MR) Rustenburg Platinum Mines Limited: Rustenburg Section Carved Out Operations EMPR, WSP/Parsons Brinckerhoff (2016)

TABLE 8: OPERATIONS FORMING PART OF MR82[2]

Operation	Activity Area	Status
Mining Operations	Khomanani Mine (Shaft 1&2)	Khomanani 1 Shaft has been infilled and all associated infrastructure demolished. Khomanani 2 Shaft is under care and maintenance
	Bathopele Mine	Operational
	Siphumelele Mine (Shaft 1,2 & 3)	Siphumelele 1 Shaft is operational, Siphumelele 2 and 3 shafts have been infilled and all associated infrastructure have been demolished
	Thembelani Mine (Shaft 1&2)	Thembelani 1 Shaft is operational, Thembelani 2 Shaft have been infilled and all associated infrastructure have been demolished
	Khuseleka Mine (Shaft 1&2)	Khuseleka 1 Shaft is operational, Khuseleka 2 shaft have been infilled and all associated infrastructure have been demolished
Process Operations	Klipfontein Slurry Plant	Operational
	Waterval/UG2 Concentrator	Active
	Waterval Retrofit Concentrator	Active
	Western Limb Tailings Retreatment (WLTR) Plant	Active
	Paardekraal Tailings Complex	Active
	Hoedspruit Tailings Complex	Active
	Waterval Tailings Complex	TSFs are being re-processed
	Historic Klipfontein Tailings Complex	Re-processed (currently an opencast mine)

The Bathopele Mine Complex consists of two (2) decline shafts, the East and Central shafts, and supported by various ventilation shafts.

Bathopele Operations utilises bord and pillar underground mining methods that exploits the UG2 reef. The Bathopele Operations mine between 40 and 300m below surface within the UG2 horizon from an East to West direction. Currently, at the Bathopele Shaft, backfilling with waste rock occurs underground[3]. To promote safe working conditions underground, fissure water is abstracted[4] and stored in the Settling Dams on surface[5].

[2] Authorised in Consolidated Environmental Management Programme (NW30/5/1/2/2/82 MR) Rustenburg Platinum Mines Limited: Rustenburg Section Carved Out Operations EMPR, WSP/Parsons Brinckerhoff (2016)

[3] Authorized in WUL No. 07/A21D/AIJGC/7026 (2025) in terms of Section 21(g) of the National Water Act (Act 36 of 1998)

[4] Authorised in WUL No. 07/A21D/AIJGC/7026 (2025) in terms of Section 21(a) and (j) of the National Water Act (Act 36 of 1998)

[5] Authorised in WUL No. 07/A21D/AIJGC/7026 (2018) in terms of Section 21(g) of the National Water Act (Act 36 of 1998)

Existing infrastructure at the mine complex includes workshops, administrative buildings, change houses, water management facilities, waste management facilities and an ore stockyard.

Ore that is mined from the East and Central shafts are transported to a load silo using existing conveyance infrastructure. From the load silo, the ore is transported to the stock yard, and a front-end loader moves the ore onto a conveyor belt. The conveyor belt transports the ore to the Waterval Concentrator where it is further processed. Tailings material from the Waterval Concentrator is deposited on the Paardekraal Tailings Storage Facility.

The Bathopele Mine Complex has been identified as an operational area in which existing surface infrastructure will be utilized to support the operational activities of the proposed Block D Underground Mining project.

The expected Life of Mine of the current operations extends to 2028.

Figure 6 illustrates the existing infrastructure at the Bathopele Complex that will be utilised during the underground mining of the Block D area.

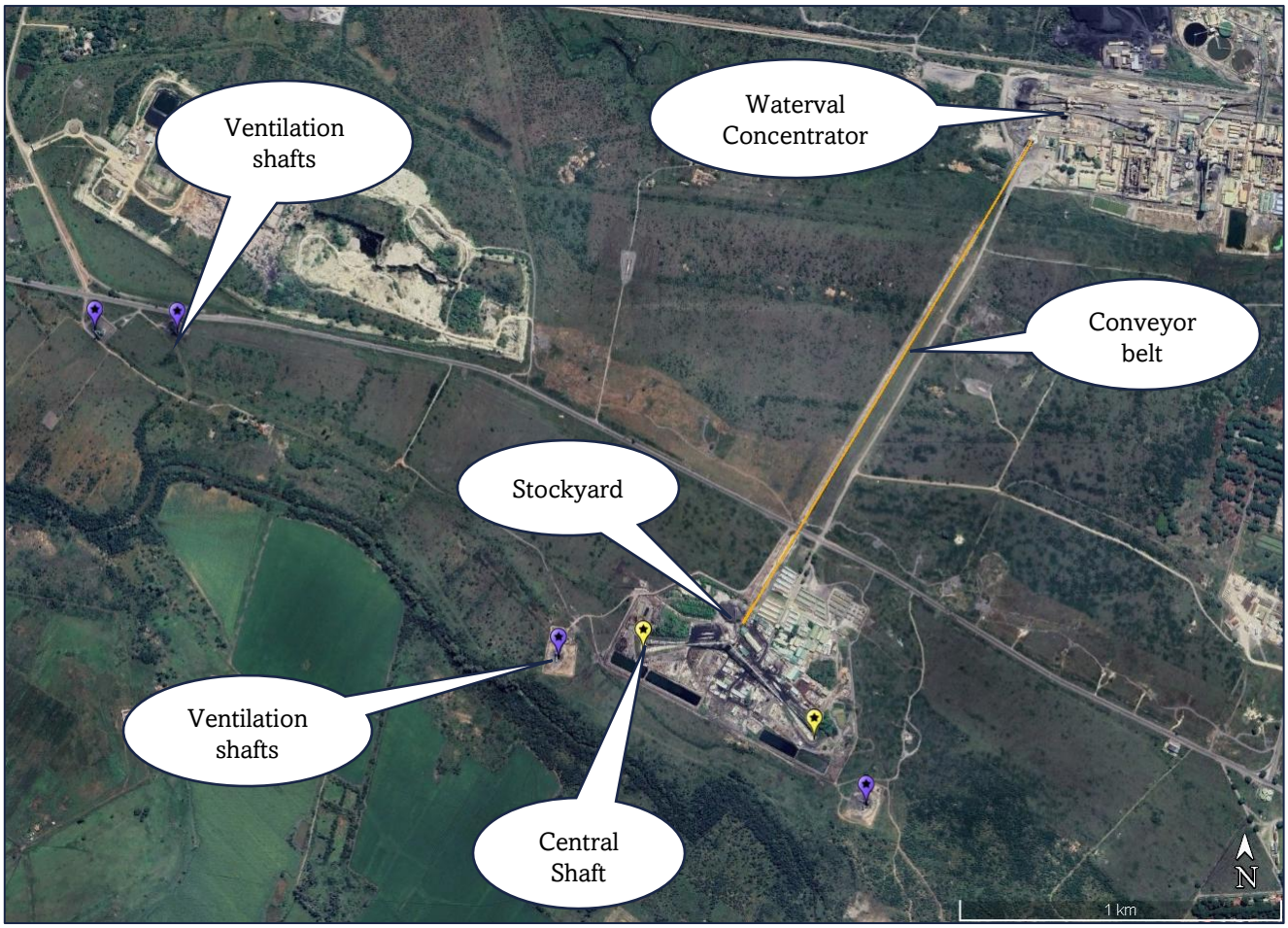

FIGURE 6: ARIAL OVERVIEW OF THE BATHOPELE OPERATIONS

2.2.2 Waterval Concentrator[6]

The Waterval Concentrator is located approximately 1.8 km northeast of the Bathopele Mine Complex. The overall capacity of the Concentrator is 620 000 tonnes per month after an upgrade in 2007. The current available capacity at Waterval Concentrator is 20 000 tonnes per month. The concentrate is dispatched to the Smelter. Sulphide rich matte (which is converter matte) is produced for further processing at the Base Metal Refinery. At the Base Metal Refinery, the converted matte is treated to produce nickel sulphide crystals, copper cathodes and PGM Concentrate. The PGM Concentrate is air freighted to the Precious Metals Refinery for further refining to finished pure metals for the market. Refer to Figure 7 for the location of the Waterval Concentrator in relation to the Bathopele Mine Complex.

2.2.3 Paardekraal Tailings Storage Facility[7]

The Paardekraal Tailings Storage Facility (TSF) is located approximately 5km north of the Bathopele Mine Complex. The Paardekraal TSF has various compartments that stores tailings material from different Concentrators owned by Sibanye-Stillwater. Refer to the details below:

- Paardekraal TSF (PK4 & PK5) – Fed from Waterval Concentrator and Waterval Retrofit plants after PGM extraction at Platinum Mile, at 750ktpm (kilo tonnes per month). The life of the TSF is until 2069 with activation of PK5 dormant area.

- Paardekraal TSF (PK Central) – Fed from Waterval UG2 and Waterval Retrofit plants after PGM extraction at Platinum Mile, at 250ktpm. The life of the TSF is until 2026.

SRPM TSF's have a remaining capacity of 225Mt. The Life of Mine (LoM) requires 120.7 Mt, resulting in a surplus of 104.3Mt. The current capacity can be increased further through the activation of the PK5 dormant area. This surplus feeds into the integrated SA PGM tailings management strategy and will alleviate and address Background to SRPM shortages elsewhere.

Refer to Figure 7 for the location of the Paardekraal TSF in relation to the Bathopele Mine Complex.

[6] Authorized in Consolidated Environmental Management Programme (NW30/5/1/2/2/82 MR) Rustenburg Platinum Mines Limited: Rustenburg Section Carved Out Operations EMPR, WSP/Parsons Brinckerhoff (2016), Water Use Licence Number 07/A21D/AIJGC/7026, issued on 16 January 2018

[7] Authorised in Consolidated Environmental Management Programme (NW30/5/1/2/2/82 MR) Rustenburg Platinum Mines Limited: Rustenburg Section Carved Out Operations EMPR, WSP/Parsons Brinckerhoff (2016), Water Use Licence Number 07/A21D/AIJGC/7026, issued on 16 January 2018

FIGURE 7: LOCATION OF WATERVAL CONCENTRATOR AND PAARDEKRAAL TSF IN RELATION TO THE BATHOPELE COMPLEX

2.3 Description of existing activities at K6 Operations

2.3.1 K6 Operations[8]

SRPM's K6 Operations is located approximately 3km northeast of the town of Rustenburg. The K6 Operations forms part of Mining Right NW 30/5/1/2/2/80MR (MR80) (refer to Figure 2). MR80 consists of various mining operations, highlighted in Table 9.

[8] Authorised in Consolidated Pooling and Sharing Agreement Environmental Management Programme Report Mining Right Ref (NW30/5/1/2/2/80 MR), WSP/Parsons Brinckerhoff (2016)

TABLE 9: OPERATIONS FORMING PART OF MR80

Operation	Activity Area	Status
Mining Operations	Kwezi Shaft (K5)	Operational
	K6 Shaft	Operational
	Klipfontein Opencast	Operational

The K6 Shaft consists of one (1) decline shaft and supported by various ventilation shafts.

The K6 Operations utilises bord and pillar underground mining methods, that exploits the UG2 reef. The K6 Operations mine between 160 and 340m below surface within the UG2 horizon in a southern direction. To promote safe working conditions underground, fissure water is abstracted[9] and stored in the Settling Dam[10].

Existing infrastructure at the K6 Shaft include workshops, administrative buildings, change houses, water management facilities, waste management facilities and an ore storage silo.

Ore is mined via the K6 Decline Shaft, whereafter it is transported via a conveyor system to a surface storage silo. With the assistance of the Kroondal railway line, the ore is transferred from the silo to the Klipfontein Siding where the ore is transferred to trucks.

The K6 Shaft has been identified as an operational area in which existing surface infrastructure will be utilized to support the operational activities of the proposed Block D Underground Mining project.

Figure 8 illustrates the existing infrastructure at the K6 Shaft that will be utilised during the underground mining of the Block D area.

[9] Authorised in Water Use Licence Number 03/A22H/CI/3706, issued on 22 April 2016 and amended on 17 June 2025 as a Section 21 (a) and (j) water use

[10] Authorised in Water Licence Number 03/A22H/CI/3706, issued on 22 April 2016 and amended on 17 June 2025 as a Section 21 (g) water use

FIGURE 8: ARIAL OVERVIEW OF K6 OPERATIONS

Ore material from the K6 Shaft area is processed at both the K1 and K2 Concentrator Plants. For processing of the ore at K1 Plant, the ore is trucked via an existing gravel road from the Klipfontein Siding to the existing Kopaneng Shaft ore stockpile area. From the stockpile area, the ore is transferred via an existing conveyor belt to K1 Plant for processing.

For processing of ore at K2 Plant, the ore is trucked via an existing gravel road from the Klipfontein Siding to the ore feedbin located at K2 Plant. From the feedbin, the ore is transferred via an existing conveyor to the K2 Plant for processing.

Tailings from K1 and K2 Plants are deposited onto K150 and K2 TSFs. Refer to Figure 9 for the location of the K1 and K2 Plants, and K150 and K2 TSFs.

2.3.2 K1 and K2 Concentrator[11]

The K1 and K2 Concentrators forms part of Sibanye-Stillwater South African PGM Kroondal Operations (refer to Figure 1). The K1 and K2 Concentrator is located approximately 12km southeast of the K6 Shaft.

The design capacity of the K1 Concentrator is 290ktpm, and current operation capacity is 148ktpm. The design capacity of the K2 Concentrator is 300ktpm, and current operation capacity if 255ktpm[12].

The concentrate is dispatched to the Smelter. Sulphide rich matte (which is converter matte) is produced for further processing at the Base Metal Refinery. At the Base Metal Refinery, the converted matte is treated to produce nickel sulphide crystals, copper cathodes and PGM Concentrate. The PGM Concentrate is air freighted to the Precious Metals Refinery for further refining to finished pure metals for the market. Refer to Figure 9 for the location of the K1 and K2 plants.

2.3.3 Tailings Storage Facilities[13]

Tailing storage facilities (TSF) are detailed below:

- K1 TSF is fed from K1 plant at 28ktpm (life of TSF until 2030 at current deposition rate)
- K150 TSF is fed from K1 plant at 86ktpm (life of TSF until 2028 at current deposition rate)
- K2 TSF is fed from K1 (80%) and K2 (20%) plants at 86ktpm (life of TSF until 2030 at current deposition rate)
- Marikana TSF is fed from K2 plant at 200ktpm (life of TSF until 2037 at current deposition rate)

The Kroondal TSFs have a remaining capacity of 18.4Mt. The LoM requires 23.3Mt TSF capacity, resulting in a shortfall of 4.9Mt. The current capacity constraints will be mitigated through the integrated consolidated surface operations strategy which addresses tailings deposition across the SA PGM segment. A new TSF, the Marikana pit TSF, is currently subject to permitting by the authorities, and the appeal process for the Marikana pit TSF water use licence continues.

Refer to Figure 9 for the location of the K150 and K2 TSFs.

[11] Authorised in Amendment and Consolidated Environmental Impact Assessment and Environmental management Programme for Kroondal Platinum Mines (NW 30/5/1/2/2/104 MR), SLR Consulting (2016), Water Use Licence Number 07/A22H/CGIAJ/7827, issued on 24 May 2018

[12] Technical Report Summary on the material assets of the Kroondal Operaitons, Sibanye-Stillwater, December 2023

[13] Authorised in Amendment and Consolidated Environmental Impact Assessment and Environmental management Programme for Kroondal Platinum Mines (NW 30/5/1/2/2/104 MR), SLR Consulting (2016), Water Use Licence Number 07/A22H/CGIAJ/7827, issued on 24 May 2018

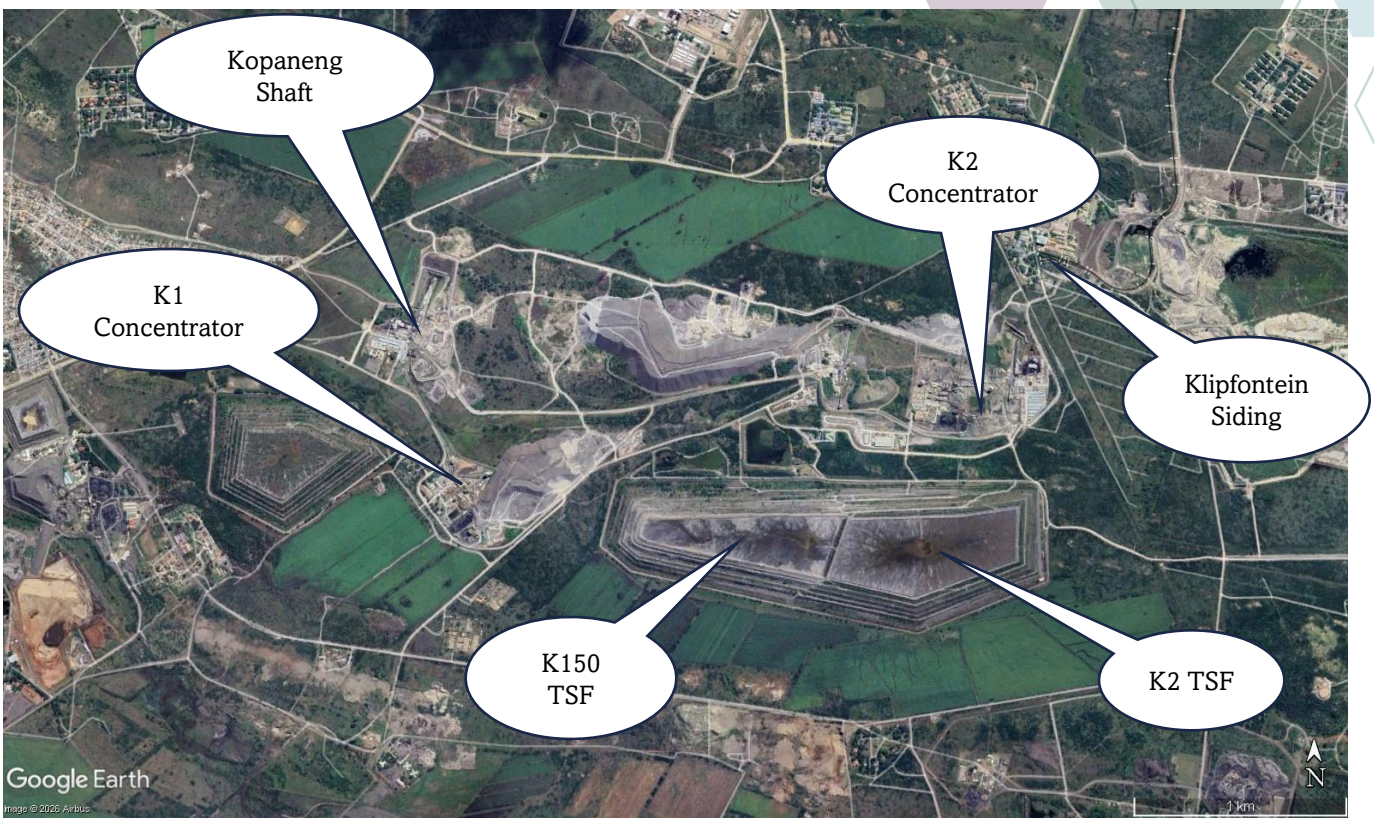

FIGURE 9: LOCATION OF K1 AND K2 PLANTS, K150 AND K2 TSFS

2.4 Description of proposed activities to be undertaken

2.4.1 Proposed Block D underground mining area

Both the Bathopele and K6 Operations are currently experiencing a production decline, resulting in the urgent need to find additional ounces of PGMs. It is the intention of Sibanye Rustenburg Platinum Mines to expand its Mining Right Area (NW 30/5/1/2/2/80 MR) through the incorporation of the proposed Block D mining area (~45ha)[14]. **FIGURE 10** highlights the existing Mining Right Area (outlined in turquoise) and the proposed addition of Block D mining area (orange) to the Mining Right.

[14] NEMA EIA Regulations: Listing Notice 1, Activity 21D – Section 102 application to amend the Mining Right and Mining Work Programme

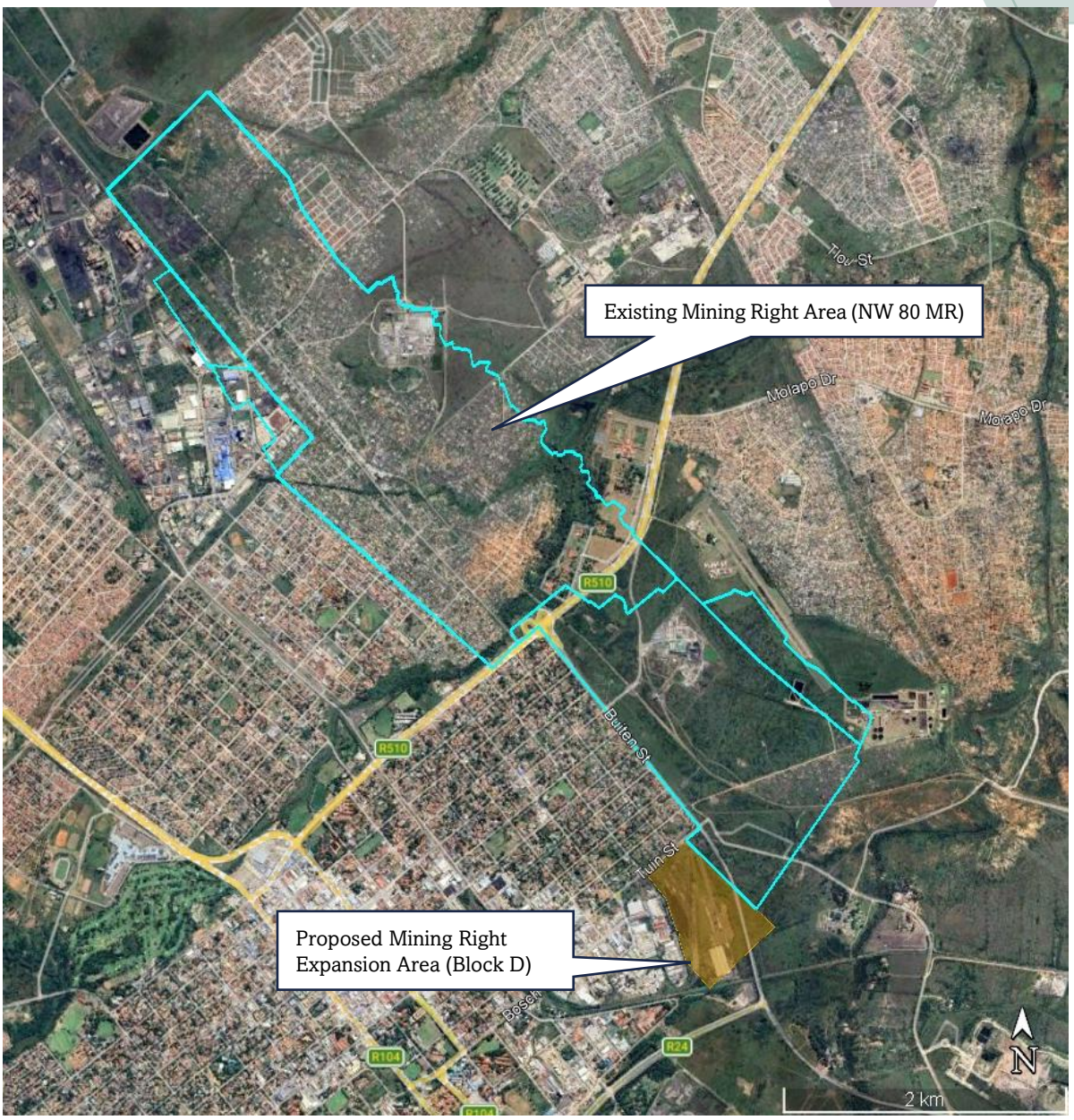

FIGURE 10: MINING RIGHT AREA (80MR)

Block D will utilise underground mining methods - specifically, bord and pillar mining methods - using mechanised mining equipment. The proposed Block D underground mining area will be accessed via the Bathopele Central Shaft (located on NW 30/5/1/2/2/82 MR) and K6 Shaft (located on NW30/5/1/2/2/80MR). Figure 11 illustrates how each portion of Block D will be accessed from each respective shaft. Mined ore will be transported to the Bathopele Shaft and K6 Shaft via existing underground conveyor systems.

Waste rock will be removed in order to reach the ore. This material will be retained underground and utilised for backfilling to enhance the waste rock will remain underground and will be used in backfilling to promote stability within the mined- out underground areas. No waste rock will be transported to the surface for deposition on the existing Waste Rock Dumps

No new surface infrastructure will be required as the existing Bathopele and K6 Shafts will be utilised to access the Block D underground mining area. The existing infrastructure associated with both shafts such as vent shafts, transportation routes, stockpile areas and concentrators, will be used for the mining of Block D.

The expected Life of Mine for the proposed Block D underground mining area is seven (7) years.

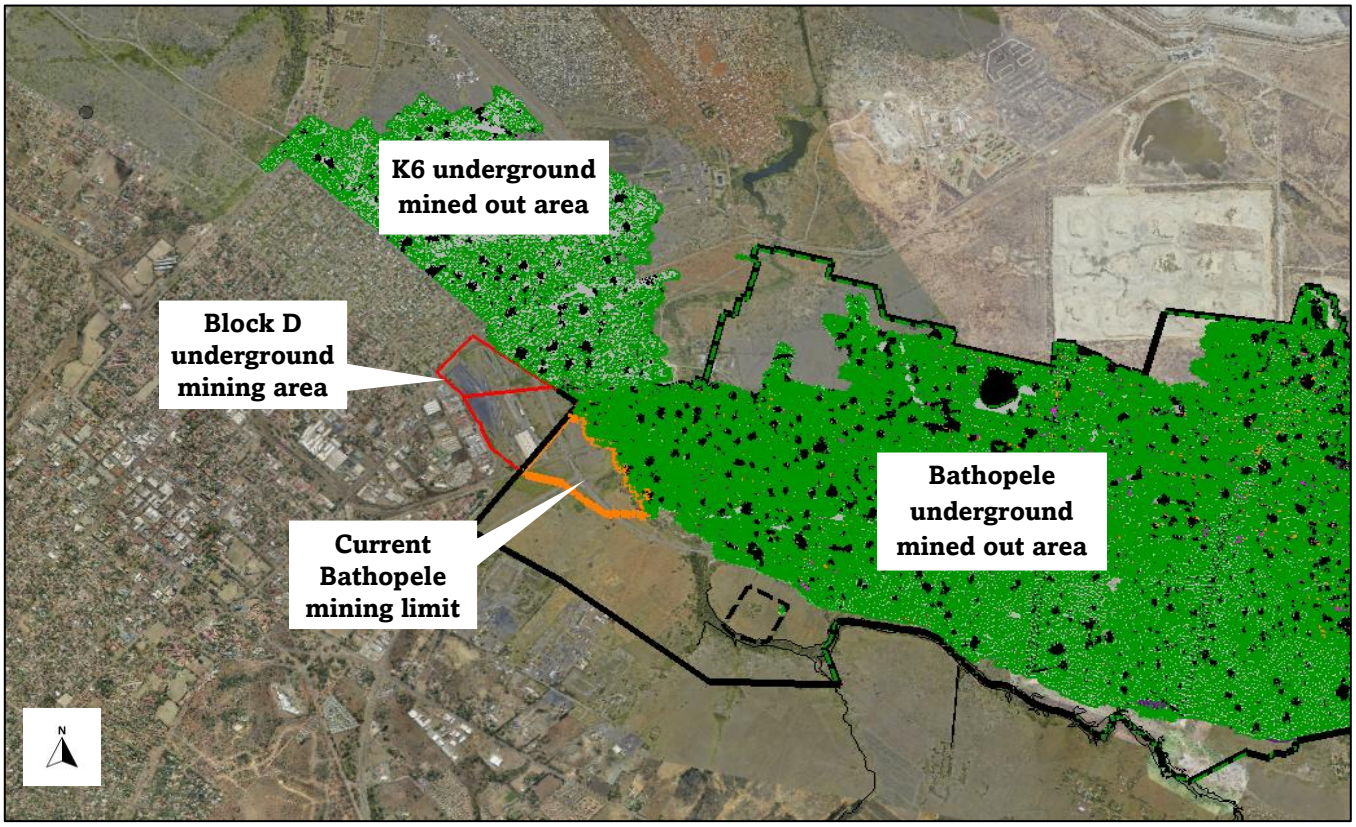

FIGURE 11: BLOCK D'S LOCATION RELATIVE TO THE K6 SHAFT AND BATHOPELE SHAFT

2.4.2 Surface description of Block D

Block D comprises of approximately 45ha and existing surface infrastructure of Block D includes the following,

- A railway track, ~ 770m in length
- A permanent building- occupying ~2ha of Block D's surface area
- Road D108_010 - a tar road which diagonally intersects the surface of Block D - occupies a vertical distance of ~450m
- Additionally, Block D is situated to the South of a Residential Zone and to the East of an Industrial Zone.

These infrastructures are illustrated in Figure 12.

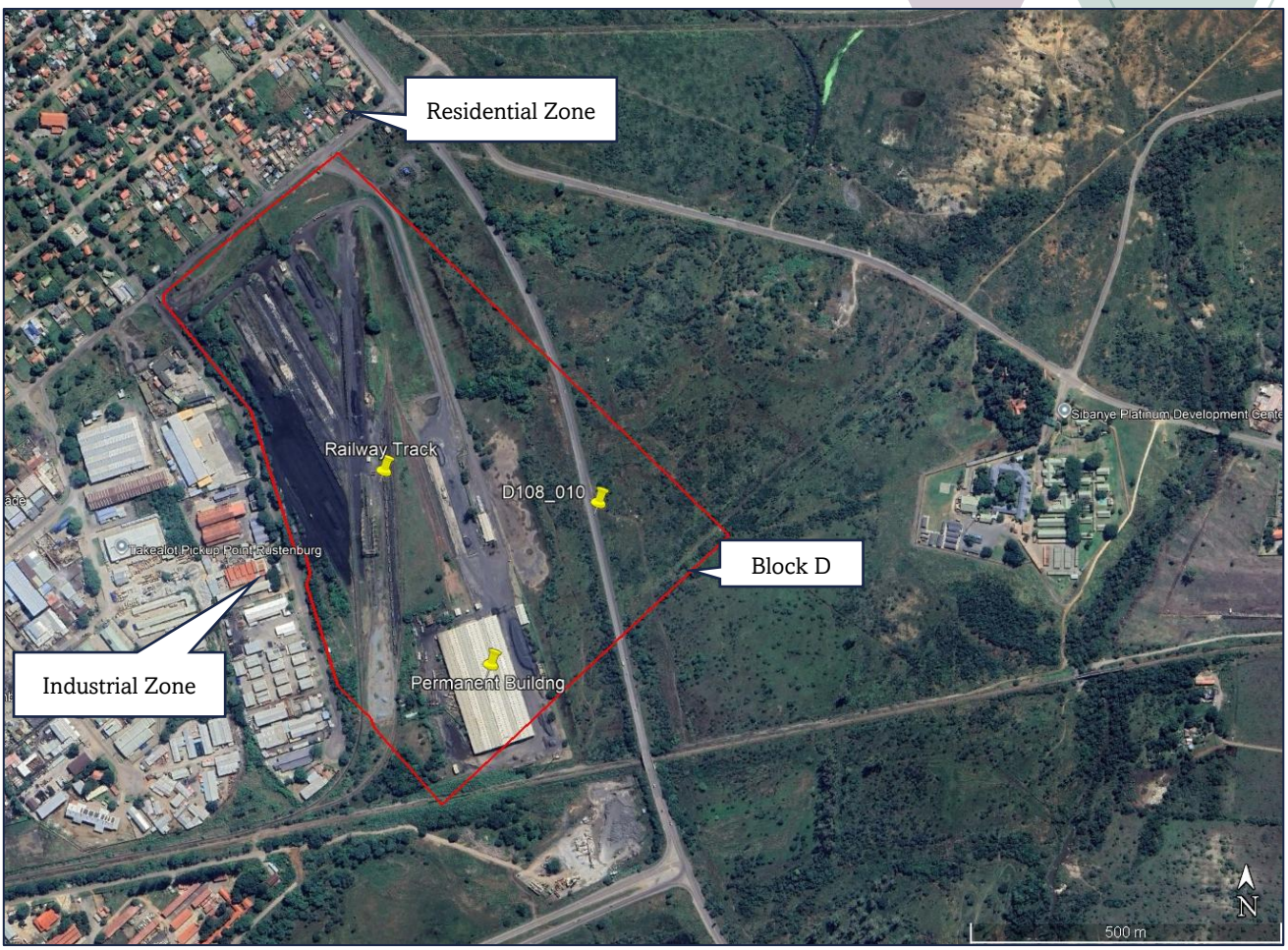

FIGURE 12: SURFACE INFRASTRUCTURE OF BLOCK D

No new surface infrastructure will be required as the existing K6 Shaft and Central Bathopele Shaft, and its associated infrastructure, will be used in support of the Block D underground mining operation.

2.4.3 Mining Method

Block D will utilise the Bord and Pillar mining method to access the mineral below surface. Bord and Pillar Mining is defined as a style of mining that creates a grid of tunnels (bords - mined out sections) which are separated by solid blocks (pillars), to support the roof and promote stability (Figure 13).

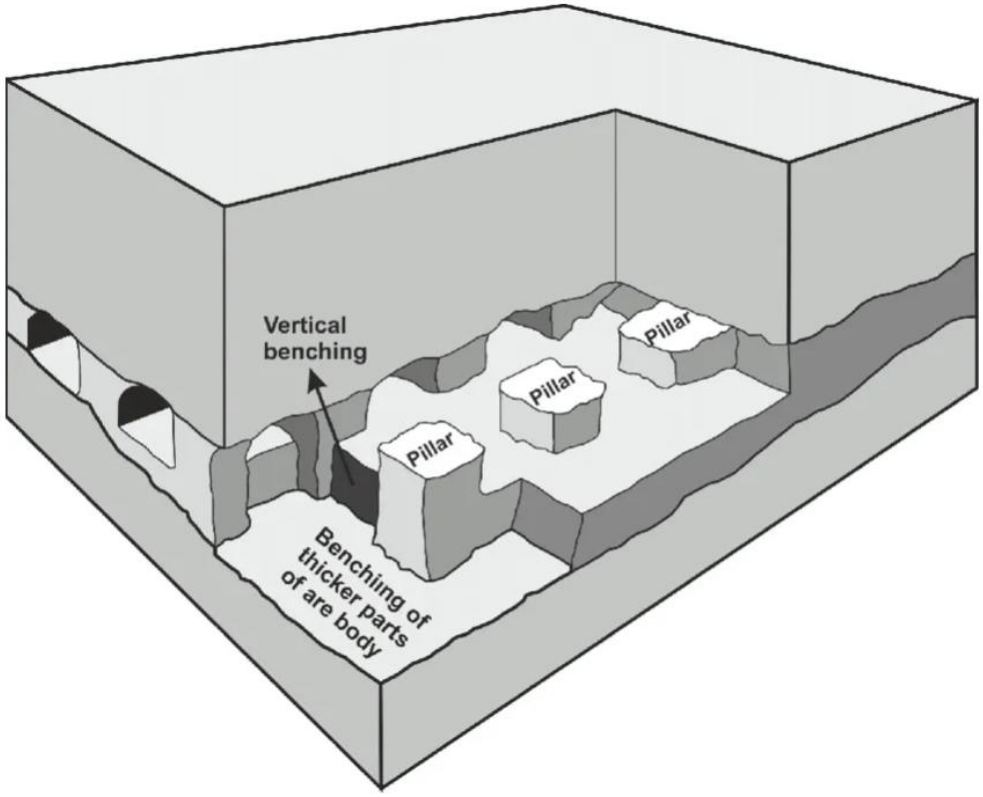

FIGURE 13: BORD AND PILLAR MINING METHOD

The standard pillar size will be approximately 5m x 4m, and bord lengths will be 10m x 10m with a height of 2.2m. Depending on ground conditions, bord lengths can be reduced to 8m or 6m. Refer to Figure 14.

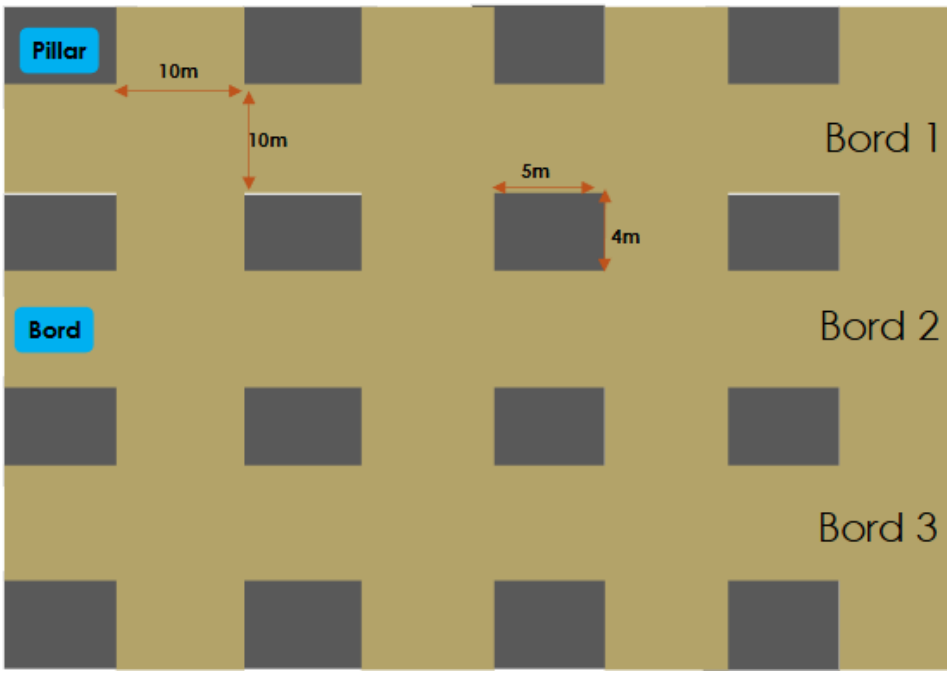

FIGURE 14: STANDARD BORD AND PILLAR SIZES

The Block D underground mining area will be accessed from both the Bathopele and K6 underground mining areas.

The Block D mining area will be accessed from the K6 underground mining horizon at a depth of more than 100m below surface. Mining will advance along the reef in a south-westerly direction, with extraction terminating at approximately 60m below surface. Refer to Figure 15.

The Block D mining area will also be accessed from the Bathopele underground mining horizon, at depths ranging from approximately 30m below surface, extending progressively deeper along the reef and terminating at approximately 100m below surface. Refer to Figure 15 highlighting the depth of mining at each respective mining horizon.

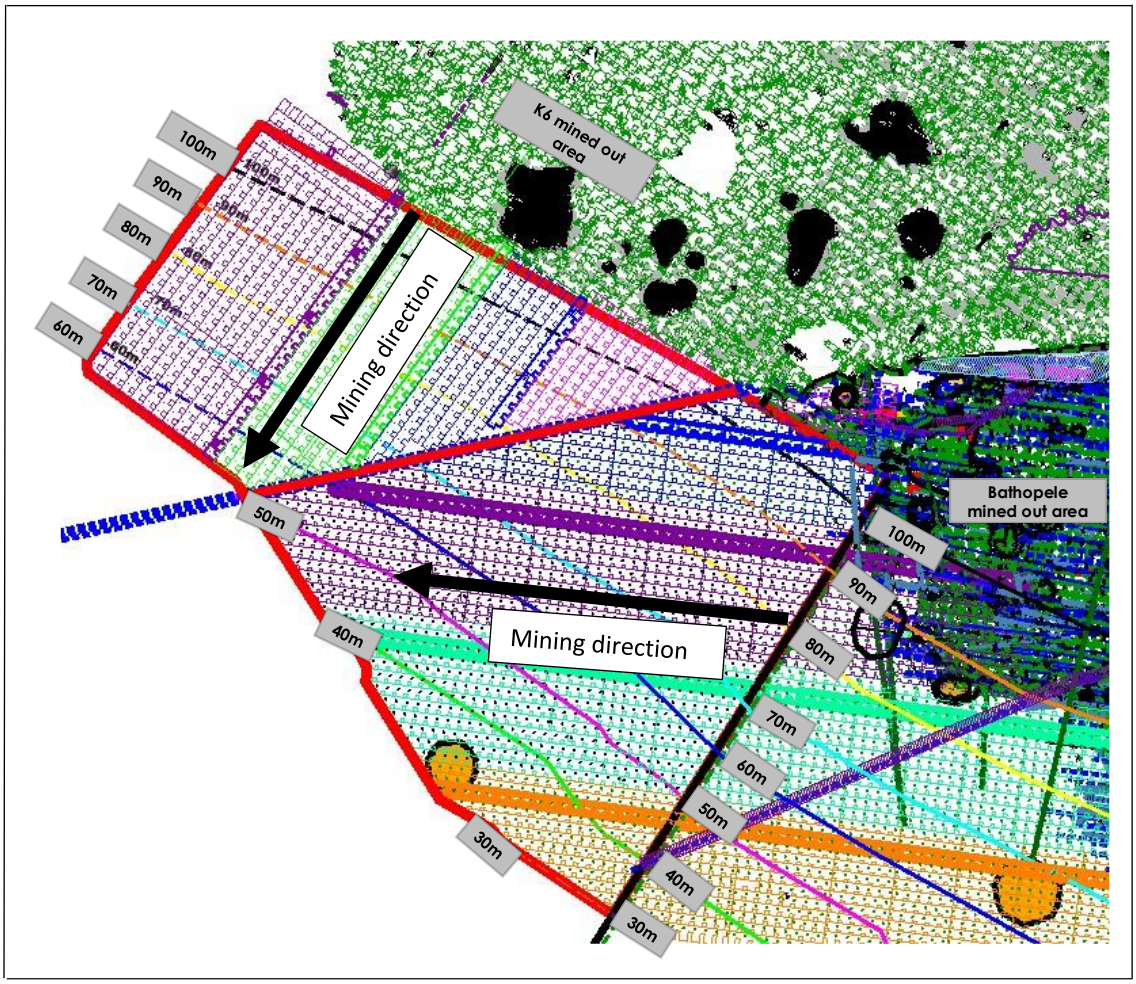

FIGURE 15: MINING DEPTHS FOR BLOCK D UNDERGROUND MINING AREA

2.4.4 Production Profile

The expected production profile for each shaft area is shown in Table 10.

TABLE 10: PRODUCTION PROFILE FOR THE PROPOSED BLOCK D UNDERGROUND MINING AREA

Tonnes hoisted	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Bathopele	136 999	310 823	283 974	400 595	389 891	143 516	5 624	1 671 422
K6	131 939	196 893	171 805	147 155	57 575			705 367
Combined	268 938	507 716	455 778	547 750	447 466	143 516	5 624	2 376 788

2.4.5 Backfilling[15]

To access the ore, waste rock must be removed. This waste rock will remain underground for use in backfilling processes, ultimately promoting stability. The mined ore will be transported above ground, via an existing underground conveyor system.

The waste rock generated during proposed mining of the Block D mineral deposit will consist of rock lumps greater 25cm. This material represents rejected waste rock that does not pass through the tip grizzly. The tonnage of waste rock generated is the product of the blasting design and tip grizzly apertures. Estimated tonnage of waste rock to be generated during the proposed life of mine of the Block D Underground Mining project is summarised in Table 11.

The oversized waste rock lumps from the tip grizzly will be loaded by the Load, Haul, Dump (LHD) and packed in designated scalping lines.

TABLE 11: VOLUME OF BACKFILLING WASTE ROCK GENERATE DURING SCALPING PROCESS

Waste rock (m^3)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Bathopele (Waste rock -m^3)	1 698	3 852	3 519	4 480	3 918	1 746	70	19 283
K6 (Waste rock -m^3)	880	1 446	1 420	638	17			4 401
Combined	2 578	5 298	4 939	5 118	3 935	1 746	70	23 684

[15] NEMA EIA Regulations: Listing Notice 1, Activity 34 – Backfilling of the proposed Block D Underground Mining area, NEM:WA Category A Activity 13 – use of waste rock in backfilling of excavated areas in the Block D underground mining area, NWA Section 21 (g) water use - Infilling of the Block D Underground workings with waste rock material for stabilisation of underground mining area

Legal Framework

3. LEGAL FRAMEWORK

3.1 The Constitution of the Republic of South Africa

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 projects 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 3).

3.2 The Minerals and Petroleum Resources Development Act (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.

3.2.1 Application for a Mining Right

Section 22 ("*Application for Mining Right")* of the MPRDA addresses mining rights. This section states:

22. *(1) Any person who wishes to apply to the Minister for a mining right must simultaneously apply for an environmental authorisation and must lodge the application –*

(a) At the office of the Regional Manager in whose region the land is situated.
(b) In a prescribed manner; and
(c) Together with the prescribed non-refundable application fee.

(2) The Regional Manager must, within 14 days of receipt of the application accept an application for a mining right if –

(a) The requirements contemplated in subsection (1) are met.
(b) No other person holds a prospecting right, mining right, mining permit or retention permit for the same mineral or land; and
(c) No prior application for a prospecting right, mining right or mining permit or retention permit, has been accepted for the same mineral and land and which remains to be granted or refused.

(3) if the application does not comply with the requirements of this section, the Regional Manager must notify the applicant in writing within 14 days of the receipt of the application.

(4) if the Regional Manager accepts the application, the Regional Manager must, within 14 days from the date of acceptance, notify the applicant in writing –

(d) To submit the relevant environmental reports, as required in terms of Chapter 5 of the National Environmental Management Act, 1998, within 180 days from the date of the notice.
(e) To consult in the prescribed manner with the landowner, lawful occupier and any interested and affected party and include the result of the consultation in the relevant environmental reports.

(5) The Regional Manager must, within 14 days of receipt of the environmental reports and results of the consultation contemplated in subsection (4) and section 40, forward the application to the Minister for Consideration.

SRPM holds an approved Mining Right with the DMRE (*now known as DMPR*) reference NW30/5/1/2/2/80MR, which is valid until 28 July 2040.

3.2.2 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.

SRPM will be submitting a Section 102 application to the DMPR for the amendment of Mining Right NW 30/5/1/2/2/80 MR to include the Block D mining area into the mining right. The Section 102 application will also include the amendment of the associated Mining Work Programme, to include the mine plan for the underground mining of Block D.

3.3 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.

3.3.1 Environmental Approvals

The following environmental approvals are in place for the existing operations:

- Consolidated Environmental Management Programme (NW30/5/1/2/2/82 MR) Rustenburg Platinum Mines Limited: Rustenburg Section Carved Out Operations EMPR, WSP/Parsons Brinckerhoff (2016)
    - Authorises the Bathopele Operations, Waterval Concentrator and Paardekraal TSF
- Consolidated Pooling and sharing Agreement Environmental Management Programme Report Mining Right Ref (NW30/5/1/2/2/80 MR), WSP/Parsons Brinckerhoff (2016)
    - Authorises the K6 Shaft and associated infrastructure
- Amendment and Consolidated Environmental Impact Assessment and Environmental management Programme for Kroondal Platinum Mines (NW 30/5/1/2/2/104 MR), SLR Consulting (2016)
    - Authorises the Kopaneng Shaft, K1 and K2 Concentrators, K1, K150 and K2 TSFs

3.3.2 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 ("S&EIA") 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 12 below records the listed activities triggered and applied for in support of this project.

TABLE 12: LISTED ACTIVITIES TRIGGERED BY THIS PROJECT (NEMA)

Applicable Listing Notice	Listed Activity	Listed Activity Description	Project Activity Description	Extent of Activity
Listing Notice 1 Activities (Government Notice R 983, as amended in 2017, 2018 and 2021)				
GNR 327 Listing Notice 1	Activity 21D	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.	Amendment of the Sibanye Rustenburg Platinum Mines Mining Right and Mining Works Programme to include Block D Underground Mining Area (NW30/5/1/2/3/2/1/80 MR)	~45 Ha
GNR 327 Listing Notice 1	Activity 34	The expansion of existing facilities or infrastructure for any process or activity where such expansion 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, effluent or pollution, excluding (i) where the facility, infrastructure, process or activity is included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (ii) the expansion of existing facilities or infrastructure for the treatment of effluent, wastewater, polluted water or sewage where the capacity will be increased by less than 15 000 cubic metres per day; or (iii) the expansion is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will be increased by 50 cubic metres or less per day.	Backfilling of the proposed Block D Underground Mining Area	~45 Ha

3.4 National Environmental Management: Waste Act (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 regulate 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.

Waste management activities triggered by the proposed project is detailed in Table 13.

TABLE 13: TRIGGERED ACTIVITIES FOR THE PROPOSED EXPANSION (NEM:WA)

Applicable Listing Notice	Listed Activity	Listed Activity Description	Project Activity Description	Extent of Activity
Listing Notice 1 Activities (Government Notice R 983, as amended in 2017, 2018 and 2021)				
GN921- 29 November 2013 (as amended)	Category A: Activity 13	The expansion of a waste management activity listed in Category A or B of this Schedule which does not trigger an additional waste management activity in terms of this Schedule.	Use of waste rock in backfilling of excavated areas in the Block D underground mining area	~45 Ha

Transitional Arrangements in terms of NEM:WA

The Bathopele Shaft Complex was approved in the Original RPM-RS EMPr in 1996 (RDNW(R) 6/2/2/35). The Bathopele Shaft Complex was therefore approved prior to the promulgation of the National Environmental Management: Waste Act in 2008, and as such no Waste Management Licence was required for the construction of the facility.

The K6 Shaft was approved in the 2010 K6 Shaft Project EMPR Amendment/Addendum which was approved prior to the promulgation of the NEM:WA List of Waste Management Activities that have, or are likely to have, a detrimental effect on environment (first published in 2013). As such, as such no Waste Management Licence was required for the construction and operation of the facility by SRPM at the time.

- GNR 921 Government Gazette No. 37083 (as amended)
    - *Section (7)(1) – "A person who lawfully conducts a waste management activity in this Schedule on the date of coming into effect of this Notice may continue with the waste management activity until such time that the Minister by notice in a Gazette calls upon such a person to apply for a waste management licence".*
        - The Bathopele Shaft Complex and K6 Shaft and associated mining did not require a Waste Management Licence as the facilities were approved prior to the promulgation of Government Notice 718, Government Gazette No. 32368 (Listed Waste Activities).

3.5 National Water Act (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 recordings as well as the effects to be achieved through management practices prior to discharge or disposal.

3.5.1 Approved Water Use License

There are five (5) existing Water Use Licences applicable to the proposed Block D Underground Mining Project, namely:

1. Licence Number 03/A22H/CI/3706, issued on 22 April 2016
    - Authorises a Section 21 (c) and (i) water use for Bathopele to mine within 100m of the Hex River
2. Licence Number 07/A21D/AIJGC/7026, issued on 16 January 2018
    - Authorises Section 21 (g) water uses in support of the Bathopele Operations, Waterval Concentrator and Paardekraal TSF
3. Licence Number 07/A21D/AIJGC/7026, issued on 26 June 2025
    - Authorises a Section 21 (a) water use for the abstraction of fissure water from the Bathopele Shaft
    - Authorises a Section 21 (g) water use for backfilling of waste rock at Bathopele Shaft
    - Authorises a Section 21 (j) water use for abstraction of fissure water from the Bathopele Shaft
4. Licence Number 03/A22H/CI/3706, issued on 22 April 2016 and amended on 17 June 2025
    - Authorises a Section 21 (a) water use for the abstraction of fissure water from the K6 Shaft
    - Authorises Section 21 (g) water uses for K6 Shaft
    - Authorises a Section 21 (j) water use for abstraction of fissure water from the K6 Shaft
5. Licence Number 07/A22H/CGIAJ/7827, issued on 24 May 2018
    - Authorises Section 21 (g) water uses associated with K1 and K2 Plants, K1, K150 and K2 TSFs

Authorised water uses associated with the Bathopele Shaft and Paardekraal TSF are shown in Table 14.

Authorised water uses associated with the K6 shaft are shown in Table 15.

Authorised water uses associated with K1 and K2 Plants, K1, K150 and K2 TSFs are shown in Table 16.

TABLE 14: APPROVED WATER USES ASSOCIATED WITH BATHOPELE SHAFT, WATERVAL CONCENTRATOR AND PAARDEKRAAL TSF

Licence Number	Water Use	Water Use Activities	Purpose	Property Description	Dimensions/capacity (m^3)/volume (m^3)	Coordinates
3706	Section 21 (c) and (i)	Mining of UG2 within 100m of the Hex River	To mine UG2 under the Hex River	Portion 3 and Remaining Extent of portion 2 of the farm Waterval 303 JQ	Depth= 550-580m	S 25°40'31.5" E 27°16'36.7"
7026 (2025)	Section 21 (a)	Combined abstraction of fissure water from Bathopele shaft	Shaft dewatering for safety of miners	Farm Waterval 303 JQ Portion 6 Turffontein 302 JQ Portion 0	450 000	S 25°41'17.22" E 27°18'15.66"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Excess Water Dam 1	-	Waterval 303 JQ Ptn 6	290	S 25°41'26.83" E 27°18' 26.14"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Excess Water Dam 2		Waterval 303 JQ Ptn 6	310	S 25°41'26.57" E 27°18'26.86"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Process Water Dam	-	Waterval 303 JQ Ptn 7	15 000	S 25°41' 26.08" E 27°18' 18.9"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Settling Dam 1	-	Waterval 303 JQ Ptn 6	280	S 25°41' 23.26" E 27°18' 27.78"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Settling Dam 2	-	Waterval 303 JQ Ptn 6	480	S 25° 41' 23.71" E 27° 8' 27.92"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) East Settling Dam 3	-	Waterval 303 JQ Ptn 6	650	S 25°41' 23.66" E 27° 18' 4.77"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central Settling Dam 1	-	Waterval 303 JQ Ptn 6	600	S 25° 41' 14.23" E 27° 18' 4.77"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central Settling Dam 2	-	Waterval 303 JQ Ptn 6	510	S 25° 41' 14.4" E 27° 18' 5.56"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central Settling Dam 3	-	Waterval 303 JQ Ptn 6	460	S 25° 41' 13.23" E 27° 18' 5.96"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central Settling Dam 4	-	Waterval 303 JQ Ptn 6	400	S 25°41' 13.83" E 27° 18' 5.93"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central Excess Water Dam 1	-	Waterval 303 JQ Ptn 6	290	S 25° 41' 15.06" E 27° 18' 5.35"
7026 (2018))	Section 21 (g)	Waterval (Bathopele) Central Excess Water Dam 2	-	Waterval 303 JQ Ptn 6	290	S 25° 41' 15.1" E 27° 18' 4.44"
7026 (2018)	Section 21 (g)	Waterval (Bathopele) Central process water dam	-	Waterval 303 JQ Ptn 7	20 000	S 25° 41' 18.5" E 27° 18' 2.3"
7026 (2018))	Section 21 (g)	UG2 Concentrator Pollution Control Dam		Waterval 303 JQ Ptn 14	9 300	S 25.675747 E 27.315650

Licence Number	Water Use	Water Use Activities	Purpose	Property Description	Dimensions/capacity (m^3)/volume (m^3)	Coordinates
7026 (2018)	Section 21 (g)	Waterval concentrator west pollution control dam		Waterval 303 JQ Ptn 14	18 200	S 25.675828 E 27.319950
7026 (2018)	Section 21 (g)	Waterval concentrator east pollution control dam		Waterval 303 JQ Ptn 14	19 800	S 25.676980 E 27.321303
7026 (2018)	Section 21 (g)	Paardekraal Phase 5 tailings dam	-	Klipgat 281 ptn 0	5 220 943 m^3/a Ht = 75 m 108 ha	S25.684220 E27.3177139
7026 (2018)	Section 21 (g)	Paardekraal Phase 1 return water dam	-	Paardekraal 279 JQ ptn 78, 120	1 868 494 m^3/a 705 300 m^3 18 ha	S25.631739 E27.321568
7026 (2018)	Section 21 (g)	Paardekraal Phase 1, 2, 3 tailings dam	-	Paardekraal 279 JQ ptn 27, 28, 144, 122	13 866 259 m^3/a Ht = 75 m 336 ha	S25.620706 E27.3000633
7026 (2018)	Section 21 (g)	Paardekraal Phase 4 tailing dam	-	Paardekraal 279 JQ ptn 28, 78, 114, 120, 122	8 229 013 m^3/a Ht: 41m 154 ha	S25.627294 E27.298132
7026 (2018)	Section 21 (g)	Paardekraal Phase 3 return water dam	-	Paardekraal 279 ptn 27	5 826 604 m^3/a 138 000 m^3 5.6 ha	S25.637862 E27.304787
7026 (2018)	Section 21 (g)	Paardekraal Phase 4 return water dam	-	Paardekraal 279 ptn 78, 120, 123, 124, 125	5 679 607 m^3/a 455 000 m^3 19.8 ha	S25.619957 E27.294272
7026 (2025)	Section 1 (g)	Bathopele- Backfilling with Waste Rock and DMS underground	Bathopele- concurrent backfilling during mining	Portion 6 of the Farm Waterval 303 JQ	1 803 m^3	S 25°41'16.71" E 27°18'16.43"
7026 (2025)	Section (j)	Abstraction of fissure water from Bathopele Shafts	Abstraction of fissure water from Bathopele Shafts	Farm Waterval 303 JQ Portion 6 Turffontein 302 JQ Portion 0	450 000	S 25°41'17.22" E 27°18'15.66"

TABLE 15: APPROVED WATER USES APPLICABLE TO K6 SHAFT

Water Use	Purpose	Property Description	Capacity/ Volume (m^3/a)	Co-ordinates
Section 21(a)	Taking water from underground, K6 Main Decline Shaft for use in mining processes	Town and Townlands 272 JQ	243 820 m^3/a	S 25°38'55.80" E 27°15'52.22"
Section 21(g)	Pollution Control Dam-Settling Ponds for the disposal of water containing waste from K6 Shaft	Town and Townlands 272 JQ	243 820 m^3	S 25°39'0.23" E 27°15'52.02"
Section 21(g)	Pollution Control Dam-Ericson Dak to contain wastewater from Setters	Town and Townlands 272 JQ	2 409 000 m^3	S 25°38'57.27" E 27°15'52.22"
Section 21(g)	Stockpiling of Waste Rock Dump on the surface at the K6 Shaft	Town and Townlands 272 JQ	4 164 m^3	S 25°39'1.29" E 27°15'55.12"
Section 21(g)	Dust suppression on roads with wastewater from Erikson Dam	Town and Townlands 272 JQ	13 140 m^3	S 25°38'44.62" E 27°15'55.71" S 25°38'54.71" E 27°15'45.36" S 25°39'12.23" E 27°15'55.58" S 25°38'59.03" E 27°16'7.37"
Section 21(g)	Pollution Control Dam-Stormwater Dam to contain dirty runoff	Town and Townlands 272 JQ	53 290 m^3	S 25°38'57.53" E 27°16'02.39"
Section 21(j)	Removing of water found underground at K6 Shaft Operations	Town and Townlands 272 JQ	243 820 m^3/a	S 25°38'55.80" E 27°15'52.22"

TABLE 16: APPROVED WATER USES APPLICABLE TO THE K1 AND K2 PLANTS, AND K1, K150 AND K2 TSFS

Licence Number	Water Use	Water Use Activity	Property Description	Volume (m^3)/capacity (m^3)	Coordinates
7827	Section 21 (g)	K1 Tailings Dam	Kroondal 304 JQ Ptn 168, 169, 171	1 200 000 m^3/a 7 950 000 m^3	S25°42'46.71" E27°19'47.24"
7827	Section 21 (g)	K1 Return Water Dam (TSF)	Kroondal 304 JQ Ptn 161	87 500	S25°42'32.61" E27°19'27.08"
7827	Section 21 (g)	K2 Tailings Dam	Kroondal 304 JQ Ptn 241	1 560 000m^3/a 14 400 000m^3	S25°43'01.48" E27°21'38.88"
7827	Section 21 (g)	K2 Return Water Dam (TSF)	Kroondal 304 JQ Ptn 241	97 250	S25°42'45.18" E27°21'09.88"
7827	Section 21 (g)	K150 Tailings Dam	Kroondal 304 JQ Ptn 241	1 200 000 m^3/a	S25°42'58.84" E27°20'58.40"
7827	Section 21 (g)	K150 Return Water Dam (TSF)	Kroondal 304 JQ Ptn 241	50 000	S25°42'46.61" E27°21'03.58"
7827	Section 21 (g)	K1 Process Water Pond (K1 Plant)	Kroondal 304 JQ Ptn 173, 174	7 000	S25°42'55.11" E27°20'16.29"
7827	Section 21 (g)	K1 Plant Pollution Control Dam (Klein Kariba) (K1 Plant)	Kroondal 304 JQ Ptn 173	5 100	S25°42'48.34" E27°20'17.87"
7827	Section 21 (g)	K2 Process Dam (K2 Plant)	Kroondal 304 JQ Ptn 242	7 000	S25°42'37.31" E27°21'47.85"
7827	Section 21 (g)	K2 Kariba Dam (plant pollution control dam) (K2 Plant)	Kroondal 304 JQ Ptn 242	16 800	S25°42'29.77" E27°21'50.70"

3.5.2 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. The applicable water uses to the project is indicated in bold.

- **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 authorised under a tiered authorisation system as a General Authorisation ("GA") in terms of the General Authorisation Regulations as published under section 39 of the NWA or as a Water Use Licence ("WUL"), as provided for in terms of section 21 of the NWA.

The authorisation 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 authorisation 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.

Table 17 provides a description of the water uses required in support of this project.

TABLE 17:TRIGGERED ACTIVITIES IN TERMS OF THE NWA

Nr	Water use(s) activities	Purpose	Capacity/ Volume (m^3, tonnes and/or m^3/annum)/ dimension	Property Description	Co-ordinates
Section 21 (a)					
A1	Abstraction of fissure water from the K6 Underground workings (including Block D)	Fissure water abstracted from the K6 Underground Workings for re-use in underground mining and process	~1 285 m^3/day ~469 025 m^3/annum	Portion 0 of Town and Townlands of Rustenburg 272 JQ	25°38'55.80''S 27°15'52.22''E
A2	Abstraction of fissure water from the Bathopele Mine Underground workings (including Block D)	Fissure water abstracted from the Bathopele Underground Workings for re-use in underground mining and process	~2 413 m^3/day ~880 670 m^3/annum	Waterval 303 JQ Portion 6	25°41'17.22''S 27°18'15.66''E
Section 21 (c) & (i)					
C1	Undertaking of underground mining activities underneath a delineated unchanneled valley bottom wetland, as well as within 500m of a delineated unchanneled valley bottom wetland	Underground mining of Block D	Length: ~180m Width: ~120m	Portion 1 of Town and Townlands of Rustenburg 272 JQ	Start: 25°39'50.74"S 27°16'3.43"E End: 25°39'49.32"S 27°16'9.17"E
Section 21 (g)					
G1	Infilling of the Block D Underground workings with waste rock material	Infilling of the Block D Underground workings with waste rock material for stabilisation of underground mining area	23 684 m^3 (total volume) ~ 3 384 m^3/annum	Portion 1 and 145 of Town and Townlands of Rustenburg 272 JQ	A: 25°39'45.98"S 27°15'46.77"E B: 25°39'38.37"S 27°15'56.77"E C: 25°39'58.26"S

Nr	Water use(s) activities	Purpose	Capacity/ Volume (m^3, tonnes and/or m^3/annum)/ dimension	Property Description	Co-ordinates
					27°16'19.33"E D: 25°40'12.22"S 27°16'2.76"E
Section 21 (j)					
J1	Abstraction of fissure water from the K6 Underground workings (including Block D)	Fissure water abstracted from the K6 Underground Workings for safety of miners and for re-use in underground mining and process	~1 285 m^3/day ~469 025 m^3/annum	Portion 0 of Town and Townlands of Rustenburg 272 JQ	25°38'55.80''S 27°15'52.22''E
J2	Abstraction of fissure water from the Bathopele Mine Underground workings (including Block D)	Fissure water abstracted from the Bathopele Underground Workings for safety of miners and for re-use in underground mining and process	~2 413 m^3/day ~880 670 m^3/annum	Waterval 303 JQ Portion 6	25°41'17.22''S 27°18'15.66''E

3.5.3 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.

Table 18 records the anticipated GN704 exemptions required and to be applied for in terms of the NWA to support the proposed expansion. This application (GN704 Exemption Motivation in terms of NWA) will run in parallel with the Basic Assessment and WULA Process.

TABLE 18: GN704 REQUIREMENTS

GN704	Condition	Applicability to the Proposed Project
4b	No person in control of a mine or activity may- 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 metres from any watercourse or estuary, whichever is the greatest.	Underground mining activities underneath a delineated wetland and within 100m from delineated wetland
4c	No person in control of a mine or activity may- place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast excavation, prospecting diggings, pit or any other excavation	Use of waste rock material for infilling of the underground workings

3.6 National Heritage Resources Act (Act 25 of 1999) ("NHRA")

The objective of the NHRA is to introduce an integrated system for the management of national heritage resources. The identification, evaluation and assessment of any cultural heritage site, artefact or find in South Africa is required by this Act. Section 38 of this Act pertains to Heritage resources management and Section 38(1) states the following:

Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

- *(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- *(b) the construction of a bridge or similar structure exceeding 50 m in length;*
- *(c) any development or other activity which will change the character of a site—*
  - *(i) exceeding 5 000 m^2 in extent; or*
  - *(ii) involving three or more existing erven or subdivisions thereof; or*
  - *(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

(8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent

A Heritage Compliance Statement has been undertaken in line with the requirements set forth in Section 38 (8) of the NHRA. The South African Heritage Resource Agency ("SAHRA") will be informed of the proposed project, and the Draft BAR was provided to SAHRA for comment.

3.7 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 ("NEM:AQA") (Act 39 of 2004) as amended.
- Spatial Planning and Land Use Management Act, 2013 ("SPLUMA") (Act No 16 of 2013)
- Rustenburg Local Municipality By-Laws
- Bojanala Platinum District Municipality By-Laws

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

Needs and Desirability

4. NEEDS AND DESIRABILITY

4.1 Project Need

The current Bathopele and K6 Operations have an expected Life of Mine until 2028.Given the limited lifespan of the operations, it can be anticipated that both operations are facing a production decline. The current outputs driven by the operations are no longer sustainable, thus risking the livelihoods of employees of the Bathopele Mine and K6 Shaft.

Through the expansion of the Mining Right NW 30/5/1/2/2/80 MR, both Operations can extend the LoM by an additional seven years. The approval of this Mining Right Expansion will allow for job security of existing staff members employed by the Bathopele and K6 Operations and promote economic development within the region and the organisation (SRPM).

4.2 Project Desirability

According to Mining Weekly (2025), the South African Mining Industry contributed 6% of the country's total nominal Gross Domestic Product (GDP) during the first three quarters of 2024. This statistic highlights the integral role of the mining sector in the contribution of the National GDP. It is important to highlight that the mining sector does not only boost the National GDP through direct revenue development, but also through job creation and parallel industrial participation (e.g., beneficiation, transportation and retail of minerals).

South Africa mines a variety of minerals including gold, diamonds, coal, iron ore and platinum. The North West Province, particularly, contributes to 40% of the world's platinum. The North West Development Corporation (NWDC) indicated that PGMs are the major product of the mining sector within the province and further highlighted that mining contributes to approximately 14% of the province's formal employment.

The insights gained from the NWDC highlights that the North West Province, in particular- Rustenburg, holds much of South Africa's PGM resources. Further, these resources are responsible for a significant proportion of formal employment within the province- driving economic development within the region. Although the economic and social benefits of this project are clear, there are associated environmental impacts with underground mining. It should be noted that these impacts may be managed under the implementation of the appropriate mitigation measures.

Approving the proposed amendment of the existing Mining Right importantly allows for localised job security, within the Bathopele and K6 Operations, but further encourages economic development within the mining industry (and industries in association with the mining industry) and on a national level. Additional ounces of PGMs extracted enhances other mining opportunities such as smelting; refining; minerals processing; mining equipment manufacturing; contract mining services; equipment supply and recovering chemicals from waste products. The proposed project, therefore, has several economic and social benefits associated with its implementation.

Project Alternatives

5. PROJECT ALTERNATIVES

In terms of the EIA Regulations published in Government Notice ("GN") R982 of 2014, as amended, feasible and reasonable alternatives must be identified and considered within the environmental assessment process. According to the above-mentioned Regulations, an alternative is defined as "in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

- property on which or location where it is proposed to undertake the activity;
- type of activity to be undertaken
- design or layout of the activity;
- technology to be used in the activity;
- operational aspects of the activity; and
- includes the option of not implementing the activity."

In terms of Section 24 of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the EA process. It is important to highlight that alternatives must be practical, feasible, reasonable and viable to cater for an unbiased approach to the project and in turn to ensure environmental protection.

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. In all cases, the no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes) or both is appropriate needs to be informed by the specific circumstance of the activity and its environment.

Alternatives, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity. Generally, several alternative aspects are considered when planning a project. Table 19 indicates alternatives aspects that could be considered, and reasons for considering those or not as part of this assessment. These alternatives considered are explained in more detail below.

TABLE 19: ALTERNATIVE ASPECTS CONSIDERED

Alternative aspects	Reason for consideration or not
Property/location	The location for the proposed mining of Block D is determined by the existing presence of mineral deposits. Further, Block D is an expansion of an existing Mining Right Area (MR80). In alignment with the expansion, no new infrastructure will be required as the operations will use existing infrastructure and access from the Bathopele Mine and K6 Shaft. No property/location alternatives were considered for the following reasons: • The presence of the mineral deposit • The opportunity to expand existing underground mining operations; • The availability of existing surface infrastructure for mineral processing
Type of activity	Mineral extraction may either be undertaken via underground mining or opencast mining. Opencast mining is a surface mining technique which extracts rock and minerals from a large open pit. Block D is located within close proximity to developed residential and industrial regions. The potential disturbance that would be caused to nearby residents and industries, makes open cast mining an unviable option and therefore, no additional alternatives to the type of activity are considered.

Alternative aspects	Reason for consideration or not
	In addition, the proposed Block D underground mining project intends to expand on existing underground mining operations from both K6 and Bathopele shaft areas, and therefore opencast mining methods have not been considered.
Design or layout	Similarly to the location of Block D, the design/ layout of the project is determined by the accessibility of minerals and availability of existing infrastructure. Given that Block D aims to extract minerals using existing infrastructure, no design or layout alternatives were considered.
Technology	The project entails underground mining of Block D using existing infrastructure; therefore, technological alternatives are not considered.
Operational aspects	Bathopele Mine employs mining methods of Bord and Pillar- in the low-profile equipment suites- and Breast Mining- in the extra-low-profile equipment suites. Block D will follow existing mining methods (Bord and Pillar). No alternatives were considered given that existing infrastructure (and therefore procedure) will be used.
No-go alternative	The no-go alternative was considered. Further are provided in Section 5.1

5.1 Operational Aspect

Alternative waste management strategies were considered for the management of waste rock material. Refer to Table 20.

TABLE 20: ASSESSMENT OF ALTERNATIVE WASTE MANAGEMENT STRATEGIES FOR THE WASTE ROCK

Alternative	Advantages	Disadvantages
Backfilling of waste rock material in underground workings **(Preferred alternative)**	• Promotes stability in the mined out underground areas • Sustainable return of the rock to its origin • Reduces the volume of waste rock material of surface waste rock dumps	• Increased costing if not planned for in the mining method • Waste rock material may result in increased groundwater pollution (however, this is not expected for the Block D project, please refer to Section 8.4.2)
Disposal of waste rock material on surface waste rock dumps	• A well-established and proven solution for the disposal of waste rock material • Waste rock dumps have designs in place for dirty water containment	• Visual intrusion due to the height of the Waste Rock Dumps • Surface disturbance depending on the ground level footprint • Potential impact on the ambient air quality • Final disposal is least desirable • End use rehabilitation including the shaping and vegetation of the side slopes • Possible leachate formation, which could impact the water resources

5.2 No-go Alternative

The benefits of approving this project are summarised below,

- Approval of this project allows for an additional seven years on the expected Life of Mine. This means that existing employees have job security for a further seven years, enabling individuals to support their families and positively contribute to the growth of the local economy.

- Further, in approving this application, there will be an increase in the amount of minerals extracted. These minerals are crucial to the economic and social development of the North West Province and South Africa as a whole.
- The minerals extracted from these operations (if approved) will support parallel industries, such as mineral beneficiation, transport and retail.

It is evident that the approved project will have social benefits for employees of the K6 Shaft and Bathopele Mine, but also promote economic development on a local, provincial and national level. Without the approval of this project, these benefits will not be realised. Furthermore, not approving this project increases the risk of job insecurity within the Rustenburg area and discourages economic development.

Public Participation Process

6. PUBLIC PARTICIPATION PROCESS

6.1 Objectives of the public participation process

The NEMA (1998) EIA Regulations, 2014, as amended, prescribe that the Basic Assessment process must include the undertaking of public participation in accordance with the Chapter 6 of the Regulations. The purpose of the Public Participation Process (PPP/P3) is to provide all potential and / or registered Interested and Affected Parties (I&APs), including the competent authority and any other stakeholder or organ of state, an opportunity to become involved in the Basic Assessment process and provide comments during the various phases of the project. Involvement by I&APs is critical, as it contributes to a better understanding of the proposed project among I&APs, raises important issues that need to be assessed and provides local insight that will enhance the Basic Assessment process. This Section of the report provides details on the PPP followed during the environmental authorisation process for the proposed project.

6.2 Summary of the public participation process followed

Table 21 describes the Public Participation Process (PPP) followed. These engagements are applicable to the both the Environmental Authorisation and Water Use Licence Application processes and supporting documentation are available in Appendix B of this Basic Assessment Report.

TABLE 21: PUBLIC PARTICIPATION PROCESS FOLLOWED

Activity	Description
Pre-Application phase	
Identification of stakeholders	During the pre-application phase of the project, the following key stakeholders were identified, • Bojanala Platinum District Municipality • Rustenburg Local Municipality • Department of Mineral and Petroleum Resources • North West Department of Economic Development, Environment, Conservation and Tourism • Department of Water and Sanitation • Department of Rural and Land Reform • North West Department of Agriculture and Rural Development • Provincial Heritage Resources Agency- North West • South African Heritage Resources Agency • Department of Public Works • Department of Public Works and Roads • Roads Department- Rustenburg Municipality • The South African National Roads Agency SOC Ltd (SANRAL) • Adjacent Landowners • Landowners • Adjacent businesses Refer to **Appendix B1** for the stakeholder database**.**
Pre-Application meeting	Pre-application meetings were undertaken with the following stakeholders: • Department of Mineral and Petroleum Resources (DMPR) (competent authority) on 29 October 2025;

Activity	Description
	• Department of Water and Sanitation (DWS) (competent authority) on 15 January 2026 • Ward Councillors on 20 January 2026 • Block D Committee on 05 February 2026 During the pre-application meetings the proposed project was presented and the stakeholders were provided with an opportunity to raise any concerns, comments and queries. Minutes of the Pre-Application meetings can be found in **Appendix B2**.
Site notices	Site notices, providing information on the proposed project, were placed on site and within areas near the proposed site. Information such as the applicant, project description, authorisations required, availability of the Background Information Document (BID) and the opportunity to register as an I&AP was provided in English and Setswana Site Notices. These posters were placed on the 12th of November 2025. Refer to **Appendix B3** for a copy of the site notice and proof of site notices placed.
Background Information Document	A Background Information Document's (BID) was compiled and distributed electronically via email to the competent authority, commenting authorities, landowners, adjacent landowners and all identified stakeholders. BIDs were shared with neighbouring landowners and businesses through a "Knock and Dop" process on 12 November 2025. Refer to **Appendix B4** for a copy of the BID and **Appendix B5** for proof of distribution of the BIDs.
Notification Letter 1	A notification letter was distributed to inform stakeholders of the availability of the Draft BAR for public comment, as well an invitation to the public meeting on 12 March 2026. A copy of the notification letter is available in **Appendix B6**. Proof of distribution is available in **Appendix B7**.
Basic Assessment Phase	
Newspaper Advertisement 1	A newspaper advertisement was placed in the in the Rustenburg Herald newspaper on the 06 March 2026 announcing the availability of the Draft BAR for public comment, as well as an invitation to the public meeting on 12 March 2026. The advertisement is provided in **Appendix B8**.
Availability of the Draft BAR 1	The Draft BAR was made available for public comment for a period of 30 days from 06 March to 14 April 2026. The availability of the report for comment was advertised in the Rustenburg Herald on 06 March 2026. The report was made available at the following public places: • Eastend Community Library • Rustenburg Local Library • Bathopele Operations Security Office • K6 Operations Security Office • Alta van Dyk Environmental Consultants Office The Draft BAR was also available electronically on the AvDE website: https://www.altavandykenvironmental.co.za/public-documents/ In addition, the Draft BAR was available on the data free app ULWAZI: http://ulwazi.datafree.co/za
Public Meeting 1	A public meeting was held on Thursday 12 March 2026 at Sibanye-Stillwaters' Recreation Centre in Rustenburg. The purpose of the meeting will be to provide stakeholders with a description of the proposed project, feedback on the findings of the specialist studies, potential impacts identified as well as proposed mitigation measures to manage the potential impacts identified. It was also provide stakeholders the opportunity to comment on the proposed project.

Activity	Description
	Approximately three quarters into this public meeting, the attendees indicated that they did not want to continue with the meeting, and requested that a public meeting be held within their community in the Eastend residential area in Rustenburg. Minutes of the public meeting are included in **Appendix B9**.
Focus Group Meetings	After the public meeting, two virtual Focus Group meetings were held with the Block D Committee and the Ward 18 Committee, on 13 April 2026 and 16 April 2026 respectively. The purpose of these meetings was to provide the various committees with feedback regarding comments raised about Sibanye-Stillwater's existing operations. Minutes of these meetings are included in **Appendix B10**.
Public Meeting 2	Due to numerous requests received from the Ward Councillor of Ward 18 and the Block D Committee, an additional Public Meeting was held for the Block D Underground Mining Project. This meeting was held, as per the request of the community, at the David Brink Primary School on Saturday 30 March 2026. The purpose of the meeting was to provide stakeholders with a description of the proposed project, feedback on the findings of the specialist studies, potential impacts identified as well as proposed mitigation measures to manage the potential impacts identified. It was also to provide stakeholders the opportunity to comment on the proposed project. The minutes of the second public meeting are included in **Appendix B11**.
Availability of the Draft BAR 1	After the public meeting on 30 May 2026, the Draft BAR was made available for public comment for an additional 30 days, from 01 June to 01 July 2026. The availability of the report for comment was advertised in the Rustenburg Herald on 21 May 2026. The report was made available at the following public places: • Eastend Community Library • Rustenburg Local Library • Bathopele Operations Security Office • K6 Operations Security Office • Alta van Dyk Environmental Consultants Office The Draft BAR was also available electronically on the AVDE website: https://www.altavandykenvironmental.co.za/public-documents/ In addition, the Draft BAR was available on the data free app ULWAZI: http://ulwazi.datafree.co/za
Notification letter 2	A notification letter was distributed to stakeholders to invite them to the public meeting on 30 May 2026, and to inform stakeholders of the availability of the Draft BAR for public comment for an additional 30 days. The notification letter was distributed to stakeholders on 15 May 2026. A copy of the notification letter is available in **Appendix B12**. Proof of distribution is available in **Appendix B13**.
Advertisement 2	A newspaper advertisement was placed in the in the Rustenburg Herald newspaper on 21 May 2026 inviting members of the public to the public meeting on 30 May 2026 and to announce the availability of the Draft BAR for public comment for an additional 30 days, from 01 June to 01 July 2026.ement is provided in **Appendix B14**.
SMS Notification	Stakeholders were invited to the public meeting on 30 May 2026 by means of SMS. Refer to **Appendix B15** for the SMS and proof of notifications sent.
Final Basic Assessment Report	The DBAR was updated to the Final BAR (this report) and is submitted to the DMPR for final decision making. The FBAR contains the updated CRR which includes and address all comments obtained from stakeholders during the pre-application, announcement and Draft BAR comment periods.

Activity	Description
Decision making phase	
Notification letter	Once a decision regarding the environmental authorisation has been received from DMPR, all registered stakeholders will be informed with a notification letter via email and SMS. The notification letter will provide details on the appeal process and the associated timeframes, should thy wish to appeal the decision.

6.3 Comments received by stakeholders

All comments received from stakeholders are included in the Comment and Response Report, included as **Appendix B16** of this report. Communication with stakeholders and comments received are available in **Appendix B17**.

6.4 Legal Requirements for Public Participation

Table 22 provides a review of the legal requirements for public participation in terms of the NEMA EIA Regulations.

TABLE 22: LEGAL REQUIREMENTS FOR PUBLIC PARTICIPATION

NEMA Regulation	Public Participation Regulation	Process followed
39 (1)	If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.	The proponent is not the land owner; all land owners were informed of the proposed project via email notifications. Refer to **Appendix B5**.
40(1)	The public participation process to which the- (a) basic assessment report and EMPr, and the closure plan in the case of a closure activity, submitted in terms of regulation 19; and (b) scoping report submitted in terms of regulation 21, the environmental impact assessment report, EMPr, and the closure plan in the case of a closure activity, submitted in terms of regulation 23; was subjected to must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and the closure plan in the case of a closure activity, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times.	The Draft BAR was available for public comment for a period of 30 days from 06 March to 14 April 2026.
40(2)	The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with- (a) the competent authority;	The following state departments have been informed of the proposed project and will be provided with an opportunity to comment on the Draft BAR: • Department of Mineral and Petroleum Resources

NEMA Regulation	Public Participation Regulation	Process followed
	(b) every State department that administers a law relating to a matter affecting the environment relevant to an application for an environmental authorisation; (c) all organs of state which have jurisdiction in respect of the activity to which the application relates; and (d) all potential, or, where relevant, registered interested and affected parties.	• Department of Water and Sanitation • South African Heritage Resources Agency • The South African National Roads Agency SOC Ltd (SANRAL) • Department of Public Works and Roads • Department of Rural Development and Land Reform • North West Department of Economic Development, Environment, Conservation and Tourism • North West Department of Agriculture and Rural Development • North West Provincial Heritage Resources Agency Refer to **Appendix B5** for emails sent.
40(3)	Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but must be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority	The Draft BAR was available for public comment for a period of 30 days from 06 March to 14 April 2026.
41(2)	The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by- (a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of— (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;	A2 notice boards were placed at the proposed project site as part of the project announcement. Refer to **Appendix B3** for proof of site notices placed.
41(2)	giving writing notice, in any of the manners provided for in Section 47D of the Act, to-	
	the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to	A Background Information Document's (BID) was compiled and distributed electronically via email to the

NEMA Regulation	Public Participation Regulation	Process followed
	be undertaken and to any alternative site where the activity is to be undertaken;	competent authority, commenting authorities, adjacent landowners, landowners and all identified stakeholders. Hard copies of BIDs were provided to landowners and businesses within proximity to the proposed project. Refer to **Appendix B4** for a copy of the BID and **Appendix B5** for proof of distribution
	owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;	
	the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;	A BID was emailed to Cllr Nortje (Ward 18) and Cllr Mosito (Ward 39) Refer to **Appendix B5** for emails sent.
	the municipality which has jurisdiction in the area;	A BID was emailed to the following departments within the local municipality: • Development and Planning • Planning and Human Settlement • Public Safety • Roads Management • Traffic Department Refer to **Appendix B5.**
	any organ of state having jurisdiction in respect of any aspect of the activity	BIDs were distributed to the following authorities: • Department of Mineral and Petroleum Resources • Department of Water and Sanitation Refer to **Appendix B5.** The Draft Basic Assessment Report was uploaded on the South African Heritage Resources Agency (SAHRA) website.
	any other party as required by the competent authority;	None required to date
41(2)	placing an advertisement in- one local newspaper; or any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	A newspaper advertisement was placed in the Rustenburg Herald newspaper on 05 March 2026 announcing the availability of the Draft BAR for public comment (06 March – 08 April 2026. The advertisement is provided in **Appendix B8**. An additional newspaper advertisement was placed in

NEMA Regulation	Public Participation Regulation	Process followed
		the Rustenburg Herald newspaper on 21 May 2026 inviting members of the public to the public meeting and announcing the availability of the Draft BAR for an additional 30 days for public comment (01 June – 01 July 2026). Refer to **Appendix B14**.
41(2)	(b) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and	Not applicable. The activity does not have an impact that extends beyond the boundaries of the metropolitan.
41(2)	(c) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to- (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	None required to date.
41(3)	A notice, notice board or advertisement referred to in subregulation (2) must- (a) give details of the application or proposed application which is subjected to public participation; and (b) state- (i) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.	A2 notice boards were placed at the proposed project site as part of the project announcement. Refer to **Appendix B3** proof of site notices placed.
41(4)	A notice board referred to in subregulation (2) must- (a) be of a size of at least 60 cm by 42 cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.	

Environmental Status Quo (Baseline)

7. ENVIRONMENTAL STATUS QUO (BASELINE)

7.1 Topography

The North West province has a mean elevation of 1 263m with a minimum elevation of 904m and maximum of 1 817m. The general topography of the region may be described as relatively a relatively flat to gently undulating landscape, with scattered regions of hills or mountains. Within the province, there are 446 named mountains with the main mountain range being the Magaliesberg Range. There are three major drainage systems associated with the North West- the Molopo catchment, Vaal catchment and the Limpopo catchment (Desmet, et al., 2024).

Rustenburg Town, situated in the North West, is situated at the foot of the Magaliesberg mountain range. The town has an altitude range from 1028masl to 1756masl and an average elevation of 1,217m. The Kgaswane Mountain Nature Reserve runs South of the town. Hydrological features present in the town includes the perennial Rustenburg Dorpspruit River, which originates in the Magalies Mountains and forms part of the Hex River Catchment. Refer to Figure 16 below for an outline of the topography of the study area.

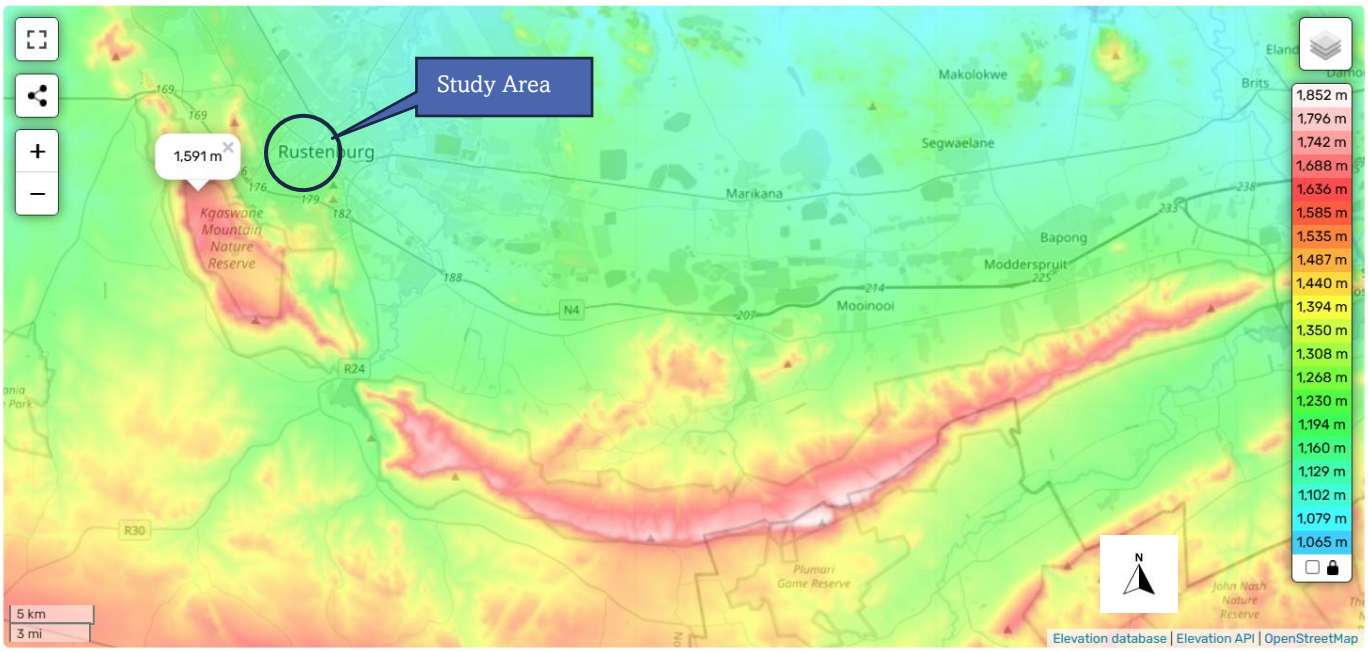

FIGURE 16: TOPOGRAPHICAL OVERVIEW OF THE STUDY AREA

7.2 Climate

7.2.1 Temperature

During the Summer Months (December to February), temperatures in Rustenburg are on average 29°C (maximum) and 18°C (minimum). In the winter months (June to August), the town experiences an average maximum of 21°C and minimum average of 6°C. Refer to Figure 17, below, on the town's temperature details throughout the year.

7.2.2 Precipitation

Rustenburg town is characterised by summer rainfall patterns. Highest amounts of precipitation are received in December with an average volume of 112mm. This is followed by January, receiving 97mm, and February receiving 90mm of precipitation. In the Winter months (June to August) precipitation levels occur under 10mm. To be specific, in the month of July, 3mm of precipitation is received- this is the lowest expected volume in the year. Refer to Figure 17, below, on the town's precipitation details throughout the year.

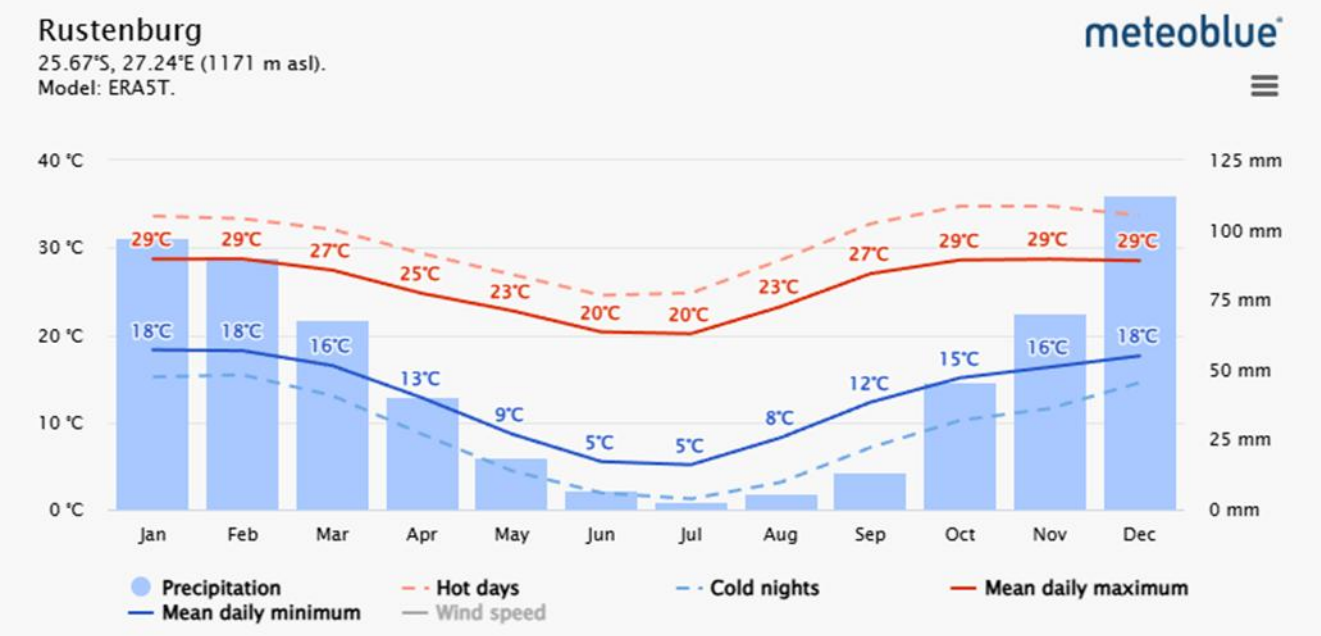

FIGURE 17: AVERAGE TEMPERATURE AND PRECIPITATION FOR RUSTENBURG (METEOBLUE, 2025)

7.2.3 Wind direction

The annual prevailing wind direction changes throughout the year. With the most often wind direction occurring from the east-north-easterly direction, the north-westerly and the south-south-easterly directions. Figure 18 below depicts the annual wind rose for the Rustenburg region. The compass-like configuration of the wind rose shows the direction the wind is blowing from, not towards. The colour of each spoke indicates the range of wind speeds for that direction. The legend at the bottom of the wind rose explains the colour scheme.

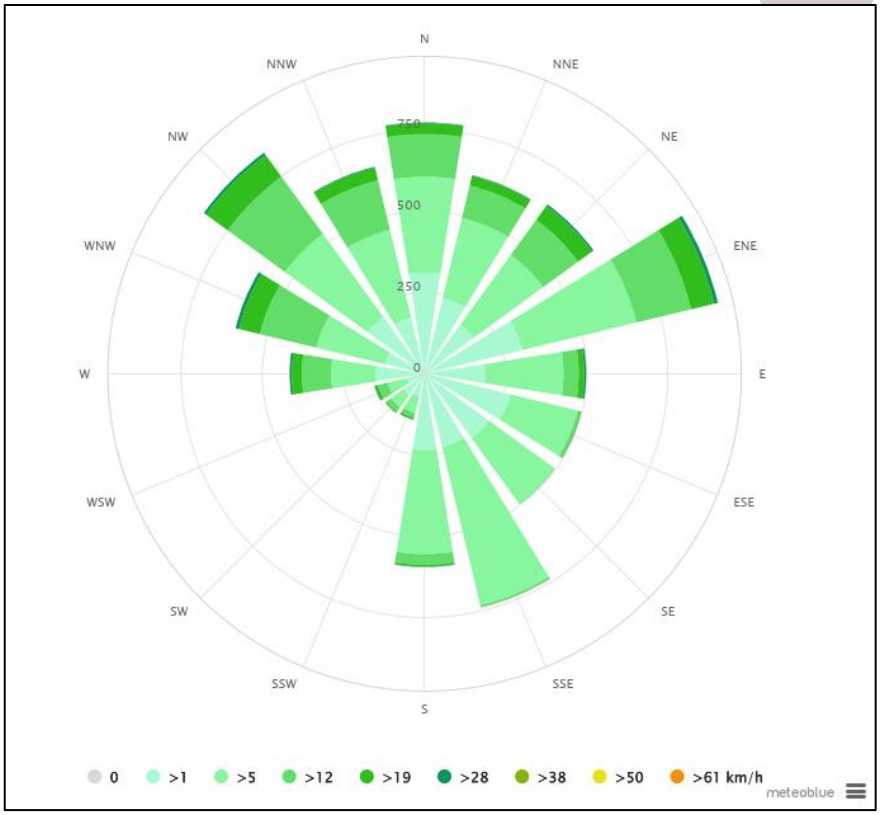

FIGURE 18: ANNUAL WIND ROSE FOR RUSTENBURG AREA (METAOBLUE, 2024)

7.3 Geology

Note: Information for this section was obtained from MvB Consulting's Hydrogeology Report (2026). Refer to **Appendix C1** for the full report.

The geology of the region is dominated by the layered rocks of the Bushveld Igneous Complex (BIC) (Refer to Figure 19) The BIC intruded concordantly into the volcano sedimentary Pretoria Group strata of the Transvaal Supergroup about 2 060 million years ago. The Magaliesberg formation (upper Pretoria Group) is the floor to the BIC in the region.

The Bushveld Igneous Complex (BIC) extends approximately 350km east–west and covers about 66 000km², with the Rustenburg area underlain by the ultramafic to mafic Rustenburg Layered Suite. This suite comprises, from bottom to top, the Marginal Zone, Lower Zone, Critical Zone, Main Zone and Upper Zone, with the Critical Zone containing the economically important Merensky Reef and UG2 chromitite reefs that host platinum group metals (Refer to Figure 20). The Critical Zone is subdivided into lower, middle and upper groups containing a total of thirteen major chromitite seams, of which the UG2 chromitite in the upper Critical Zone is the primary mining target. In the study area, the Merensky and UG2 reefs strike northwest–southeast and dip approximately 10°–14° to the northeast, with Merensky Reef mining having commenced about 95 years ago from surface and progressively extending to depths exceeding 1 200m below surface, while opencast and underground mining of the UG2 Reef, located 100–140m below the Merensky Reef, began around 15 years ago and is accessed mainly via vertical and decline shafts linked to existing Merensky operations.

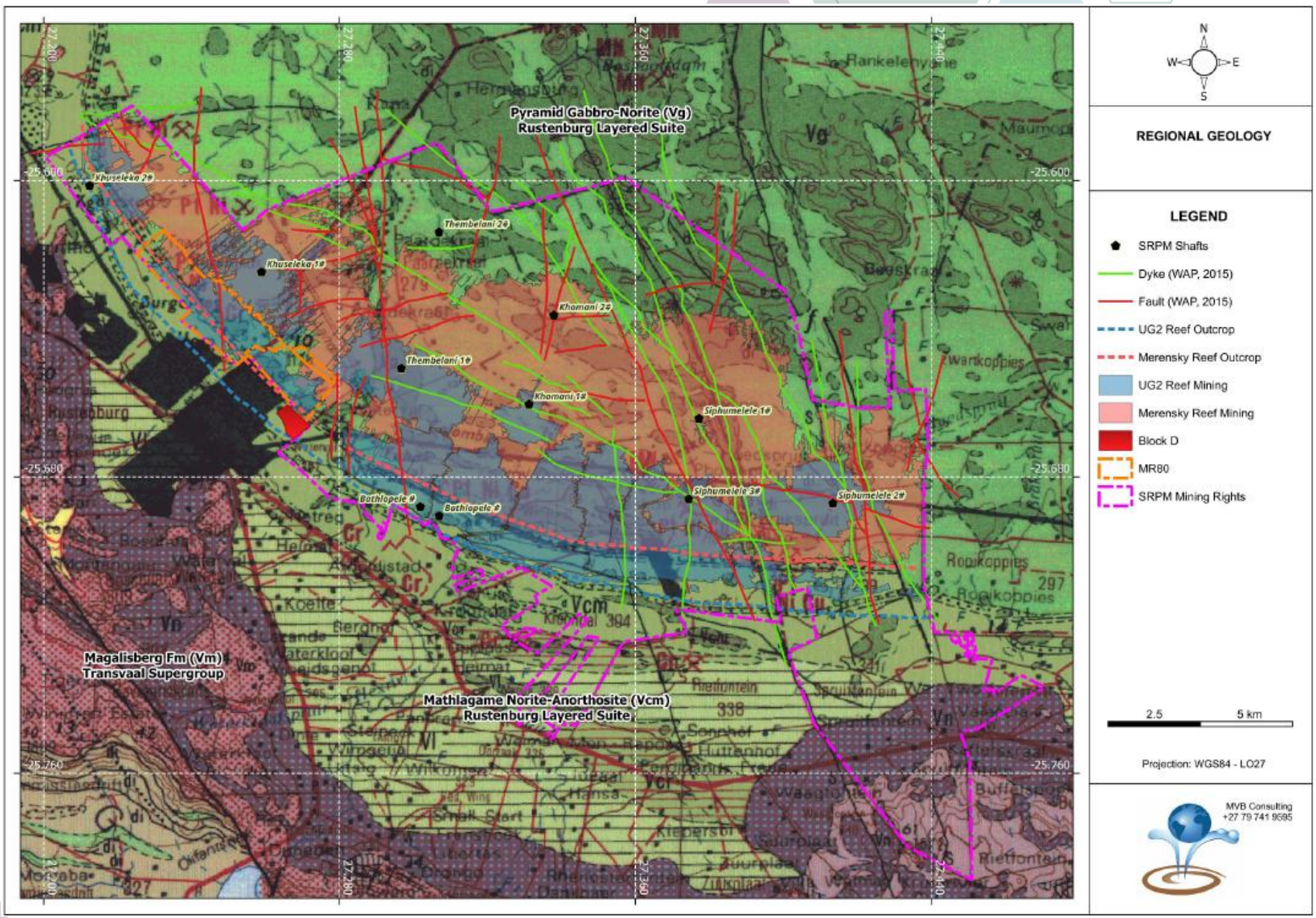

FIGURE 19: REGIONAL SURFACE GEOLOGY (MVB CONSULTING, 2026)

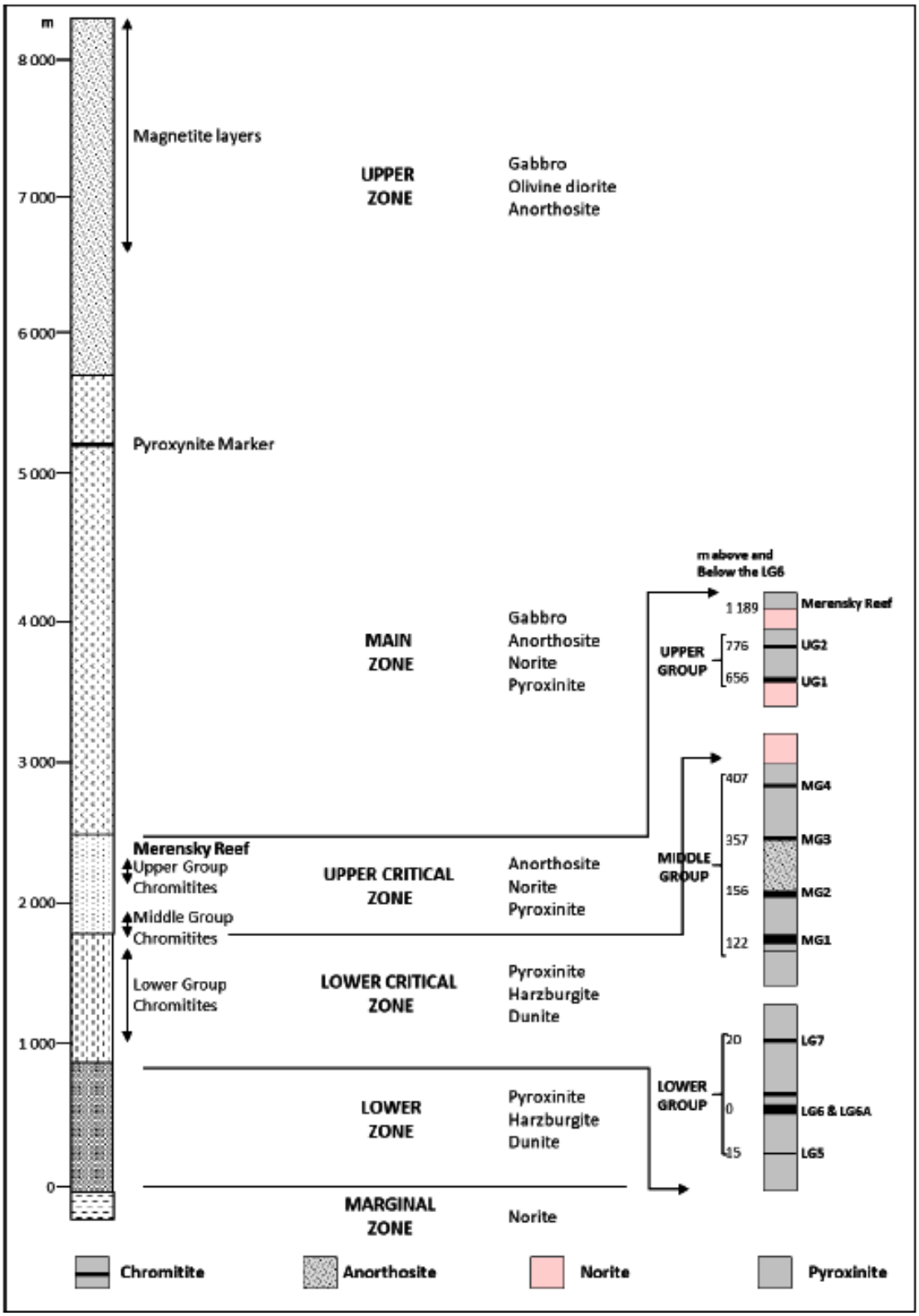

FIGURE 20: GENERALISED STRATIGRAPHIC COLUMN OF THE RUSTENBURG LAYERED SUITE OF THE BUSHVELD COMPLEX (VILJOEN AND SCHURMANN, 1998)

7.4 Soils

Note: Information for this section was obtained from The Biodiversity Company's Hydropedology Report (2025). Refer to **Appendix C3** for the full report.

7.4.1 Land types

According to the land type database (Land Type Survey Staff, 1972 - 2006), the transects relevant to the Block D project are located in the Bc 8 and Ea 3 land types.

The Bc 8 land types are commonly characterised with the Hutton, Dundee, and Mispah soil forms with rocky areas as well as other soils also occurring in the terrain according to the Soil Classification Working Group, (2018). The Bc land types are commonly dominated by plinthic catena, usually duplex and margalitic soils are rare in the upper terrain. These soils have a dystrophic and mesotrophic base status. Red soils are not widespread in the landscape. The relevant land types of terrain units for the Bc 8 3 land types are presented in Figure 21.

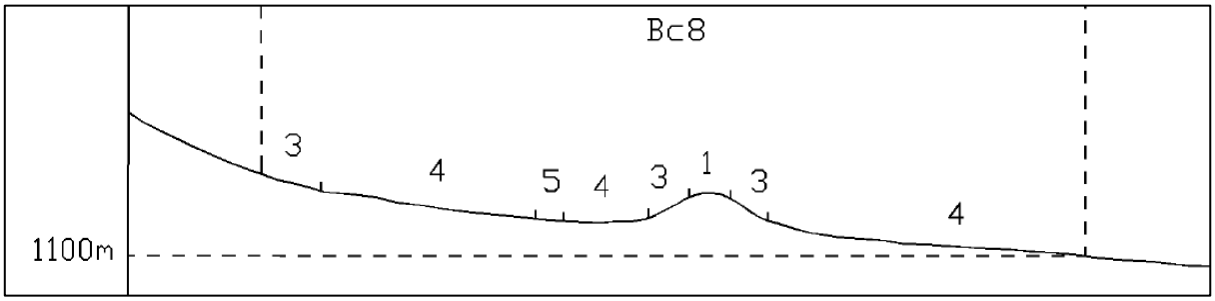

FIGURE 21: ILLUSTRATION OF LAND TYPE BC 8 TERRAIN UNITES (LAND TYPE SURVEY STAFF, 1972 – 2006 (TBC1, 2026)

The Ea 3 land types are characterised with Arcadia and Oakleaf soil forms and rocky areas including the occurrence of other associated soils occurring in the landscape. The Ea land types have vertic, melanic and red structured diagnostic horizons usually undifferentiated. The relevant land types of terrain units for the Ea 3 land types are presented in Figure 22.

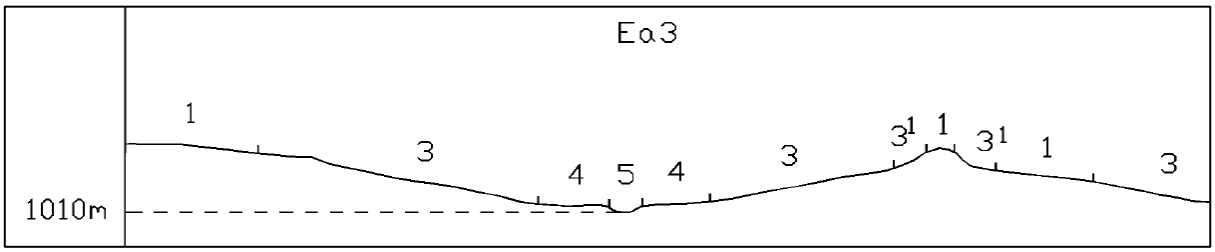

FIGURE 22: ILLUSTRATION OF LAND TYPE EA 3 TERRAIN UNITS (LAND TYPE SURVEY STAFF, 1972 - 2006) (TBC1, 2026)

TABLE 23: SOILS EXPECTED AT THE RESPECTIVE TERRAIN UNITS WITHIN THE BC 8 LAND TYPE (LAND TYPE SURVEY STAFF, 1972 – 2006) (TBC1, 2026)

Terrain Units							
1 (2%)		**3 (8%)**		**4 (85%)**		**5(5%)**	
Bare Rocks	50%	Mispah	50%	Hutton	40%	Dundee	60%
Mispah	50%	Bare Rocks	44%	Mispah	17%	Mispah	10%

Terrain Units							
1 (2%)		**3 (8%)**		**4 (85%)**		**5(5%)**	
		Hutton	6%	Avalon	18%	Kroonstad	10%
				Clovelly	8%	Arcadia	10%
				Bare Rocks	6%	Shortlands	6%
				Shortlands	6%	Bare Rocks	4%
				Kroonstad	5%		
				Arcadia	1%		

TABLE 24: SOILS EXPECTED AT THE RESPECTIVE TERRAIN UNITS WITHIN THE EA 3 LAND TYPE (LAND TYPE SURVEY STAFF, 1972 – 2006) (TBC1, 2026)

Terrain Units											
1 (30%)		**1 (1) (0.5%)**		**3 (44.5%)**		**3 (1) (5%)**		**4 (15%)**		**5 (9%)**	
Arcadia	70%	Bare Rock	80%	Arcadia	76%	Bare Rocks	70%	Arcadia	89%	Oakleaf	67%
Bare Rock	14%	Mispah	20%	Bare Rocks	10%	Mispah	30%	Hutton	3%	Arcadia	22%
Mispah	9%			Mispah	6%			Shortlands	3%	Shortlands	6%
Hutton	4%			Hutton	4%			Swartland	3%	Hutton	5%
Shortlands	3%			Shortland	3%			Bare Rocks	2%		
				Swartland	1%						

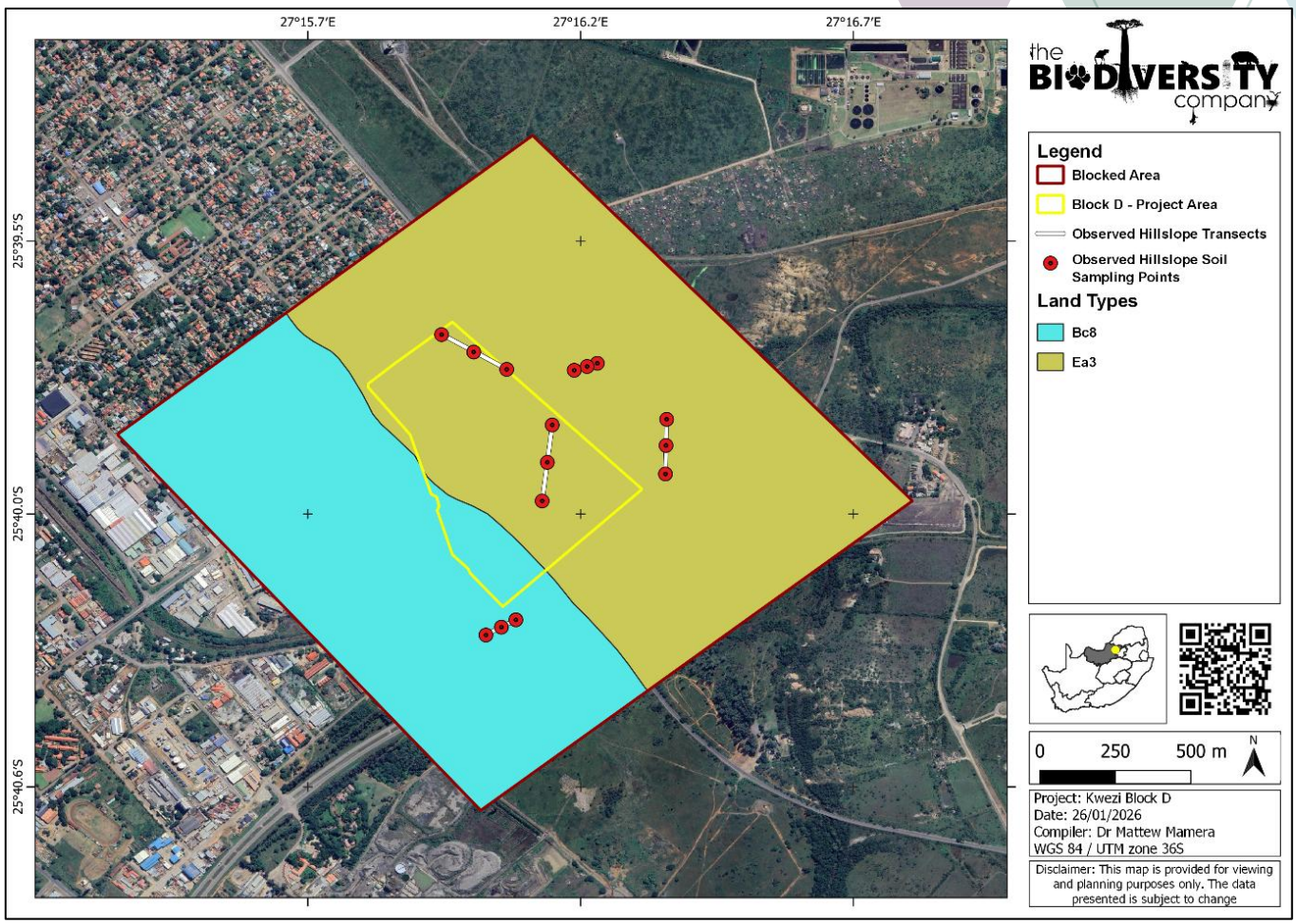

FIGURE 23: LAND TYPES PRESENT WITHIN THE BLOCK D MINING AREA PROJECT`S SURROUNDINGS (TBC, 2026)

7.4.2 Identified soil forms

The following soil forms were identified on-site whilst surveying the relevant transects:

- Tukulu (Orthic topsoil on top of a neocutanic horizon, with a gleyic horizon);
- Arcadia (Vertic topsoil on top of a lithic horizon);
- Rustenburg (Vertic topsoil on top of a hard rock layer);
- Rensburg (Vertic topsoil on top of a Gley horizon);
- Mispah (Orthic topsoil on top of a Hardrock layer); and
- Witbank (Transported technosols or material from mining activities).

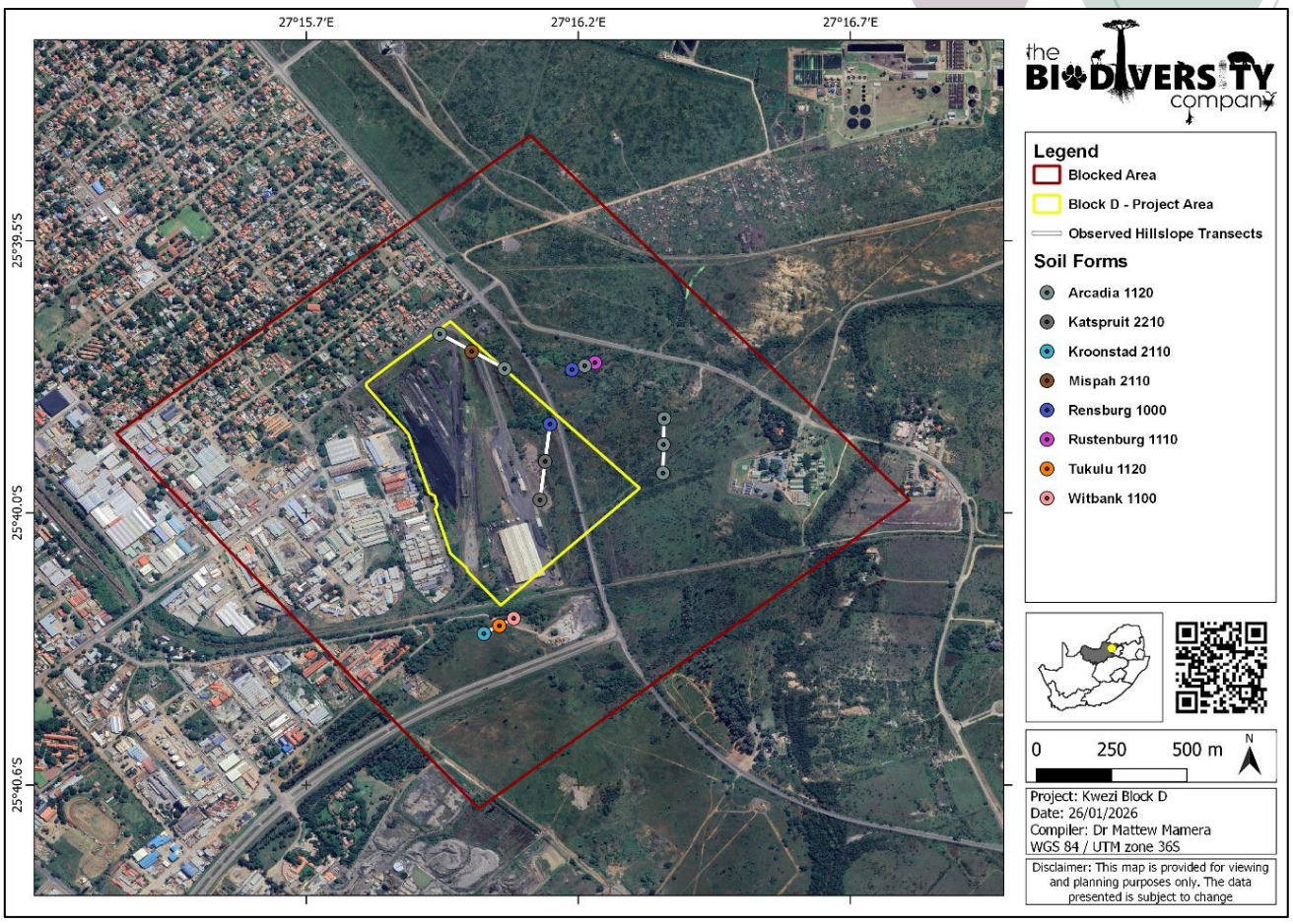

FIGURE 24: SOILS FORMS AND THE RESPECTIVE

7.5 Terrestrial Biodiversity

7.5.1 Vegetation

The proposed Block D underground mining area is associated with the Marikana Thornveld Vegetation Type and Moot Plains Bushveld Vegetation Type. Figure 25 illustrates the vegetation of the proposed project area.

Marikana Thornveld

The MT consists of open *Vachellia karroo* woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are denser along drainage lines, on termitaria and rocky outcrops or in other habitats protected from fire. Marikana Thornveld occurs on plains from the Rustenburg area in the west, through Marikana and Brits to the Pretoria area in the East.

Only approximately 1% of this vegetation type is formally protected within statutory conservation areas (Magaliesberg Nature Area, falling well short of the 19% conservation target. Additional partial protection exists in informal reserves, but the total protected extent remains below the national target (Magaliesberg Nature Area, De Onderstepoort Nature Reserve (Mucina & Rutherford, 2006). Transformation of this vegetation type was estimated at 48% in 2006, mainly cultivated and urban or built-up areas.

Moot Plains Bushveld

The main belt of the Moot Plains Bushveld extends from the Selons River Valley south of the Magaliesberg, through Maanhaarrand and the valley bottom of the Magalies River, east of the Hartebeestpoort Dam between the Magaliesberg and Daspoort mountain ranges and to Pretoria (Mucina & Rutherford, 2006). It is characterised by low-lying savanna dominated by Vachellia sp. occurring on the bottomlands and plains, or woodlands on the lower hillsides vary in height 27 Vegetation Compliance Statement Waterval Proposed Opencast Mining Development and density (Mucina & Rutherford, 2006). Grasses dominate the herbaceous layer (Mucina & Rutherford, 2006).

According to Mucina and Rutherford (2006), this vegetation type is classified as Vulnerable, with its national conservation target being 19%. About 28% has been transformed by cultivation as well as urban and built-up areas (Mucina & Rutherford, 2006).

7.5.2 North West Biodiversity Sector Plan

Figure 26 shows the proposed Block D underground mining project in terms of the North West Biodiversity Sector Plan. The proposed Block D underground mining project is not located within a Critical Biodiversity or an Ecological Support Area.

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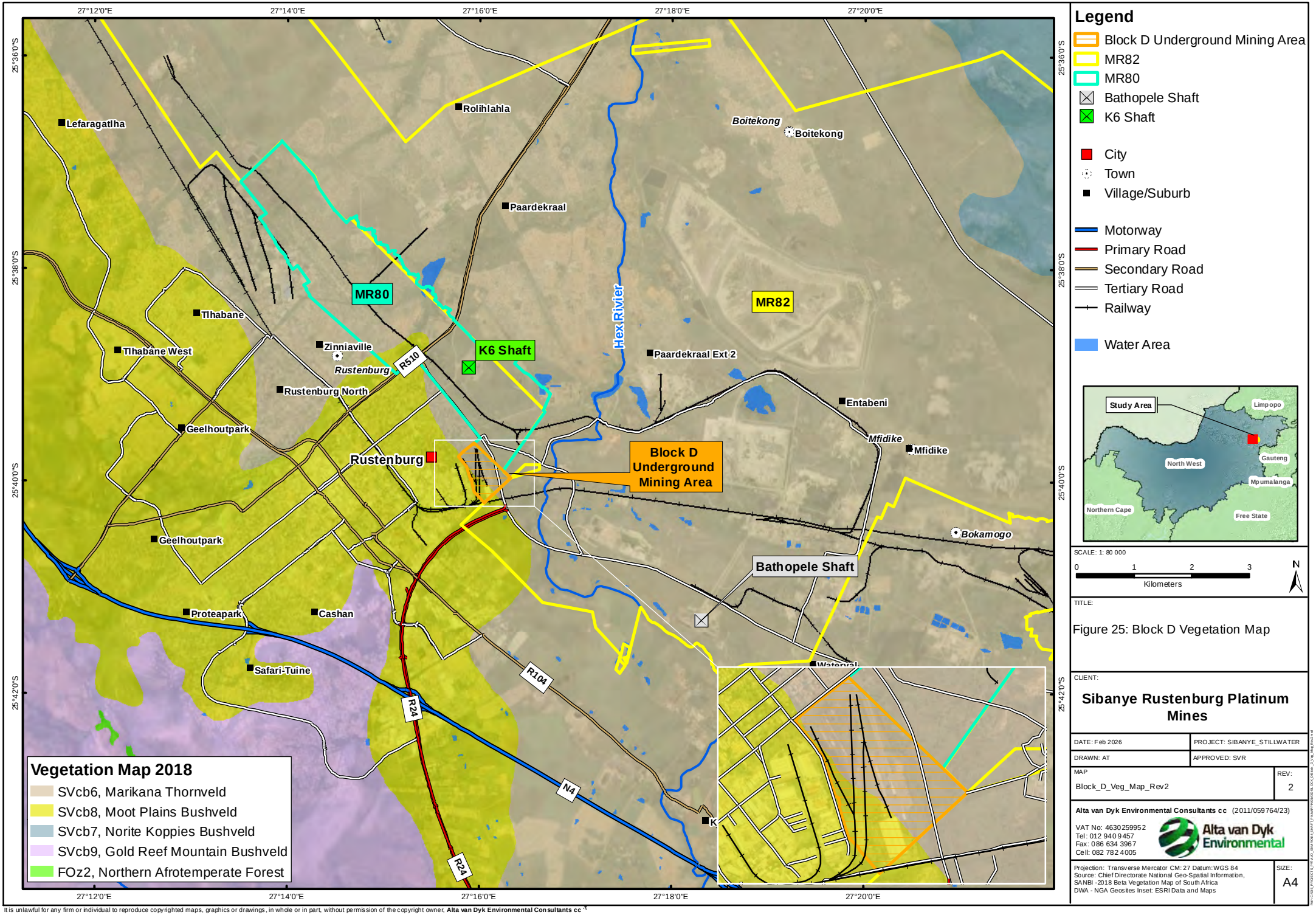


TITLE:

Figure 25: Block D Vegetation Map

CLIENT:

Sibanye Rustenburg Platinum Mines

DATE: Feb 2026	PROJECT: SIBANYE_STILLWATER
DRAWN: AT	APPROVED: SVR
MAP: Block_D_Veg_Map_Rev2	REV: 2

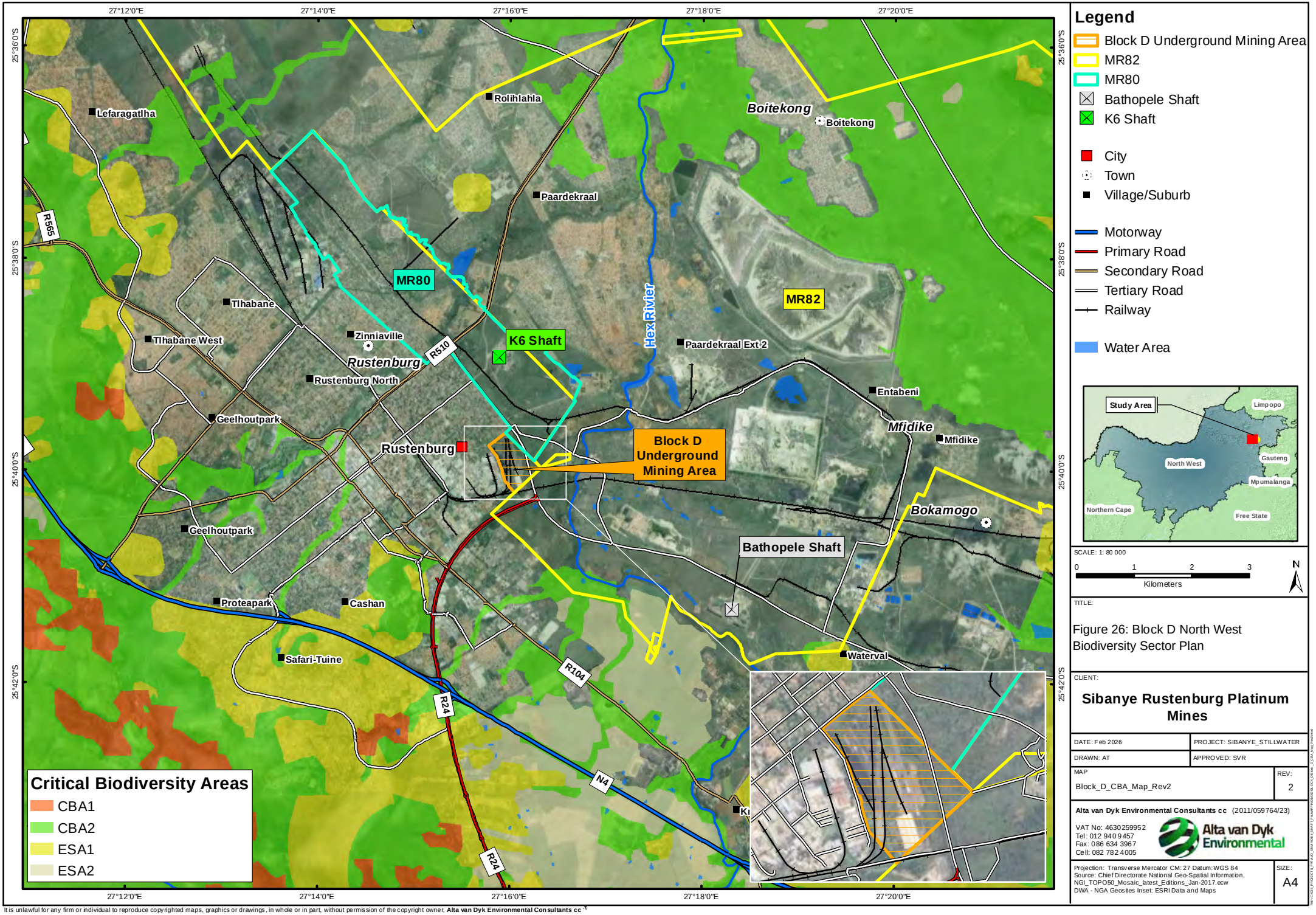
Alta van Dyk Environmental Consultants cc (2011/059764/23)

VAT No: 4630259952
Tel: 012 940 9457
Fax: 086 634 3967
Cell: 082 782 4005

Alta van Dyk Environmental

Projection: Transverse Mercator CM: 27 Datum: WGS 84
Source: Chief Directorate National Geo-Spatial Information, SANBI -2018 Beta Vegetation Map of South Africa
DWA - NGA Geosites Inset: ESRI Data and Maps

SIZE: A4



Legend

- Block D Underground Mining Area
- MR82
- MR80
- Bathopele Shaft
- K6 Shaft
- City
- Town
- Village/Suburb
- Motorway
- Primary Road
- Secondary Road
- Tertiary Road
- Railway
- Water Area

SCALE: 1: 80 000

0 1 2 3
Kilometers

N

TITLE:

Figure 26: Block D North West Biodiversity Sector Plan

CLIENT:

Sibanye Rustenburg Platinum Mines

DATE: Feb 2026	PROJECT: SIBANYE_STILLWATER
DRAWN: AT	APPROVED: SVR
MAP: Block_D_CBA_Map_Rev2	REV: 2

Alta van Dyk Environmental Consultants cc (2011/059764/23)

VAT No: 4630259952
Tel: 012 940 9457
Fax: 086 634 3967
Cell: 082 782 4005

Alta van Dyk Environmental

Projection: Transverse Mercator CM: 27 Datum: WGS 84
Source: Chief Directorate National Geo-Spatial Information, NGI_TOPO50_Mosaic_latest_Editions_Jan-2017.ecw
DWA - NGA Geosites Inset: ESRI Data and Maps

SIZE: A4

7.6 Surface Water

The regional drainage in the proposed Block D underground mining area is from south to north. The Block D underground mining area is situated in quaternary catchment A22H (Hex), within the Crocodile West and Marico Water Management Area. The Hex River is the main regional arterial drainage for the greater Rustenburg area and traverses the mine property, flowing in a northerly direction.

Natural runoff generated drains into the Hex River upstream of Bospoort Dam via several small ephemeral streams. One of these streams originates just north of Block D and drains the study area. Refer to Figure 27.

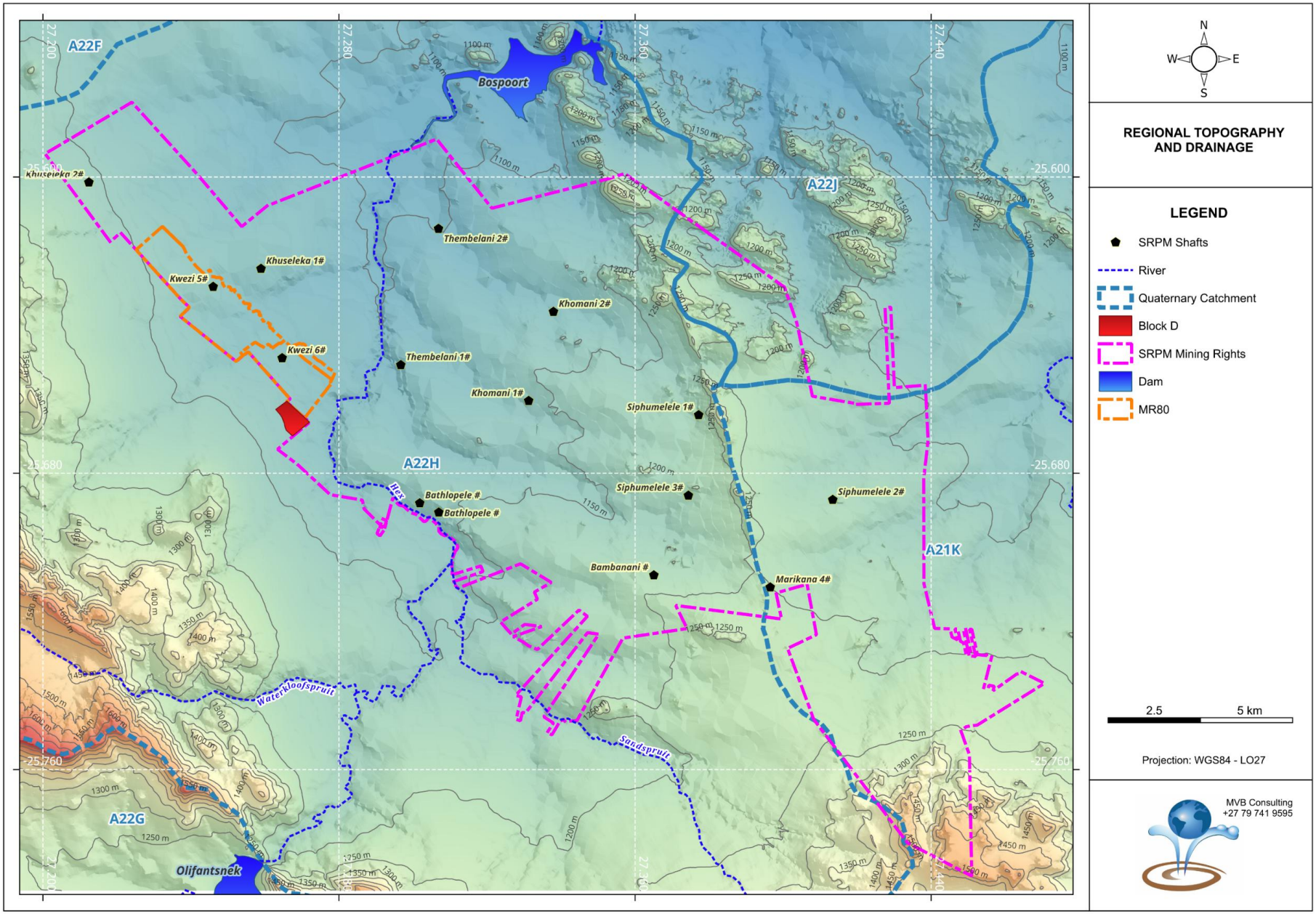


FIGURE 27: REGIONAL TOPOGRAPHY AND DRAINAGE (MVB CONSULTING, 2026)

7.7 Freshwater and Wetlands

Note: Information for this section was obtained from The Biodiversity Company's Freshwater Assessment (2025). Refer to **Appendix C2** for the full report.

7.7.1 Wetland and watercourse delineation

Freshwater features within a 500 m area around the proposed Block D Underground mining area were delineated. This area is referred to as the Project Area of Influence (PAOI)

One Hydrogeomorphic (HGM) type was identified within the PAOI, namely two unchanneled valley-bottoms (Figure 28). Additionally, non-perennial drainage features classified as 'A' Section channels that convey surface runoff immediately after a storm event and is not associated with a baseflow (DWAF, 2005) were identified. Several other artificial features were identified within the study area identified to be a dam and other areas which are prone to wetness characteristics from stormwater management and other anthropogenic influences relating to artificial water input. The artificial areas do contain wetland vegetation and due to the spatial proximity and linkage (direct and indirect) with the natural wetlands, they deliver supplementary surface flows to these systems especially during periods of exceptional flow.

The ongoing disturbance has increased the extent of wetness for both the artificial and natural systems, as confirmed by field delineation when compared to previous delineations available delineations and wetness signatures observed on available historical imagery.

A summary of the natural wetland area and percentage cover of wetlands within the study area is provided in Table 25. The area of the PAOI is approximately 262.42 ha, whereas the area of the Assessment Area is approximately 44.77 ha (Block D Underground mining area).

TABLE 25: SUMMARY OF NATURAL WETLAND AREAS WITHIN THE STUDY AREA FOR BLOCK D (TBC2, 2026)

HGM Unit - ID	Area within PAOI (ha)	Area as a percentage of PAOI (%)	Area within Assessment Area (ha)	Area as a percentage of Assessment Area (%)
HGM 1	8.51	3.24	0.95	2.12
HGM 2	5.11	1.95	-	-
Total (Natural)	13.62	5.37	0.95	2.12
Artificial	14.65	34.21	4.88	10.91

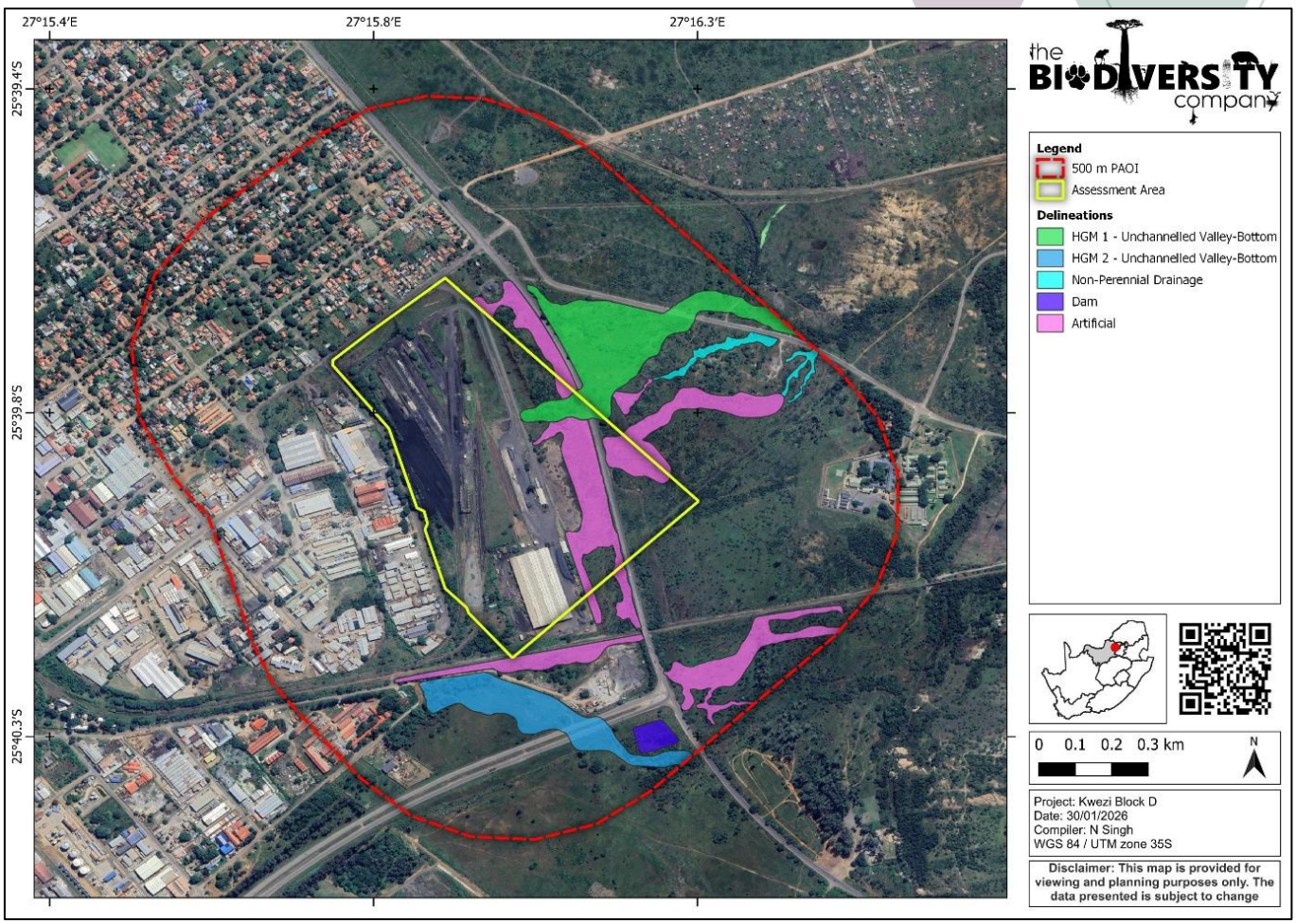


FIGURE 28: DELINEATION OF WATER RESOURCES WITHIN THE BLOCK D STUDY AREA (TBC2, 2026)

7.7.2 Risk screening

Table 26: provides the results of risk screening for the delineated wetlands and provides motivation for each of the determined categories. HGM 1, HGM 2 and the Non-perennial drainage are perceived to be "At Risk" from the proposed activities. This is attributed to the proximity of the activities to the watercourses in conjunction with the interconnectivity of some of the watercourses.

TABLE 26: RISK STATUS OF THE DELINEATED WETLANDS (TBC2, 2026)

HGM unit	Risk Status	Rationale
HGM 1 HGM 2 Non-Perennial Drainage	At Risk	These HGM units are likely to be within the zone of influence of the underground mining activities and have therefore been determined as "At Risk". It is anticipated that direct and / or indirect impacts to these systems are potential.
Artificial features and dams	Not applicable	Artificial features and dams are man-made induced systems that are dependent on some form of induced driver for sustenance and are therefore dependent on the long-term persistence of these drivers in order to provide ecological services. As such, standard wetland risk

HGM unit	Risk Status	Rationale
		assessments are not applicable to these features, since their ecological processes, values, and sensitivities can be largely altered depending on the alteration of the drivers.

7.7.3 Wetland classification

The wetland classification as per South African National Biodiversity Institute (SANBI) guidelines (Ollis *et al.,* 2013) is presented in Table 27:.

TABLE 27: WETLAND CLASSIFICATION AS PER SANBI GUIDELINE (TBC2, 2026)

Wetland Unit	Level 1	Level 2		Level 3	Level 4		
	System	DWS Ecoregion/s	NFEPA Wet Veg Group/s	Landscape Unit	4A (HGM)	4B	4C
HGM 1	Inland	Bushveld Basin Ecoregion	Central Bushveld Group 2	Valley Floor	Unchanneled valley-bottom	N/A	N/A
HGM 2				Valley Floor	Unchanneled valley-bottom	N/A	N/A

An unchanneled valley-bottom wetland, is a wetland located on a valley floor, characterised by the absence of a distinct river channel (Ollis *et al*., 2013). These wetlands are defined by their diffuse water flows, which are not confined within channel banks, allowing water to spread across the valley floor. The primary water inputs for unchanneled valley-bottom wetlands include diffuse surface and subsurface flows from upstream channels that lose confinement, as well as seepage from adjacent valley side-slopes.

7.7.4 Present Ecological State

The wetlands identified within the project area have exhibited some degree of modification resulting from natural physical changes as well as anthropogenically induced impacts at both the local and catchment level. Resultingly, the wetlands scored average Present Ecological State (PES) scores within the "D – Largely Modified" PES classes. The results of the wetland health and integrity assessment is provided in Table 28.

TABLE 28: PRESENT ECOLOGICAL STATE SCORES FOR THE ASSESSED WETLANDS (TBC2, 2026)

Unit	PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
HGM 1	Ecological Category	E	C	D	D
	Combined Ecological Category	D – Largely Modified			
HGM 2	Ecological Category	E	C	D	D
	Combined Ecological Category	D – Largely Modified			

The list below refers to the present-day local impacts observed within the assessed wetland areas:

- Alterations to hydrology and geomorphology through the development of roads and crossings within the wetland and catchment;
- Loss and degradation of habitat;

- Water quality impairments from contaminated runoff;
- Proliferation of alien invasive vegetation; and
- Erosion of watercourses from altered hydrology and geomorphology

7.7.5 Ecological Importance and Sensitivity

The Ecological Importance and Sensitivity (EIS) assessment was applied to the HGM units in conjunction with the ecosystem service scores in the preceding sections, to assess the levels of sensitivity and ecological importance of the wetland. Various components pertaining to the protection status of a wetland is considered for the EIS, including Strategic Water Source Areas (SWSA), the National Freshwater Ecosystem Priority Areas (NFEPA) Wetveg protection status and the protection status of the wetland itself considering the National Biodiversity Assessment (NBA) wetland dataset. The results of the assessment are shown in Table 29. The wetlands average EIS scores present within the "C – Moderate" class.

TABLE 29: ASPECTS CONSIDERED IN THE ECOLOGICAL IMPORTANCE AND SENSITIVITY ASSESSMENT (TBC2, 2026)

HGM Type	NFEPA Wet Veg			NBA Wetlands			SWSA (Y/N)	CBA / ESA (Y/N)	EIS Class
	Type	Ecosystem Threat Status	Ecosystem Protection Level	Wetland Condition	Ecosystem Threat Status 2018	Ecosystem Protection Level			
HGM 1 HGM 2 (UVB)	Central Bushveld Group 2	Vulnerable	Moderately Protected	D Largely Modified (Site Visit)	Critically Endangered	Moderately Protected	Y	Y (ESA)	**C - Moderate**

7.7.6 Recommended Ecological Category and Recommended Management Objective

The Recommended Ecological Category (REC) and Recommended Management Objective (RMO) for the wetland areas was determined from the results of the PES and EIS assessments. These assessments indicated that all wetland features within the site, had to an extent, underwent transformation as a result of historical and current impacts. Nevertheless, despite the altered ecological integrity of these systems, they are considered to provide ecological services. The appropriate REC for the wetland is a category D and RMO estimated for the wetland areas is to Maintain the category D PES.

7.7.7 Buffer requirements

No new surface infrastructure is proposed as part of the current project activities; therefore, the risk of direct disturbance to wetland areas is expected to be minimal and related to the activities that already occur in proximity. However, a buffer zone has been provided as a precautionary measure to further safeguard the wetlands ecological integrity. A precautionary buffer of 32 m was assigned to the natural wetlands and drainage features, which is also the NEMA regulated area of a wetland watercourse. It must be noted that existing activities, such as roads, already occur within the 32 m buffer zone and the use of these roads in their current extent is deemed permissible.

7.8 Hydropedology

Note: Information for this section was obtained from The Biodiversity Company's Hydropedology Report (2025). Refer to **Appendix C3** for the full report.

7.8.1 Hillslope hydrology

The Hydropedological survey was conducted to obtain information regarding the soil morphology to their respective soil family levels and hydropedological flow paths relevant to the hillslope by means of several representative transects (refer to Table 30). The hillslope hydrology of slopes intersected by the proposed Block D project are characterised by their distinct hydropedological patterns. The majority of the slopes for the first distinctive hydropedological patterns are characterised by responsive (Hortonian) (see Figure 29) hydropedological types. These patterns occur from the crest to the valley bottom merging to a watercourse.

TABLE 30: IDENTIFIED HILLSLOPE DOMINANT SOIL FORMS AND HYDROPEDOLOGICAL GROUPS (TBC1, 2026)

Terrain Morphological Unit (TMU)							
1&2		3		4		5	
Soil form	**Hydroped**	**Soil form**	**Hydroped**	**Soil form**	**Hydroped**	**Soil form**	**Hydroped**
Witbank 1100	Recharge (Shallow)	Tukulu 1120	Interflow (Slow)	Tukulu 1120	Interflow (Slow)	Kroonstad 2110	Responsive (Wet)
Rensburg 1000	Responsive (Wet)	Katspruit 2210	Responsive (Wet)	Katspruit 2210	Responsive (Wet)	Katspruit 2210	Responsive (Wet)
Arcadia 1120	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)
Arcadia 1120	Responsive (Hortonian)	Mispah 2110	Recharge (Shallow)	Arcadia 1120	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)
Rustenburg 1110	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)	Arcadia 1120	Responsive (Hortonian)	Rensburg 1000	Responsive (Wet)

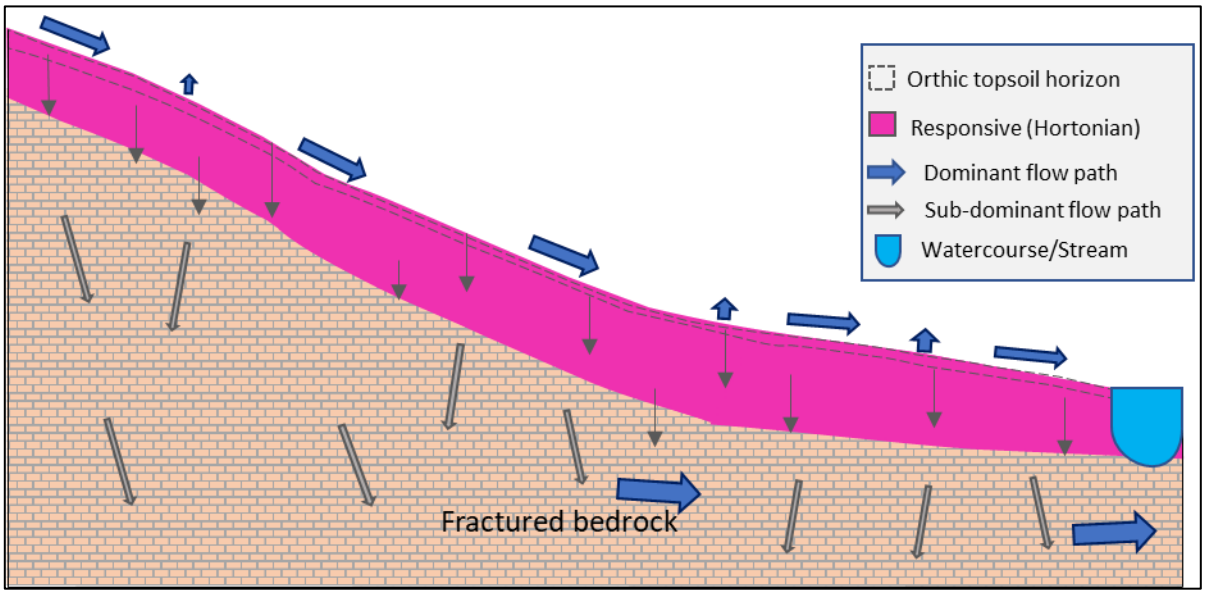


FIGURE 29: HILLSLOPE HYDROLOGY ONE OF FIVE OF THE DISTINCT HYDROPEDOLOGICAL ATTERNS PRIOR TO THE OPERATION OF THE PROPOSED BLOCK D PROJECT (TBC1, 2026)

The second and third distinctive hydropedological patterns are characterised with recharge (shallow) and responsive (Hortonian and wet) (Figure 30 and Figure 31). These patterns occur from the crest to midslope with responsive (Hortonian) which transect to recharge (shallow) in the midslope transecting to responsive (wet) in the valley bottom section merging to the watercourse.

The fourth distinctive hydropedological patterns are characterised with recharge (shallow), interflow (slow) and responsive (wet) (Figure 32). These patterns occur from the crest to the midslope with a recharge (shallow) type transecting to interflow (slow) to the lower midslope transecting to responsive (wet) in the valley bottom section merging to the watercourse.

The fifth distinctive hydropedological patterns are characterised with responsive (wet) (Figure 33). These patterns occur throughout the hillslope (i.e., responsive (Hortonian) or from the crest to the valley bottom section merging to the watercourse. Restrictions in the water flow occurs within the responsive soils due to the presence of a high clay content and partially or unfractured parent material.

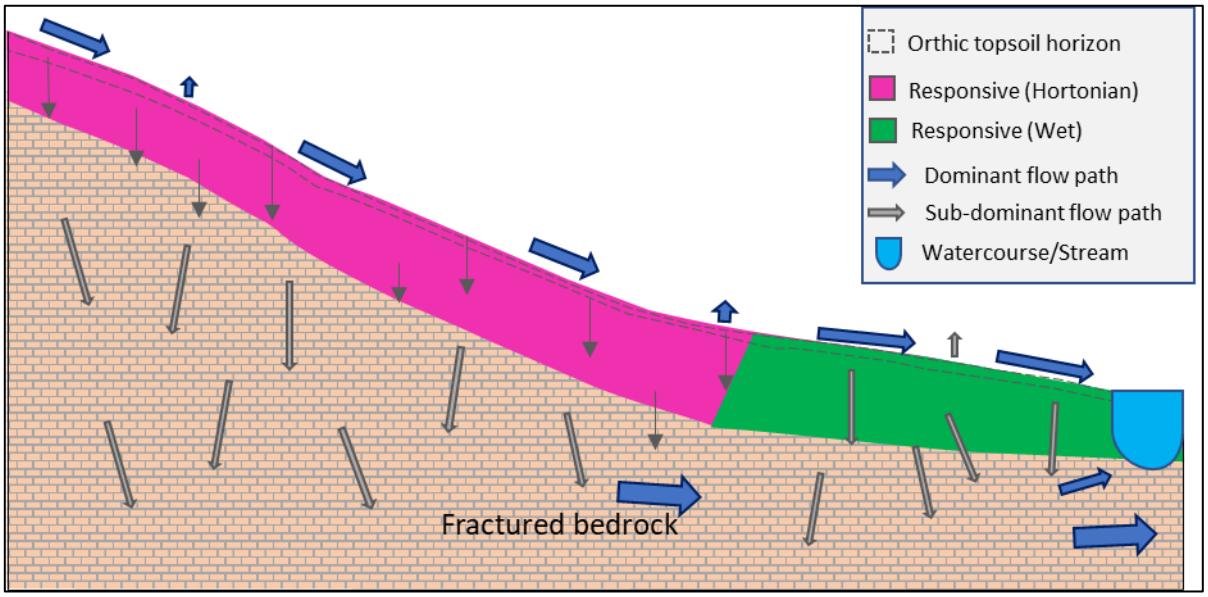


FIGURE 30: HILLSLOPE HYDROLOGY TWO OF FIVE OF THE DISTINCT HYDROPEDOLOGICAL PATTERNS PRIOR TO OPERATION OF THE PROPOSED BLOCK D PROJECT (TBC1, 2026

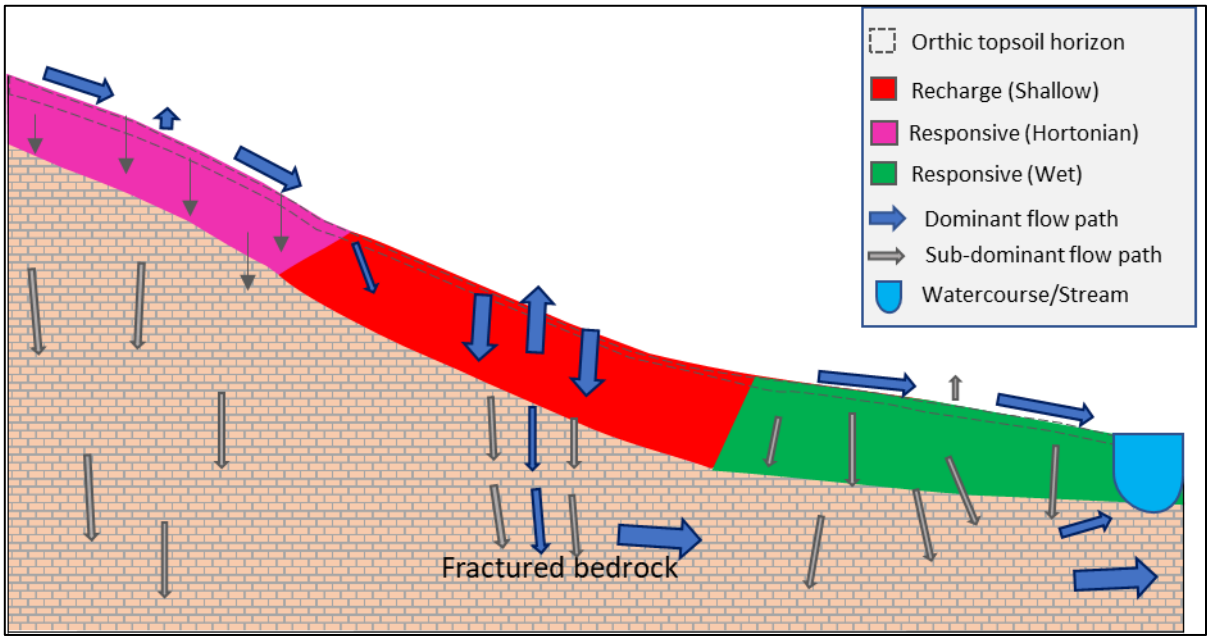


FIGURE 31: HILLSLOPE HYDROLOGY THREE OF FIVE OF THE DISTINCT HYDROPEDOLOGICAL PATTERNS PRIOR TO THE OPERATION OF THE PROPOSED BLOCK D PROJECT (TBC1, 2026)

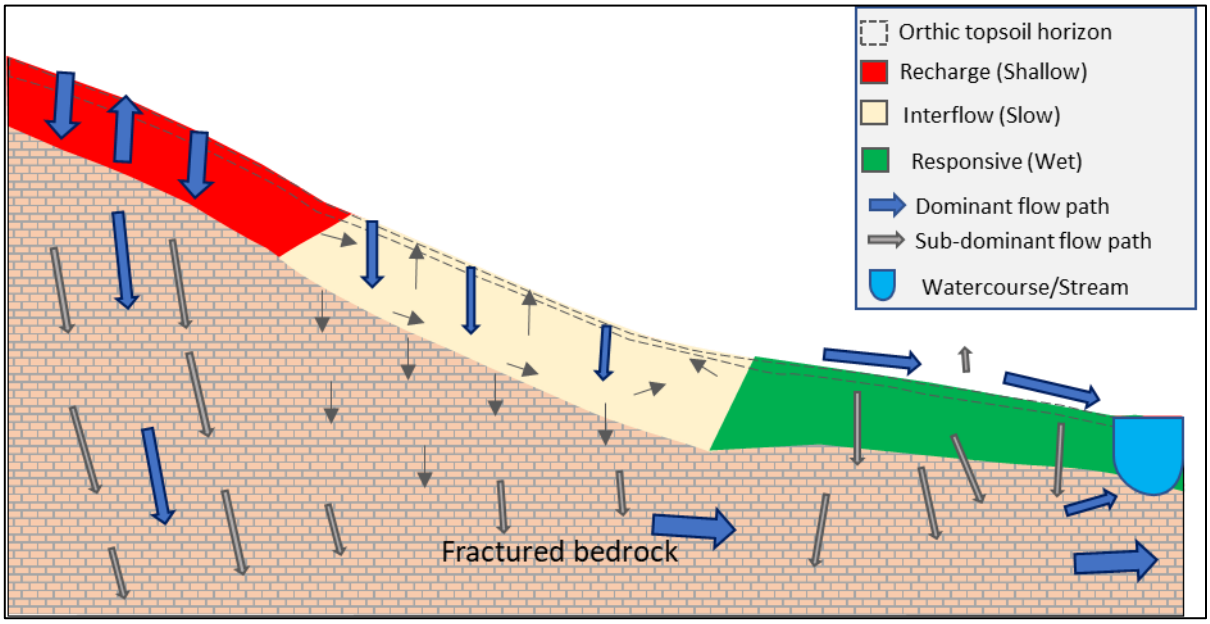


FIGURE 32: HILLSLOPE HYDROLOGY FOUR OF FIVE OF THE DISTINCT HYDROPEDOLOGICAL PATTERNS PRIOR TO THE OPERATION OF THE EXISTING BLOCK D PROJECT (TBC1, 2026)

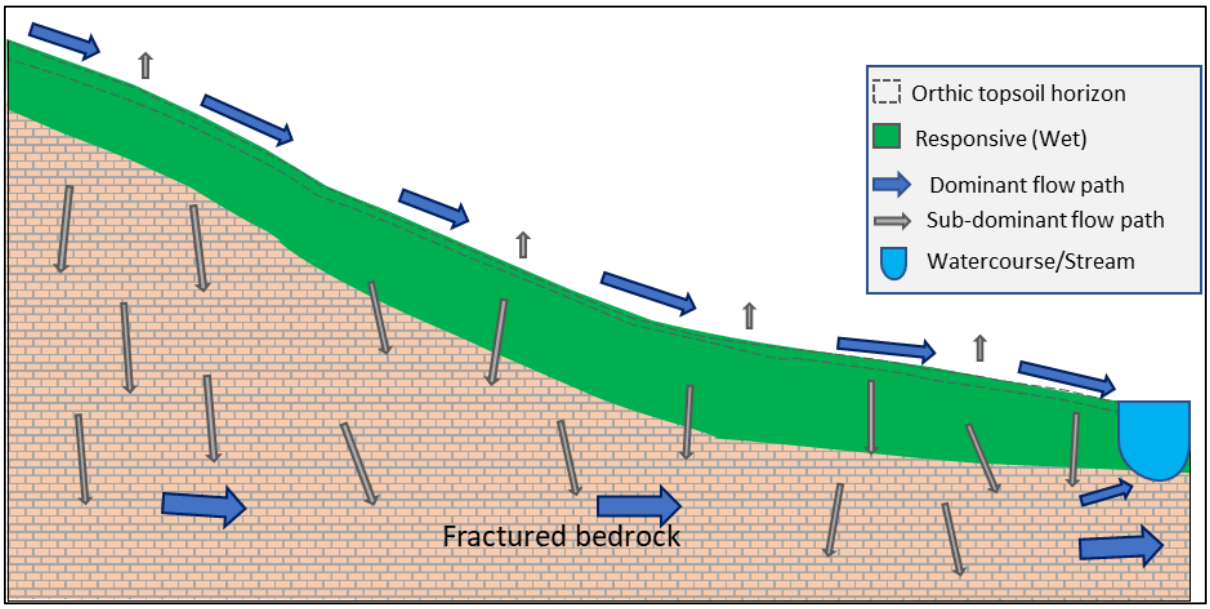


FIGURE 33: HILLSLOPE HYDROLOGY FIVE OF FIVE OF THE DISTINCT HYDROPEDOLOGICAL PATTERNS PRIOR TO THE OPERATION OF THE PROPOSED BLOCK D PROJECT (TBC1, 2026)

The shallow Mispah soil forms soils identified on-site are characterised with well drained profiles. The Mispah soil forms consist of an orthic topsoil with a hard rock layer below. Clear horizons of apedal horizons were evident and visible in the profile. These profiles are characterised by extremely high permeability soil hydraulic conductivity (Ks) rates, including the lower lithic horizon which can also be available below the B1

subsurface horizon in most cases. The Bc 8 and Ea 3 land types are commonly characterized with these soils from the crest to the lower midslope areas.

No signs of leaching or oxidation/reduction processes were identified throughout the soil profiles, which, together with the high Ks emphasises rapid vertical recharge of the groundwater storage as being the dominant flow path.

Some of the upper area to the midslope areas are characterized by responsive (Hortonian) hydropedological types. These soils commonly have high clay contents in the topsoil horizon with low conductivity; volume of water flow is low due to the textural discontinuity resulting in surface stagnations. If the evaporative demand is higher most of the water is lost through evaporation processes. Most of the water flows occur on the surface as overflows as due to restrictions in infiltration of the soils. The soils associated to these areas include, Arcadia, and Rustenburg soil forms with a vertic topsoil horizon.

Vertic topsoils are characterised by dark high smectite clay soils with strong structure and visible slickensides on the wedge-shaped aggregates. The horizon exhibits large cracks when its dry and also present the swelling and shrinking properties as a result of change in water content. Vertic topsoils have high clay content with smectic clay particles being dominant. The smectic clays have swell and shrink properties during wet and dry periods respectively. Peds will be shiny, well-developed with a highly plastic consistency during wet periods as a result of the dominance of smectic clays. During shrinking periods, cracks form on the surface and rarely occurs in shallow vertic clays (Soil Classification Working Group, 2018).

Some of the midslope areas are characterized by recharge (Slow) hydropedological types. These soils commonly have high clay contents in the B1 horizon with low conductivity; volume of water flow is low due to the textural discontinuity resulting in surface stagnations. If the evaporative demand is higher most of the water is lost through evaporation processes. The soils associated to these areas include, Tukulu soil forms with a neocutanic B1 horizon.

Neocutanic horizons are characterised with young weakly-structured subsurface layers with variations in the soil matrix. The horizon is commonly associated to the processes of transportation of materials usually colluvial or alluvial origins in the valley bottoms or flats terrains and river terraces that have been subjected to an intermediate stage of pedogenic changes. The colour differences in the neocutanic horizon are usually caused by illuvial material that coats weak structural units (Soil Classification Working Group, 2018).

The valley bottom regions are characterised responsive (Wet) hydropedological types. The Bc 8, Ea 3 and Ib 3 land types are commonly characterized with these soils in the footslope or valley bottom landscapes areas. The soil form relevant to the responsive (Wet) hydropedological types, observation point is that of the Katspruit and Rensburg soil forms. The Katspruit and Rensburg soil forms are characterised by gley horizon as the subsoil, which is indicative of prolonged/permanently saturated soils which result in the formation of "responsive soils." Responsive soils will be subject to overland/return flow during precipitation events (due to the naturally high-water content which will ensure rapid saturation). Between rainfall events, these soil forms will steadily feed watercourses and will lose moisture by means of Evapotranspiration (ET).

Gley horizons that are well developed and have homogenous dark to light grey colours with smooth transitions. Stagnant and reduced water over long periods is the main factor responsible for the formation of a gley horizon and could be characterised by green or blue tinges due to the presence of a mineral called Fougerite which includes sulphate and carbonate complexes. Even though grey colours are dominant, yellow and/or red striations can be noticed throughout a gley horizon. The structure of a gley horizon mostly is characterised as strong pedal, with low hydraulic conductivities due to high clay content (clayey texture),

although sandy gley horizons are also known to occur. The gley soil form commonly occurs at the toe of hillslopes (or benches) where lateral water inputs (sub-surface) are dominant and the underlaying geology is characterised by a low hydraulic conductivity. The gley horizon usually is second in diagnostic sequence in shallow profiles yet is known to be lower down in sequence and at greater depths (Soil Classification Working Group, 2018).

7.9 Groundwater

Note: Information for this section was obtained from MvB Consulting's Hydrogeology Report (2025). Refer to **Appendix C1** for the full report.

The groundwater of the study area was assessed based on available mine monitoring data and site-specific investigations. The hydrogeological setting and conceptual model of the study area is described according to the following criteria:

- Hydrocensus and borehole information.
- Aquifer type.
- Groundwater gradients and flow.
- Aquifer parameters.
- Hydrochemistry (groundwater quality)

7.9.1 Hydrocensus

A hydrocensus was conducted at Block D and surrounding areas where sixty-six properties were visited and eighteen boreholes were located. Figure 34 highlights the hydrocensus boreholes, as well as the closets mine monitoring boreholes.

FIGURE 34: BLOCK D HYDROCENSUS BOREHOLES (MVB CONSULTING, 2026)

7.9.2 Aquifer type

Previous studies and data related to the regional geology in the study area indicate that structural discontinuities such as dykes, fault planes and geological contact zones are the controlling agents for groundwater flow. The crystalline rocks of the BIC do not have primary porosity which would facilitate the flow of groundwater.

The following aquifers are present in the study area:

- ***Weathered Aquifer.*** The mafic intrusive norite that outcrops over most of the study area is characterized by weathering in the first few meters from surface. Norite is often associated with Nickel and Copper, which may give rise to higher naturally occurring concentrations in the groundwater.

  The weathering follows a broad pattern due to regional stresses and deformation with weathered basins mostly orientated in north-west by south-east trending valleys. This weathered overburden, which covers the project area, forms a shallow unconfined aquifer in the upper 10 to 50 m of the geological succession. The weathered overburden is treated as a single weathered aquifer unit and is described as a "highly weathered, yellowish white to yellowish brown norite. There are currently no aquifer parameter information available and literature-based values indicate that the unit generally has low to moderate transmissivity but high storativity.

- ***Primary Alluvial Aquifer.*** Along the course of the Hex River and other streams, the weathered aquifer has been partially or totally replaced by alluvial aquifers which were deposited by the river and retained hydraulic connectivity with it. The weathered aquifer is recharged by lateral inflow from the surface streams at saprolite-saprock interfaces.

- **Secondary Fractured Aquifer.** A deeper fractured semi-confined rock aquifer is formed by bedding planes, faults and joint planes of the unweathered norites, anorthosites and pyroxenites of the Rustenburg Layered Suite. In fractured rocks, the interconnected discontinuities are the main passage for groundwater flow. In the project area, regional fracture systems cause the upwelling of deeper groundwater which sustains the aquifer system. The crystalline unweathered and intact rocks are considered to have very low porosity and permeability. The hydraulic conductivity of these units is determined by fractures and mine openings.

An impermeable or semi-permeable interface between the upper weathered, and the deeper, fractured aquifer prevents vertical drainage of the shallow aquifer on a regional scale. Therefore, regionally, the groundwater flow in the shallow aquifer is driven by topographic gradients and local recharge. The vertical infiltration across the interface is governed by fractures, creating zones of permeability.

The soil cover consists mostly of a relatively thin (0-2m) layer of blackish clayey vertisol soil. The soil is a direct weathering product of the norite rocks in the area. In spite of the soil – locally referred to as 'turf' – has very high clay content, infiltration does occur through the soil horizon especially through cracks in the soil structure that form in the dry season. Deeper soil and colluvium cover (up to 6 m) is present near the Hex River and drainage lines of the shallow valleys draining the study area.

Reddish sandy loam soils occur in the direct vicinity of the intrusive felsic syenite dykes of Pilanesberg Complex origin. Better infiltration and slightly higher recharge can be expected in these areas.

A plan layout of the main geological features (dykes, faults etc.), specifically those affecting groundwater flow, is shown in Figure 19.

7.9.2.1 Aquifer boundaries

Mine boundaries and aquifer boundaries seldom coincide. Criteria for selecting aquifer boundary conditions are primarily topography, hydrology and geology. The topography, geology, or both, may yield boundaries such as impermeable strata or potentiometric surface controlled by surface water, or recharge/discharge areas such as inflow boundaries along mountain ranges. The flow system allows the specification of boundaries in situations where natural boundaries are a great distance away.

Based on these conditions the aquifer boundaries for the study area were selected. The regional mining area can be divided into three (3) aquifers referred to as follows:

- SRPM Aquifer – western section of the mining area (including the Block D mining area).
- Kroondal Aquifer – central section of the mining area.
- Marikana Aquifer – eastern section of the mining area.

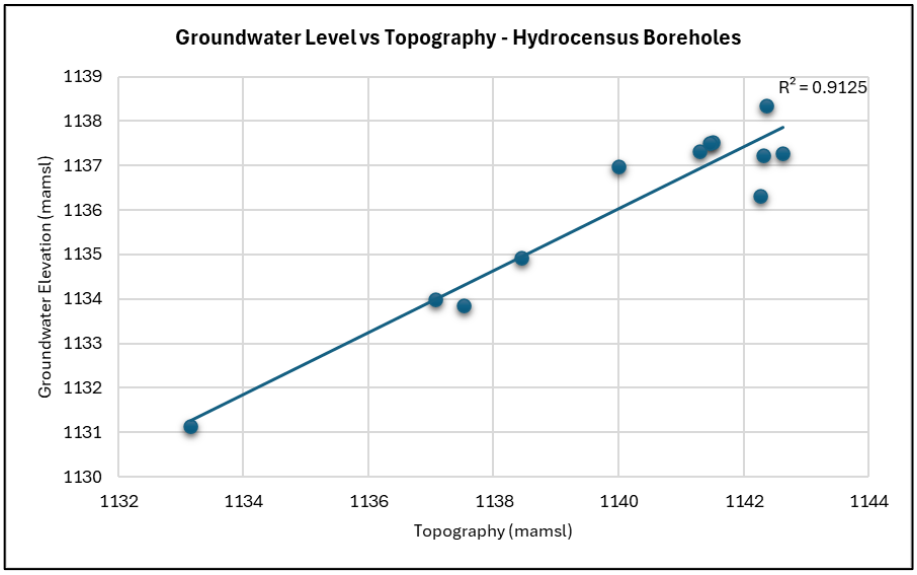
There are additional internal flow boundaries within the delineated aquifer boundaries, and it is possible to further sub-divide the above compartments if required.

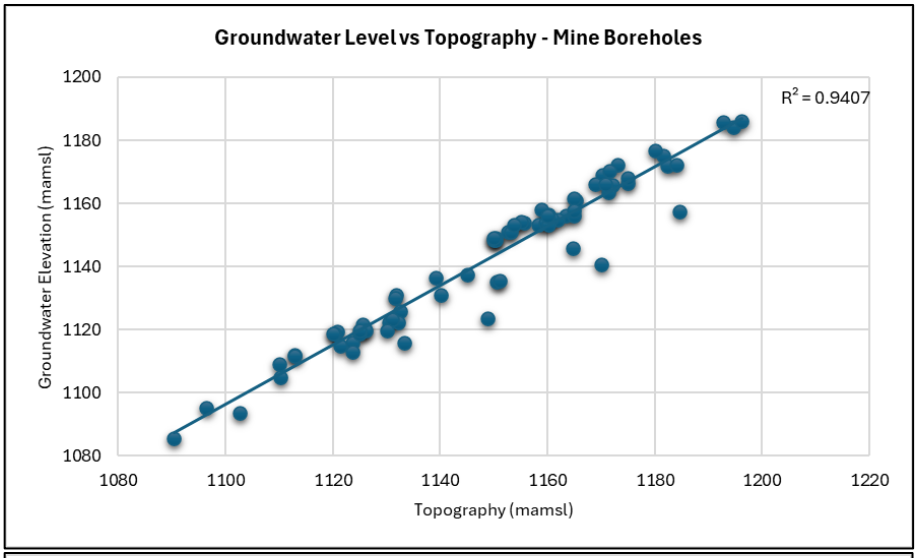
The proposed Block D underground mining area is in the SRPM Aquifer (see Figure 36).

7.9.3 Groundwater Gradients and Flow

The hydrocensus groundwater levels as well as the mine groundwater level monitoring was assessed and used to develop a regional groundwater level map.

In general, a linear relationship exists between the depth to groundwater and the topography, as groundwater normally drains under gravity towards streams and rivers. This relationship is known as the Bayesian Correlation and to prove that it exists in the study area the hydrocensus and monitoring borehole water levels and collar elevation were plotted. Refer to Figure 35.





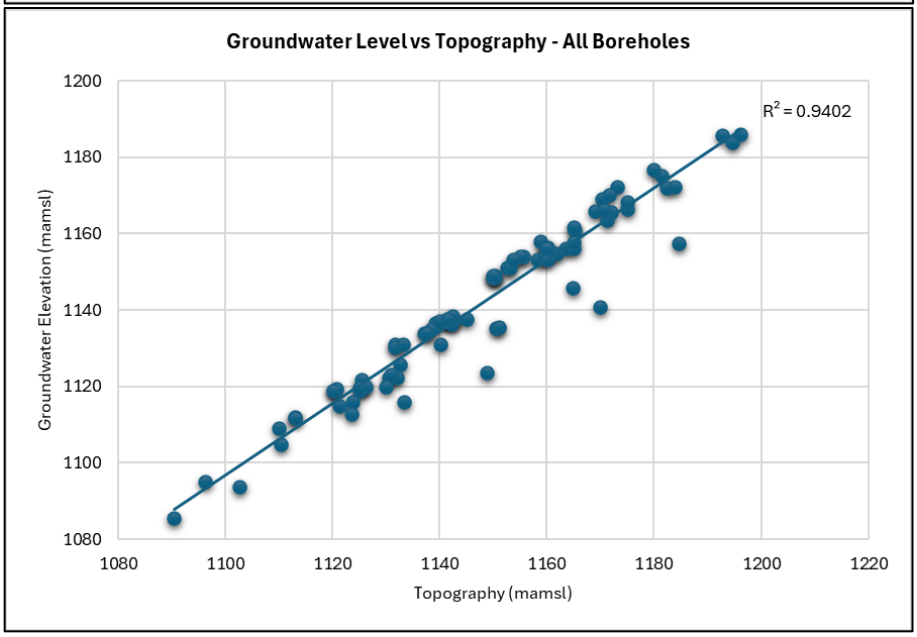


FIGURE 35: RELATIONSHIP BETWEEN TOPOGRAPHY AND GROUNDWATER TABLE (MVB CONSULTING, 2026)

The three graphs in Figure 35 illustrates the following correlations:

- Top Graph: Correlation in the hydrocensus boreholes (91%),
- Middle Graph: Correlation in the mine monitoring boreholes (94%).
- Bottom Graph: Correlation in all the boreholes. The regional correlation is 94%, indicating that the groundwater flow mimics the topography.

The hydrocensus and monitoring borehole data, as well as the topography was used to interpolate a regional groundwater gradient map. Within the study area the groundwater table generally mimics the topography (Figure 36).

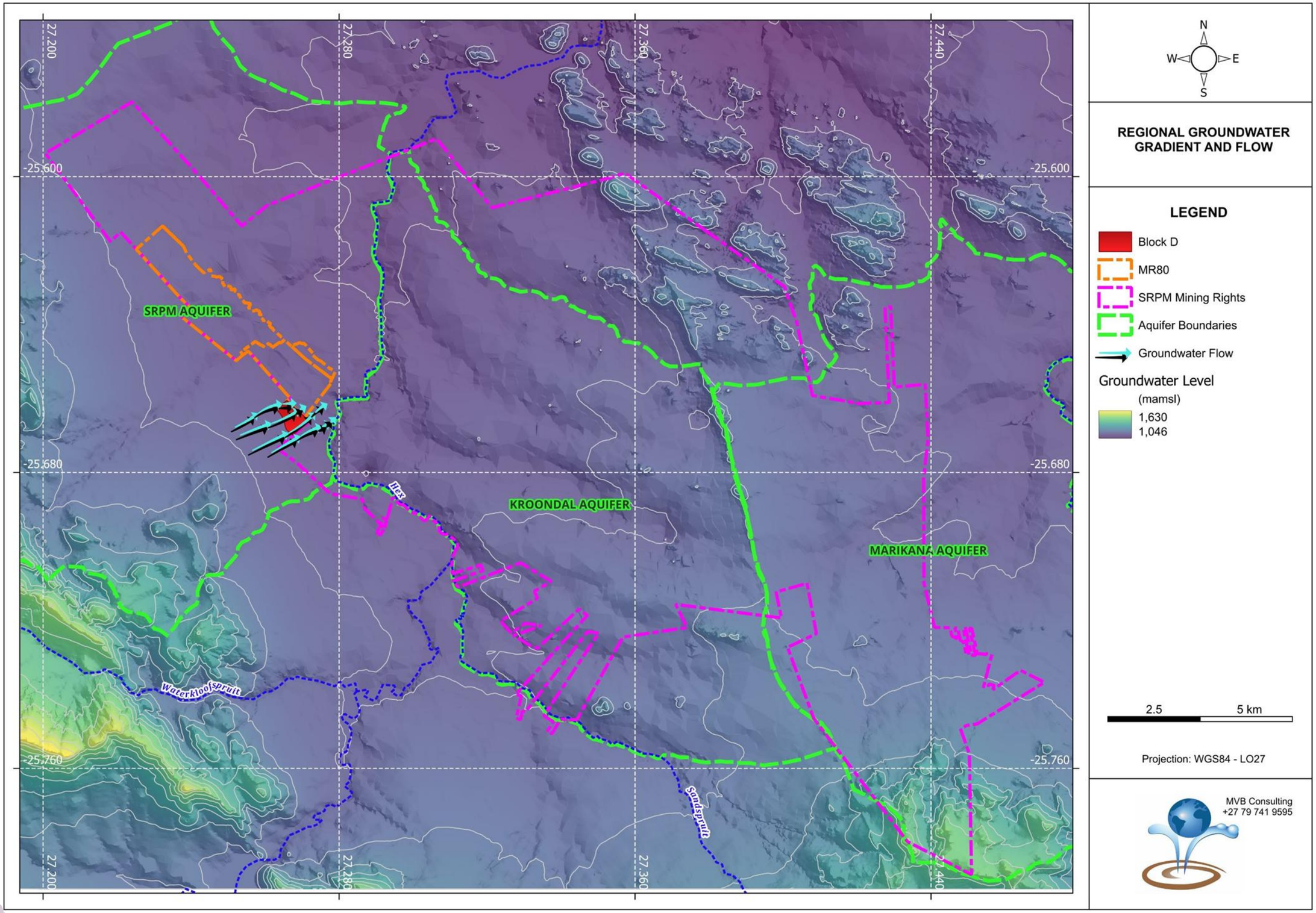


FIGURE 36: REGIONAL GROUNDWATER GRADIENTS AND FLOW (MVB CONSULTING, 2026)

7.9.4 Aquifer parameters

Aquifer parameters are obtained from the test pumping of boreholes. Important parameters that can be obtained from borehole or test pumping include Hydraulic Conductivity (K), Transmissivity (T) and Storativity (S). These parameters are defined as follows (Krusemann and De Ridder, 1991):

- **Hydraulic Conductivity (K):** This is the volume of water that will move through a porous medium in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow. It is normally expressed in metres per day (m/day).
- **Transmissivity (T):** This is the rate of flow under a unit hydraulic gradient through a cross-section of unit width over the full, saturated thickness of the aquifer. Transmissivity is the product of the average hydraulic conductivity and the saturated thickness of the aquifer. Transmissivity is expressed in metres squared per day (m2/day).
- **Storativity (S):** The storativity of a saturated confined aquifer is the volume of water released from storage per unit surface area of the aquifer per unit decline in the component of hydraulic head normal to that surface. Storativity is a dimensionless quantity.

7.9.4.1 Regional parameter estimation

Aquifer parameters typical of the region was obtained from literature and are summarised in Table 31. These values were used during the initial groundwater modelling.

TABLE 31: SUMMARISED REGIONAL AQUIFER PARAMETERS (MVB CONSULTING, 2026)

Borehole	Hydraulic Conductivity (m/day)	Transmissivity (m^2/day)	Storativity (m^2/day)	Source
Weathered BIC	0.23 - 73	6 – 1 825	0.008 – 0.35	SRK (2000)
	0.3 – 3	13 – 157		CRM (2006)
	5 - 93	73 - 535	0.001 – 0.1	WGS (2007)
	1.3		3	Delta h (2012)
Fractures BIC	0.89 - 29	22 - 725	0.00002-0.02	SRK (2000)
	0.03			Delta h (2012)
Transvaal Group	0.028			Delta h (2012)
Faults	0.2			Delta h (2012)

7.9.4.2 Site specific parameter estimation

Site-specific aquifer parameters were calculated after the pump testing of eleven (11) of the hydrocensus boreholes. The pump test information is shown in Table 32. Not all the boreholes could be tested as some of the landowners refused entry to the pump testing contractors. The following boreholes were pump tested.

TABLE 32: PUMP TESTED HYDROCENSUS BOREHOLES (MVB CONSULTING, 2025)

Borehole ID	Owner	Pump Tested	Borehole Sampled	Comment
KDB 01	Lepoa	No	Yes	Borehole blocked at 6m
KDB 02	Pronto Panelbeaters	Yes	Yes	Tested
KDB 03	Casmar	No	Yes	Could not obtain permission to test
KDB 04	Halstead	Yes	Yes	Tested
KDB 05	Munnikon	Yes	Yes	Tested
KDB 06	Reclaim	No	Yes	Business closed. Could not locate new owner
KDB 07	P & S Panelbeaters	Yes	Yes	Tested
KDB 08	Hydraulic	Yes	Yes	Tested
KDB 09	Cargo All	No	Yes	Borehole underneath paving. No access to borehole
KDB 10	Ola Freeze	Yes	Yes	Tested
KDB 11	Global Project	Yes	Yes	Tested
KDB 12	Mini Build	Yes	Yes	Tested
KDB 13	Private Home	No	Yes	Borehole garden. No access to borehole
KDB 14	Private Home	No	Yes	Borehole underneath paving. No access to borehole
KDB 15	Private Home	Yes	Yes	Tested
KDB 16	Private Home	Yes	Yes	Tested
KDB 17	Private Home	No	Yes	Could not obtain permission to test
KDB 18	Private Home	Yes	Yes	Tested

A summary of the pump testing is presented in Table 33. The transmissivity (T) values in the tested boreholes varies between 0.95 m^2/day – 172 m^2/day. The higher range T values are unrealistic for this type of aquifer and is due to the pump not able to lower the groundwater level during pumping. The estimated yield, based on these values, will therefore be an over-estimate of the capability of the borehole.

TABLE 33: SUMMARY OF HYDROCENSUS PUMP TEST RESULTS (MVB CONSULTING, 2026)

Borehole	KDB02	KDB04	KDB05	KDB07	KDB08	KDB10	KDB11	KDB12	KDB15	KDB16	KDB18
Owner	**Pronto Panel beaters**	**Halstead**	**Munnikon**	**P&S Panel beater**	**Hydraulic**	**Ola Corbon Freeze**	**Global Project**	**Mini Build Cement**	**Private Home**	**Private Home**	**Private Home**
Borehole Information											
Latitude	27.2648	27.2622	27.2610	27.2613	27.2603	27.2606	27.2613	27.2692	27.2585	27.2587	27.2642
Longitude	-25.6662	-25.6706	-25.6689	-25.6678	-25.6671	-25.6661	-25.6654	-25.6709	-25.6644	-25.6628	-25.6600
Depth (m)	32	34	45	30	25	26	35	18	20	60	50
Water Level (m below surface)	3.08	5.08	5.35	3.98	5.95	3.97	3.02	2.01	4.02	3.94	6.02
Pump Depth (m below surface)	25	20	40	25	40	20	30	15	15	55	48
Available Drawdown (m)	21.92	14.92	34.65	21.02	34.05	16.03	26.98	12.99	10.98	51.06	41.98
Pump Test Information											
Constant Rate Test											
Abstraction Rate (lit/sec)	1.1	1.37	1.6	0.9	1.62	0.46	0.68	1.6	0.79	0.82	0.45
Test Duration (minutes)	500	500	500	500	500	500	500	500	500	55	500
Recovery Test											
Test Duration (minutes)	60	70	40	20	120	20	30	20	60	150	40
Percentage Recovery (%)	100	98	99	99	94	100	98	99	100	97	99
Pump Test Results											
Transmissivity (m^2/day)											
Constant Rate Test	2.43×10^{1}	4.32×10^{0}	2.79×10^{1}	5.50×10^{1}	1.21×10^{0}	6.49×10^{0}	2.69×10^{1}	1.29×10^{2}	2.64×10^{1}	2.50×10^{0}	1.95×10^{0}
	8.64×10^{1}	4.90×10^{1}	1.98×10^{2}	1.33×10^{2}	8.14×10^{0}	4.37×10^{1}	1.42×10^{2}	2.25×10^{2}	2.03×10^{2}	2.31×10^{-1}	4.00×10^{1}
Recovery Test	5.42×10^{1}	4.90×10^{1}	1.98×10^{2}	7.67×10^{1}	2.16×10^{0}	2.16×10^{1}	1.03×10^{2}	1.63×10^{2}	1.93×10^{2}	1.19×10^{-1}	6.59×10^{0}
Average	**5.50×10^{1}**	**3.41×10^{1}**	**1.41×10^{2}**	**7.82×10^{1}**	**3.84×10^{0}**	**2.39×10^{1}**	**9.06×10^{1}**	**1.72×10^{2}**	**1.41×10^{2}**	**9.50×10^{-1}**	**1.62×10^{1}**
Hydraulic Conductivity m/day)											
Constant Rate Test	8.98×10^{-1}	2.16×10^{-1}	1.12×10^{0}	2.12×10^{0}	3.11×10^{-2}	3.09×10^{-1}	8.41×10^{-1}	5.60×10^{0}	1.65×10^{0}	4.80×10^{-2}	4.65×10^{-2}
	3.20×10^{0}	2.45×10^{0}	7.92×10^{0}	5.11×10^{0}	2.09×10^{-1}	2.08×10^{0}	4.42×10^{0}	9.77×10^{0}	1.27×10^{1}	4.44×10^{-3}	9.53×10^{-1}
Recovery Test	2.01×10^{0}	2.45×10^{0}	7.92×10^{0}	2.95×10^{0}	5.53×10^{-2}	1.03×10^{0}	3.22×10^{0}	7.11×10^{0}	1.21×10^{1}	2.29×10^{-3}	1.57×10^{-1}
Average	**2.04×10^{0}**	**1.71×10^{0}**	**5.65×10^{0}**	**3.39×10^{0}**	**1.00×10^{-1}**	**1.14×10^{0}**	**2.83×10^{0}**	**7.49×10^{0}**	**8.82×10^{0}**	**1.80×10^{-2}**	**3.86×10^{-1}**

7.9.5 Groundwater Quality Assessment

The location of the mine monitoring and hydrocensus boreholes are shown on Figure 37.

7.9.5.1 Mine Monitoring Boreholes

There is no surface mining infrastructure close to Block D, and the closest mine monitoring boreholes are approximately 600m to the north west.

The most recent groundwater quality in the closest mine monitoring boreholes are summarised in Table 34. The groundwater quality is compared against the Water Use License (WUL) specified limits. Concentrations that exceed the limits are highlighted in red.

The exceedances of the WUL limits are all in the vicinity of the TSF. Electrical Conductivity (EC), calcium (Ca), magnesium (Mg), sodium (Na), chloride (Cl) and sulphate (SO_4) concentrations are elevated.

The groundwater quality at the K6 and Bathopele shaft areas is good and none of the parameters exceed the WUL limits, with the exception of Sodium (Na) in one of the boreholes at Bathopele Shaft. Refer to Table 34 for the water quality results of the monitoring boreholes.

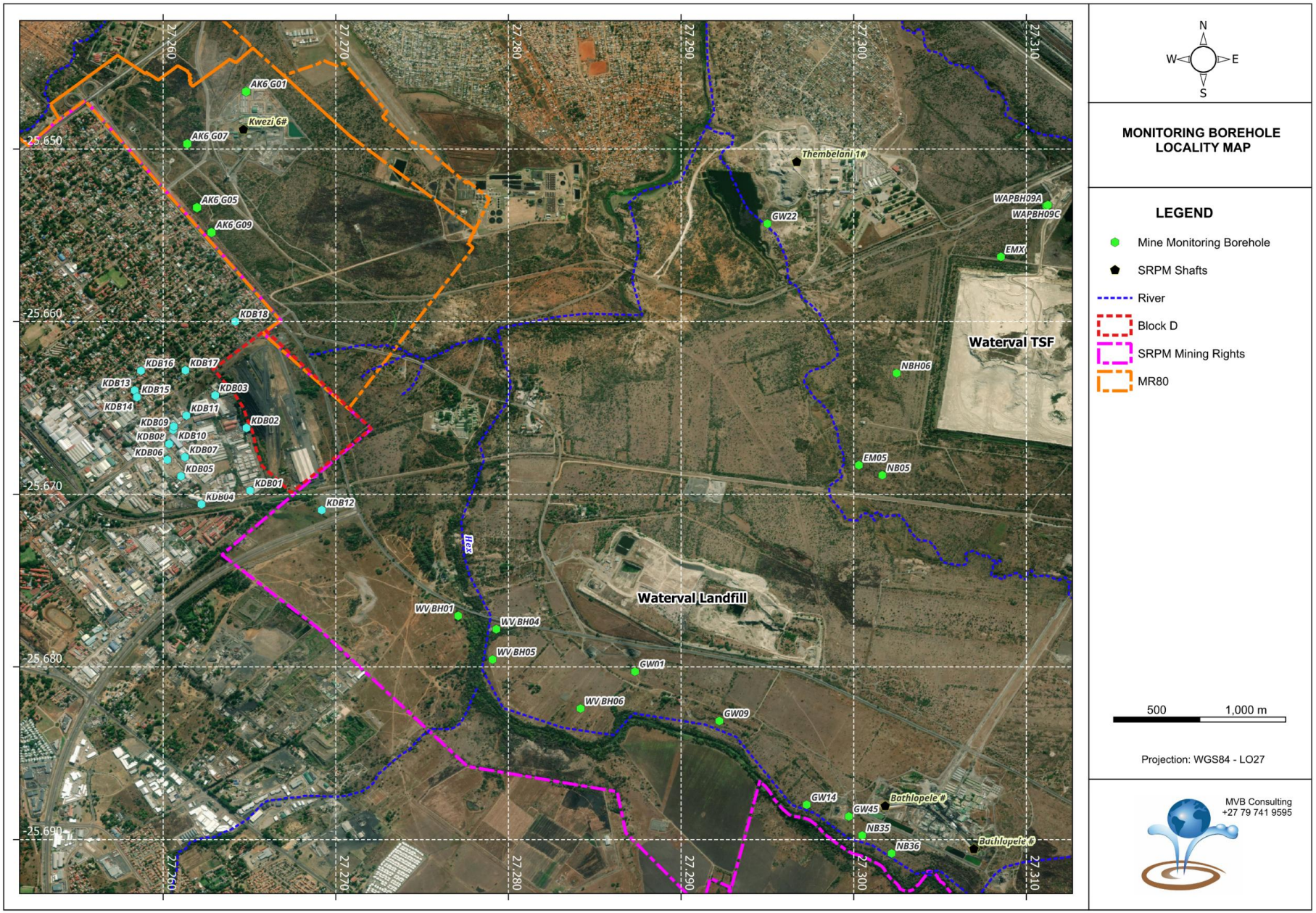


FIGURE 37: MINE MONITORING AND HYDRDOCENSUS BOREHOLE LOCALITY (MVB CONSULTING, 2026)

TABLE 34: MONITORING BOREHOLES WATER QUALITY (MVB, 2026)

BH ID	SRPM WUL (2018)	Waterval Landfill Site						Bathopele Shaft Area				Waterval TSF				Kwezi 6 Shaft Area			
		WV BH01	WV BH04	WV BH05	WV BH06	GW01	GW09	GW14	GW45	NB35	NB36	EM05	NB05	NBH06	GW22	AK6 G01	AK6 G05	AK6 G07	AK6 G09
pH	≥ 6 to ≤ 9.5	6.82	6.9	7.74	7.28	7.19	7.19	7.39	6.76	9.94	7.62	7.00	7.81	7.73	7.45	7.80	7.12	6.96	7.30
EC (mS/m)	≤150	71	91	44	93	69	123	90	30	90	100	347	108	273	321	58	126	87	142
TDS		472	575	246	575	482	931	485	169	538	609	2415	639	1979	2105	367	721	568	883
Ca	≤150	45.2	63.9	22.5	89.2	52.8	136	45.4	20.8	2.41	60.2	143	72.2	122	399	71	69	96	121
Mg	≤100	68.9	86.4	43	54	51.4	81.8	62.1	17.8	3.17	59	162	92	94	128	20	78	56	97
Na	≤200	12.5	16.7	13.8	30.8	33.3	48.3	59	10.3	207	83.9	361	28.7	354	203	21	22	19	32
K		1.1	1.06	3.04	1.82	0.966	1.51	2.18	2.54	2.85	1.71	6.59	7.21	5.89	5.92	6.96	6.75	4.26	5.48
Alk		237	323	195	285	260	396	354	92.2	368	322	580	459	261	244	276	587	397	638
Cl	≤200	70.6	92.8	31.7	76.2	22.1	19.4	85.2	21.5	29.2	93.1	458	7.69	267	966	13	98	60	98
SO_4	≤200	58.7	59.2	1.5	88.7	90.6	327	1.84	21.3	60	93.9	848	133	931	224	28	0	13	33
NO_3 as N	≤10	1.32	0.237	0.521	0.301	6.52	2.29	0.873	0.366	1.72	0.226	0.194	0.715	0.299	0.218	0.710	0.222	0.080	0.122
NH_4 as N		0.1	1.4	0.5	1.9	0.1	1.5	0.5	3.0	0.6	1.0	32.8	7.0	5.2	13.2	10.8	35.7	7.0	23.9
PO_4 as P		<0.009	<0.009	<0.009	<0.009	<0.009	0.324	<0.009	0.315	0.079	<0.009	2.64	<0.009	0.506	1.27	0.03	<0.009	<0.009	1.41
F	≤1	0.478	0.245	0.499	0.271	0.718	0.339	0.51	0.38	0.105	0.254	1.04	0.044	0.164	0.214	0.072	0.205	0.202	0.220
Al		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.029	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Fe		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.053	0.028	<0.004	0.316	<0.004	<0.004	<0.004	<0.004	0.042	<0.004	<0.004
Mn		0.754	0.632	0.41	0.634	<0.001	0.245	0.341	0.448	<0.001	0.319	0.293	0.488	1.63	5.77	0.346	0.411	0.497	0.693
B		<0.013	0.131	0.006	<0.013	<0.013	<0.013	<0.013	<0.013	0.078	0.002	0.458	0.009	0.076	<0.013	0.006	0.013	0.006	0.007
Ba		0.1	0.023	0.001	0.004	0.004	0.025	0.029	0.017	<0.002	0.008	0.031	0.025	0.025	0.078	0.013	0.013	0.013	0.013
Be		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.020	0.035	0.017	0.080
Bi		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.056	0.024	0.018	<0.004	<0.004	<0.004	<0.004	<0.004
Cd		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.011	<0.002	<0.002	<0.002	<0.002
Co		<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.013	<0.003	<0.003	<0.003	<0.003
Cr		0.008	<0.003	0.02	0.027	<0.003	<0.003	0.014	0.052	<0.003	0.004	<0.003	<0.003	<0.003	0.005	<0.003	<0.003	<0.003	<0.003
Cr6		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ni		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.053	<0.002	<0.002	0.069	<0.002	<0.002	0.03	<0.002	0.004	0.009	0.009
Pb		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.034	<0.002	0.003	0.005	0.007
Zn		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.002	<0.002

7.9.5.2 Hydrocensus Boreholes

All hydrocensus boreholes were sampled. The groundwater quality was compared against the SANS 241 (2015) Drinking Water Limits. The SANS 241 Drinking Water Specification is the definitive reference on acceptable limits for drinking water quality parameters (for a lifetime consumption) in South Africa and provides guideline levels for a range of water quality characteristics. Refer to Table 35 and Table 36 for the results of the groundwater chemistry in the hydrocensus boreholes. Concentrations that exceed the SANS 241 limits are highlighted in red.

With reference to Table 35 and Table 36, the following observations were made by the groundwater specialist:

- The groundwater quality is generally good and very few parameters exceed the guideline limits.
- The major cations and anions the exceed the limits include the following:
    - EC & TDS (Borehole KDB5).
    - Nitrate (Boreholes KDB5, KDB7, KDB8, KDB9, KDB10, KDB11, KDB12, KDB13, KDB14, KDB15, KDB16 and KDB18).
    - Ammonia (Borehole KDB1).
- Heavy metal concentrations that exceed the limits include the following:
    - Iron (Boreholes KKDB1, KDB10 and KDB12).
    - Lead (Borehole KDB12).
    - Manganese (Boreholes KDB5 and KDB12).

The above exceedances are not related to the mining activities. There is no clear trend as to where other potential sources are situated, as illustrated in Figure 38 and Figure 39. The distribution of the TDS and nitrate concentrations in the hydrocensus boreholes is shown in these figures. TDS provides an overall indication of the health of the aquifer and nitrate is elevated in most boreholes. Borehole KDB5 is the worst impacted with a nitrate concentration of 281mg/L and a TDS concentration of 1 758mg/L.

TABLE 35: GROUNDWATER CHEMISTRY IN THE HYDROCENSUS BOREHOLES (MVB CONSULTING, 2026)

Parameter (mg/L unless stated otherwise)	SANS 241	KDB 1	KDB 2	KDB 3	KDB 4	KDB 5	KDB 6	KDB 7	KDB 8	KDB 9
pH - Value @ 25 °C	≥ 5 to ≤ 9.7	7.50	7.70	7.60	6.90	7.40	7.60	7.20	7.40	7.40
Electrical Conductivity in mS/m @ 25°C	≤ 170	93	34	64	38	257	22	103	115	93
Total Dissolved Solids @ 180°C	≤ 1 200	492	224	432	300	1758	150	694	786	610
Total Alkalinity as $CaCO_3$	-	368	100	220	128	356	60	320	332	272
Chloride as Cl	≤ 300	79	22	44	18	57	16	69	84	67
Sulphate as SO_4	≤ 500	42	28	63	56	202	17	124	150	114
Fluoride as F	≤ 1.5	<0.2	0.20	<0.2	<0.2	0.20	0.20	0.20	0.20	0.20
Nitrate as N	≤ 11	0.20	3.00	3.50	1.50	281.00	0.90	25.00	28.00	22.00
Ortho Phosphate as P	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Free and Saline Ammonia as N	≤ 1.5	5.90	0.70	0.60	0.50	0.30	0.20	0.10	0.10	0.20
Sodium as Na	≤ 200	9	11	32	9	177	11	27	24	20
Potassium as K	-	3.30	4.00	<0.5	0.80	1.70	4.60	0.60	0.60	0.60
Calcium as Ca	-	55	33	50	20	203	20	99	102	79
Magnesium as Mg	-	86	17	45	31	126	7	72	83	70
Aluminium as Al	≤ 0.3	0.112	<0.100	0.111	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Arsenic as As	≤ 0.01	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001
Barium as Ba	≤ 0.7	0.057	0.050	0.043	0.035	0.122	0.062	0.045	0.026	0.042
Boron as B	≤ 2.4	0.038	0.032	0.028	<0.025	0.044	0.034	0.026	0.025	<0.025
Total Chromium as Cr	≤ 0.05	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Cobalt as Co	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Copper as Cu	≤ 2	<0.010	0.048	0.020	<0.010	0.142	0.015	<0.010	0.046	<0.010
Iron as Fe	≤ 2	14.000	<0.025	0.031	0.578	0.056	<0.025	0.083	<0.025	0.042
Lead as Pb	≤ 0.01	0.008	<0.001	0.002	0.005	0.002	0.003	0.005	0.001	0.001
Manganese as Mn	≤ 0.4	0.204	<0.025	<0.025	<0.025	1.180	<0.025	<0.025	<0.025	<0.025
Mercury as Hg	≤ 0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel as Ni	≤ 0.07	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Selenium as Se	≤ 0.04	<0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	<0.001	0.001
Strontium as Sr	-	0.246	0.142	0.207	0.096	0.824	0.101	0.473	0.417	0.349
Uranium as U	≤ 0.03	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.001	0.001	0.001
Zinc as Zn	≤ 5	<0.025	<0.025	0.358	0.219	0.036	0.078	0.650	<0.025	<0.025

TABLE 36: GROUNDWATER CHEMISTRY IN THE HYDROCENSUS BOREHOLES CONTINUED (MVB CONSULTING, 2026)

Parameter (mg/L unless stated otherwise)	SANS 241	KDB 10	KDB 11	KDB 12	KDB 13	KDB 14	KDB 15	KDB 16	KDB 17	KDB 18
pH - Value @ 25 °C	≥ 5 to ≤ 9.7	7.10	7.50	7.20	7.30	7.20	7.20	7.40	7.80	7.30
Electrical Conductivity in mS/m @ 25°C	≤ 170	83	90	60	97	122	120	124	22	124
Total Dissolved Solids @ 180°C	≤ 1 200	552	602	396	650	798	786	808	152	848
Total Alkalinity as $CaCO_3$	-	244	340	248	272	300	300	316	64	392
Chloride as Cl	≤ 300	54	47	47	91	122	128	130	21	130
Sulphate as SO_4	≤ 500	94	78	22	121	144	151	161	22	122
Fluoride as F	≤ 1.5	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.20
Nitrate as N	≤ 11	23.00	16.00	0.10	13.00	30.00	21.00	20.00	1.00	12.00
Ortho Phosphate as P	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Free and Saline Ammonia as N	≤ 1.5	0.20	0.30	0.10	0.10	0.10	0.10	0.10	0.60	<0.1
Sodium as Na	≤ 200	20	59	19	40	58	48	38	11	58
Potassium as K	-	<0.5	0.50	4.30	0.60	0.70	0.90	0.90	4.30	0.70
Calcium as Ca	-	86	65	48	92	88	89	95	21	85
Magnesium as Mg	-	57	47	36	65	76	91	85	8	101
Aluminium as Al	≤ 0.3	0.151	0.144	0.106	<0.100	0.162	<0.100	<0.100	<0.100	<0.100
Arsenic as As	≤ 0.01	<0.001	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Barium as Ba	≤ 0.7	0.057	0.050	0.067	0.053	0.046	0.055	0.046	0.066	0.064
Boron as B	≤ 2.4	0.026	0.036	0.038	0.025	0.040	0.033	0.028	0.034	0.049
Total Chromium as Cr	≤ 0.05	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Cobalt as Co	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Copper as Cu	≤ 2	<0.010	<0.010	<0.010	<0.010	0.017	<0.010	0.032	<0.010	<0.010
Iron as Fe	≤ 2	3.880	0.253	5.020	<0.025	0.239	0.049	0.046	<0.025	<0.025
Lead as Pb	≤ 0.01	0.003	0.002	0.011	0.002	0.001	<0.001	<0.001	<0.001	<0.001
Manganese as Mn	≤ 0.4	<0.025	0.028	0.624	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Mercury as Hg	≤ 0.006	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel as Ni	≤ 0.07	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Selenium as Se	≤ 0.04	0.001	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001
Strontium as Sr	-	0.341	0.342	0.195	0.389	0.399	0.394	0.478	0.098	0.392
Uranium as U	≤ 0.03	<0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.004
Zinc as Zn	≤ 5	0.032	0.058	0.027	0.038	<0.025	0.033	<0.025	<0.025	<0.025

FIGURE 38: DISTRIBUTION OF THE TDS CONCENTRATIONS IN THE HYDROCENSUS BOREHOLES (MVB CONSULTING, 2026)

FIGURE 39: DISTRIBUTION OF THE NITRATE (NO3) CONCENTRATIONS IN THE HYDROCENSUS BOREHOLES (MVB CONSULTING, 2026)

The piper diagrams illustrate the chemical character of the water at the sampling points (Refer to Figure 40 and Figure 41).

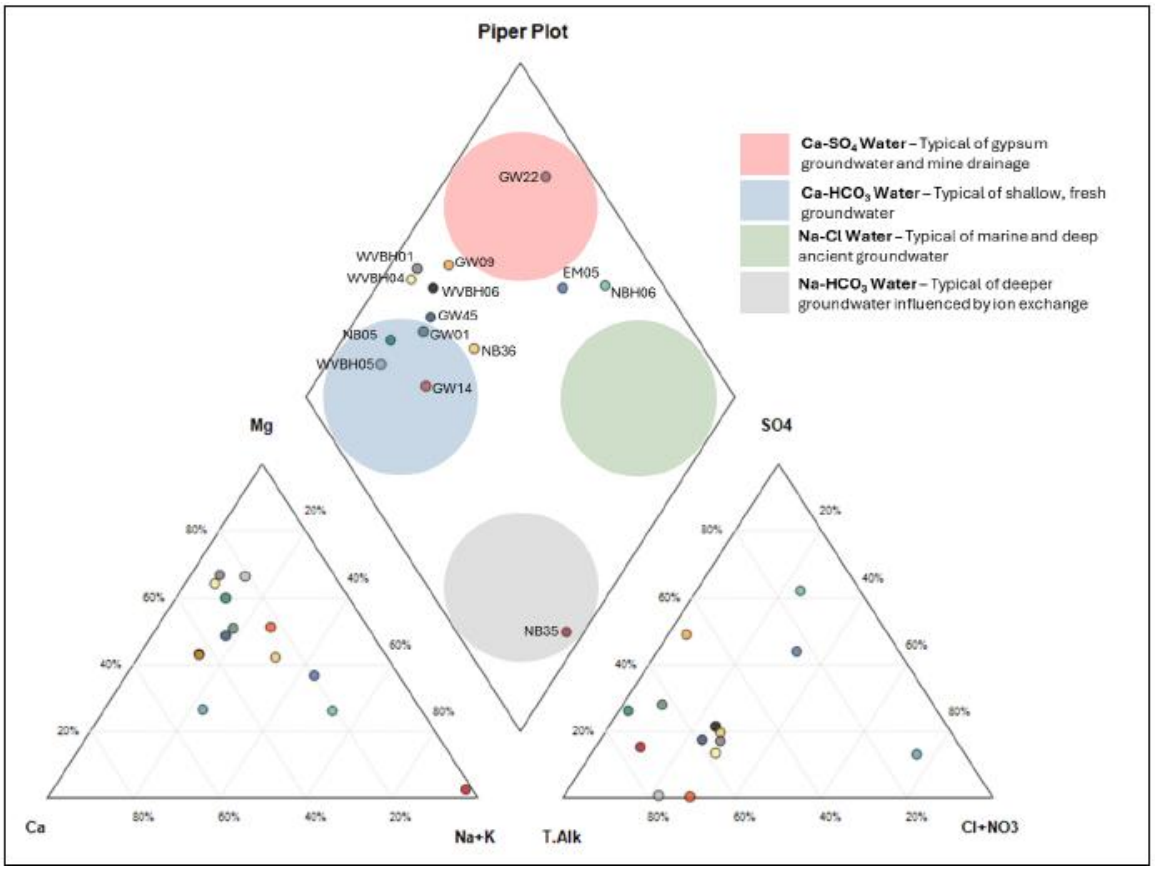


FIGURE 40: PIPER DIAGRAM FOR THE MINE MONITORING BOREHOLES (MVB CONSULTING, 2026)

The mine monitoring boreholes are predominantly characterised as Ca-HCO_3 (calcium bicarbonate - fresh groundwater), migrating towards the Ca-SO_4 (calcium sulphate - mine contamination) type water.

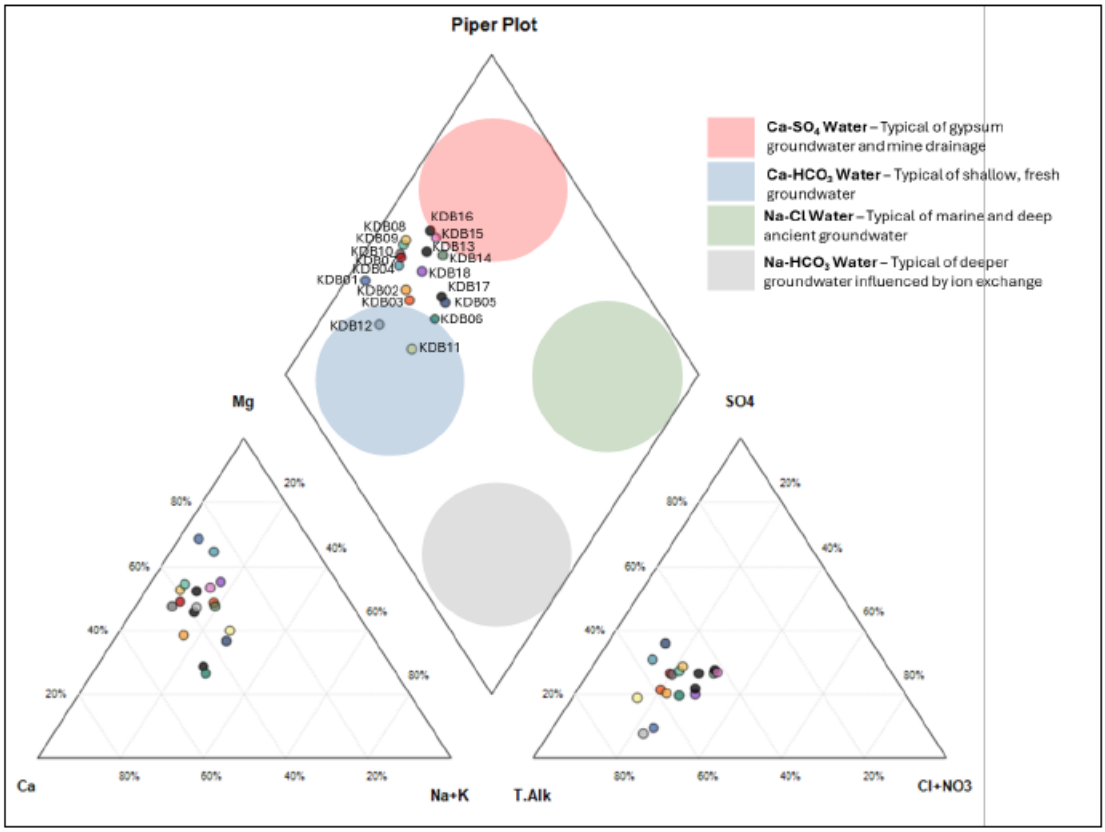


FIGURE 41: PIPER DIAGRAM FOR THE HYDROCENSUS GROUNDWATER SAMPLES (MVB CONSULTING, 2026)

Most of the hydrocensus groundwater is characterised as Ca-HCO_3 (calcium bicarbonate - fresh groundwater) type water, but there are several boreholes moving towards the Ca-SO_4 (calcium sulphate - contaminated groundwater) type water. This is indicative of the presence of contaminant sources within the industrial area.

7.9.6 Aquifer Classification and Vulnerability

An aquifer classification system provides a framework and objective basis for identifying and setting appropriate levels of groundwater resource protection. This would facilitate the adoption of a policy of differentiated groundwater protection.

Other uses could include:

- Defining levels of investigation required for decision making.
- Setting of monitoring requirements; and
- Allocation of manpower resources for contamination control functions.

The aquifer classification system used to classify the aquifers is the proposed National Aquifer Classification System of Parsons (1995). This system has a certain amount of flexibility and can be linked to second classifications such as a vulnerability or usage classification. Parsons suggests that aquifer classification forms a very useful planning tool that can be used to guide the management of groundwater issues. He also suggests that some level of flexibility should be incorporated when using such a classification system.

The South African Aquifer System Management Classification is presented by five major classes:

- Sole Source Aquifer System.
- Major Aquifer System.
- Minor Aquifer System.
- Non-Aquifer System; and
- Special Aquifer System.

The following definitions apply to the aquifer classification system:

- **Sole source aquifer system:** "An aquifer that is used to supply 50% or more of domestic water for a given area, and for which there are no reasonable alternative sources should the aquifer become depleted or impacted upon. Aquifer yields and natural water quality are immaterial."
- **Major aquifer system:** "Highly permeable formations, usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes. Water quality is generally very good".
- **Minor aquifer system:** "These can be fractured or potentially fractured rocks that do not have a high primary permeability, or other formations of variable permeability. Aquifer extent may be limited and water quality variable. Although this aquifer seldom produces large quantities of water, they are both important for local supplies and in supplying base flow for rivers".
- **Non-aquifer system:** "These are formations with negligible permeability that are generally regarded as not containing groundwater in exploitable quantities. Water quality may also be such that it renders the aquifer unusable. However, groundwater flow through such rocks does occur, although imperceptible, and needs to be considered when assessing risk associated with persistent pollutants".
- **Special aquifer system:** "An aquifer designated as such by the Minister of Water Affairs, after due process".

A second variable classification is needed for sound decision making, as the ability of an aquifer to yield water to a particular user is not adequately stated. In this case, the groundwater specialist decided to use the vulnerability of the aquifer to contamination as a second parameter (Table 37). A weighting and rating approach is then used to decide on the appropriate level of groundwater protection (Table 38).

TABLE 37: RATINGS FOR THE AQUIFER QUALITY MANAGEMENT CLASSIFICATION SYSTEM (MVB CONSULTING, 2026)

Class	Points	Class	Points
Sole Source Aquifer System	6	**High**	3
Major Aquifer System	4	**Medium**	2
Minor Aquifer System	2	**Low**	1
Non-Aquifer System	0		
Special Aquifer System	0-6		

TABLE 38: APPROPRIATE LEVEL OF GROUNDWATER PROTECTION REQUIRED (MVB CONSULTING, 2026)

GQM Index	Level of Protection
<1	Limited Protection
1 – 3	Low Level Protection

GQM Index	Level of Protection
3 – 6	Medium Level Protection
6 – 10	High Level Protection
>10	Strictly Non-degradation

After rating the aquifer system management and the aquifer vulnerability, the points are multiplied to obtain a Groundwater Quality Management (GQM) index.

Based on the above, the aquifers in the study area are classified as follows (Table 39):

TABLE 39: CLASSIFICATION OF AQUIFERS (MVB CONSULTING, 2026)

Description	Aquifer	Vulnerability	Rating	Protection
Weathered Aquifer	Minor (2)	1	2	Low
Fractured Aquifer	Minor (2)	1	2	Low

7.9.7 Geochemical Assessment and Mine Water Quality

7.9.7.1 Waste Assessment

SRPM does not propose to bring the waste material to surface, but to use the material for infilling of the underground workings to increase stability in the underground workings.

A waste assessment of SRPM's Kwezi Waste Rock Dump (WRD) was undertaken by SRK Consulting in 2023. The Kwezi waste rock dump contains waste rock material that was obtained from underground operation at SRPM's Kwezi Shaft, which is located approximately 3km northeast of the K6 Shaft and is considered representative material.

The mineralogy of the Kwezi WRD indicates that plagioclase is a predominant mineral and enstatite occur as an abundant mineral. Chromite and quartz occur in minor amounts and the remaining minerals, namely, talc, chlorite, biotite, actinolite, augite, and montmorillonite all occur in trace amounts. Based on the laboratory results, no acid-producing minerals were detected by XRD[16].

The samples were assessed against the Norms and Standards for the Assessment for Landfill Disposal and the Norms and Standards for Disposal of Waste to Landfill (Government Gazette, No. 36784, 23 August 2013).

The type of waste is determined by comparing the Total Concentration (TC) and Leachable Concentration (LC) of the elements and chemical substances in the waste with the Total Concentrations Threshold (TCT) and Leachable Concentrations Threshold (LCT) limits specified in Section 6 of the Norms and Standards (No.R.635). Based on the TC and LC limits respectively, the waste type and the landfill disposal requirements are determined.

Based on the TC and LC limits of the elements and chemical substances in the samples exceeding the corresponding TCT and LCT limits respectively, the study identified exceedances as detailed in Table 40and Table 41.

Highlighted in the colour of the respective threshold category are the concentrations of constituents above the threshold. For instance, TC above TCT0 is highlighted in green in the tables.

TABLE 40: LEACHABLE CONCENTRATIONS RELATIVE TO THE THRESHOLD VALUES FOR METAL IONS AND INORGANIC ANIONS (MVB CONSULTING, 2026)

Elements & Chemical Substances in Waste	Leachable Concentrations Threshold (LCT) Limits (mg/l)				
	LCT0	LCT1	LCT2	LCT3	KWEZI WRD
Metal Ions					
As, Arsenic	0.01	0.5	1	4	<0.003
B, Boron	0.5	25	50	200	0.019
Ba, Barium	0.7	35	70	280	0.429
Cd, Cadmium	0.003	0.15	0.3	1.2	0.001

[16] X-ray Diffraction (XRD) is a non-destructive analytical technique used to determine the crystallographic structure, chemical phase, and physical properties of materials.

Elements & Chemical Substances in Waste	Leachable Concentrations Threshold (LCT) Limits (mg/l)				
	LCT0	LCT1	LCT2	LCT3	KWEZI WRD
Co, Cobalt	0.5	25	50	200	0.006
CrT, Chromium Total	0.1	5	10	40	0.002
Cu, Copper	2	100	200	800	0.013
Hg, Mercury	0.006	0.03	0.6	2.4	<0.001
Mn, Manganese	0.5	25	50	200	0.696
Mo, Molybdenum	0.07	3.5	7	28	<0.001
Ni, Nickel	0.07	3.5	7	28	0.063
Pb, Lead	0.01	0.5	1	4	<0.001
Sb, Antimony	0.02	1	2	8	<0.002
Se, Selenium	0.01	0.5	1	4	<0.001
V, Vanadium	0.2	10	20	80	0.036
Zn, Zinc	5	250	500	2 000	0.093
Inorganic Anions					
TDS	1000	12 500	25 000	100 000	20.5
Chloride	300	15 000	30 000	120 000	<2.0
Sulphate, SO4	250	12 500	25 000	100 000	<4.0
NO3 as N, Nitrite- N	11	550	1100	4 400	<0.1
Fluoride	1.5	75	150	600	<0.1

TABLE 41: TOTAL CONCENTRATIONS RELATIVE TO THRESHOLD VALUED FOR METAL IONS (MVB CONSULTING, 2026)

Elements & Chemical Substances in Waste	Total Concentrations Threshold (TCT) Limits (mg/kg)			
	TCT0	TCT1	TCT2	KWEZI WRD
As, Arsenic	5.8	500	2000	<2
B, Boron	150	15 000	60 000	19.09
Ba, Barium	62.5	6 250	25 000	47.56
Cd, Cadmium	7.5	260	1040	<0.1
Co, Cobalt	50	5 000	20 000	12.57
CrT, Chromium Total	46 000	800 000	N/A	117
Cu, Copper	16	19 500	78 000	1191
Hg, Mercury	0.93	160	640	<0.1
Mn, Manganese	1 000	25 000	100 000	230
Mo, Molybdenum	40	1 000	4 000	<0.1
Ni, Nickel	91	10 600	42 400	111
Pb, Lead	20	1 900	7 600	1.28
Sb, Antimony	10	75	300	<1

Elements & Chemical Substances in Waste	Total Concentrations Threshold (TCT) Limits (mg/kg)			
	TCT0	TCT1	TCT2	KWEZI WRD
Se, Selenium	10	50	200	<3
V, Vanadium	150	2 680	10720	19.27
Zn, Zinc	240	160 000	640 000	39.86

The Leachable Concentrations in the waste rock shows that the only metal that exceed the LCT0 threshold is manganese. It should be noted that waste rock samples were leached using acetic acid instead of distilled water.

The Total Concentrations in the Kwezi waste rock shows that the only metals that exceed the TCT0 threshold are copper and nickel.

The Kwezi waste rock samples are classified as Type 3 waste which corresponds to a Class C disposal facility.

7.10 Air Quality

SRPM has an existing air quality monitoring programme for its Rustenburg and Kroondal Operations. The purpose of the dust monitoring programme is to:

- Quantify the operation's contribution to dust deposition in the area;
- Identify potential problem or high-risk areas; and
- Assess compliance of the operation to relevant governing air quality standards.

Dust monitors that are subject to the dust fallout limits set out by the National Dust Control Regulations (NDCR), can be either of the following:

- Residential monitors- means any dust monitor situated within an area classified for residential use as per the local town planning scheme.
- Non-Residential monitors - means any dust monitor situated within an area not classified for residential use as per the local town planning scheme.

SRPM dusting monitoring points related to the K6 and Bathopele Operations are detailed in Table 42 and shown in Figure 42.

TABLE 42: SRPM DUST MONITORING POINTS IN RELATION TO K6 AND BATHOPELE OPERATIONS

Nr	Description	Coordinates		Classification
Sib DB52	Rustenburg WWTP	25°39'9.86"S	27°17'0.85"E	Non-residential
Sib DB36	Waterval TSF W, Hex River offices	25°39'52.99"S	27°16'38.27"E	Non-residential
Sib DB43	Bathopele Shaft W	25°40'52.93"S	27°17'22.34"E	Non-residential
Sib DB25	Bathopele Shaft	25°41'12.16"S	27°18'20.48"E	Non-residential
Sib DB26	Waterval Village	25°41'44.23"S	27°19'29.78"E	Residential
Sib DB46	UG2 concentrator / WV TSF S	25°40'31.51"S	27°18'56.23"E	Non-residential
Sib DB47	Waterval WWTW	25°40'54.84"S	27°19'29.17"E	Non-residential

Nr	Description	Coordinates		Classification
KPM SB14	Rustenburg WWTW Entrance	S25.65441	E27.27816	Non-residential
KPM SB16	K6 Correctional Services	S25.64351	E27.26007	Non-residential
KPM SB17	K6 Airport	S25.64135	E27.26609	Non-residential
KPM SB18	K6 Skydiving Club	S25.64423	E27.26750	Non-residential
KPM SB36	K6 shaft, S	S25.65122	E27.26602	Non-residential
KPM SB40	Dawid Brink Primary School	S25.65670	E27.25719	Residential
KPM SB41	Corner of Beneden street and Buiten street	S25.64774	E27.25570	Residential

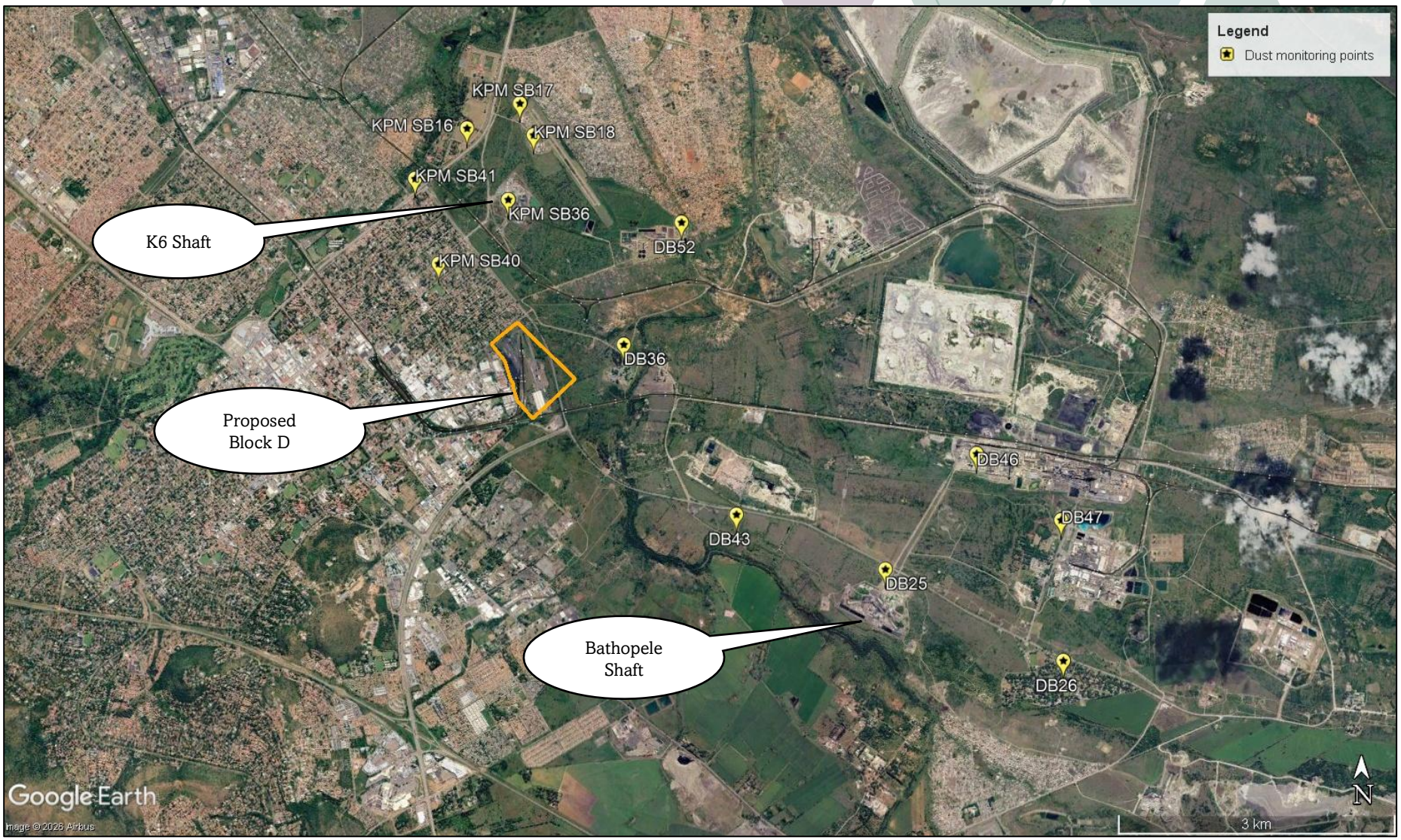


FIGURE 42: SRPM DUST MONITORING POINTS IN RELATION TO K6 AND BATHOPELE OPERATIONS

Dust fallout (DFO) monitoring is undertaken at SRPM by Aquatico Scientific (Pty) Ltd. The monitoring is done according to the requirements of the national dust control regulations (DEA 2013), according to 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 $mg/m^2/day$.

DFO monitoring data for the 12-month period from January to December 2025 is presented and compared with the limit value of the National Dust Fallout Standards for non-residential areas of 1 200$mg/m^2/day$ and residential areas of 600$mg/m^2/day$ in Table 43. Exceedances are highlighted in red. The DFO monitoring report is available as **Appendix C4**.

The DFO measured at Site DB47, Waterval WWTW exceeded the DFO limit value for non-residential areas twice during the 12-month period that was assessed. The NDCR permitted exceedance frequency was not exceeded. The source of the elevated dustfall was not confirmed, but microscopic evaluation indicated material with a very dark colour in the bucket; a likely source is the material haul trucks that use the road close by.

The DFO measured at KPM SB 40 (Dawid Brink Primary School) recorded two instances of high dustfall in August and December 2025. As this monitoring point is situated within a residential area, these exceedances may not be related to mining activity.

The DFO measured at KPM SB41 (Corner of Beneden street and Buiten street) recorded three instances of high dustfall that exceeded the residential guideline limit. Because of its location, the dustfall is not necessarily only mining related, but may contain dust from non-mining sources and activities.

Sources of air pollution in the area are mining activities, informal settlements, industrial activities, as well as domestic fuel burning, biomass burning, vehicle entrainment from unpaved roads, informal waste combustion, wind-blown dust from open areas, vehicle tailpipe emissions. Contributors to dust fallout include unpaved roads, agricultural activities (seasonal) and mining related activities.

TABLE 43: DUST FALLOUT MONITORING RESULTS FOR SRPM MONITORING POINTS RELATED TO K6 AND BATHOPELE OPERATIONS

Nr.	Classification	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec 25
Sib DB52	Non-residential	126	430	171	150	57	231	118	101	530	140		319
Sib DB36	Non-residential	200	288	446	323	256	149	252	285	417	193	148	340
Sib DB43	Non-residential	220	90	82	279	94	99	177	138	1500	251	136	302
Sib DB25	Non-residential	457	171	132	156	91	193	288	168	462	212	59	254
Sib DB26	Residential	199	152	113	256	89	49	247	239	219	199	229	231
Sib DB46	Non-residential	418	222	173	286	448	357	333	487	6560	794	68	399
Sib DB47	Non-residential	1430	763	315	754	1270	722	583	457	425	621	673	
KPM SB14	Non-residential	177	220	204	164	171	109	176	293	382	271	53	216
KPM SB16	Non-residential	149	382	212	249	81	176	322	29	353	143	168	131
KPM SB17	Non-residential	117	234	86	220	177	57	92	144	314	199	75	32
KPM SB18	Non-residential	107	132	60	143	75	60	132	146	239	186	67	342
KPM SB36	Non-residential	942	1090	969	1370	1200	1590	319.	2080	981	2800	1000	1830
KPM SB40	Residential	169	209	345	338	328	442	355	1030	356	282	201	1070
KPM SB41	Residential	-	165	675	752	434	384	486	437	808	448	388	326

7.11 Noise

Note: Information for this section was obtained from Enviro Compliance's Noise Impact Assessment (2026). Refer to **Appendix C4** for the full report.

7.11.1 Sensitive receptors and noise monitoring points

To assess the existing noise climate in the area surrounding the proposed Block D Underground Mining Project, ambient noise monitoring was conducted at seven receptor locations surrounding the proposed site.

Sensitive receptors are identified as areas that may be impacted negatively due to noise associated with the proposed project. Examples of receptors include, but are not limited to, schools, shopping centres, hospitals, office blocks and residential areas. Dominant receptors in the area surrounding the site include industrial activities, mining activities and residential areas. From a preliminary assessment of the site using Google Earth imagery, seven receptors were identified surrounding the site boundary (refer to Table 44 and Figure 43).

TABLE 44: NOISE MONITORING LOCATIONS FOR THE PROPOSED BLOCK D UNDERGROUND MINING PROJECT (ENVIRO COMPLIANCE, 2026)

Monitoring Location	Description	Latitude	Longitude	Distance to Centre of the Proposed site
EC1	6A Tuin Street, North of the proposed site	-25.66047276	27.26570332	532m to site
EC2	Buiten Street, North of proposed site	-25.65432173	27.26150515	1304m to site
EC3	Laerskool David Brink, Kerk Street, Northwest of the proposed site	-25.65897198	27.25659328	1235m to site
EC4	Corner of Tuin and Dawes Street, Northwest of the proposed site	-25.66275387	27.26266938	497m to site
EC5	Kai Tires, Dawes Street, West of the proposed site	-25.66692142	27.26510979	270m to site
EC6	Shingwedzi Lifestyle, Southeast of the proposed site	-25.67521026	27.27534218	1412m to site
EC7	Sibanye Platinum Development Centre, Northeast of the proposed site	-25.66397321	27.27717963	1032m to site

The existing noise climate surrounding the proposed Block D underground mine is predominantly industrial business activities, mining activities, and urban residential activities. Existing noise sources may include the following:

- Industrial area to the west of the proposed site;
- Coal handling activities at the Tradekor/Exarro coal stockyard;
- Underground mining activities at the K6 Sibanye Shaft operations including the surrounding vent shafts, Underground mining activities at the Bathopele Mine;
- Heavy vehicle traffic in the surrounding areas;

- Waterval Landfill operations.

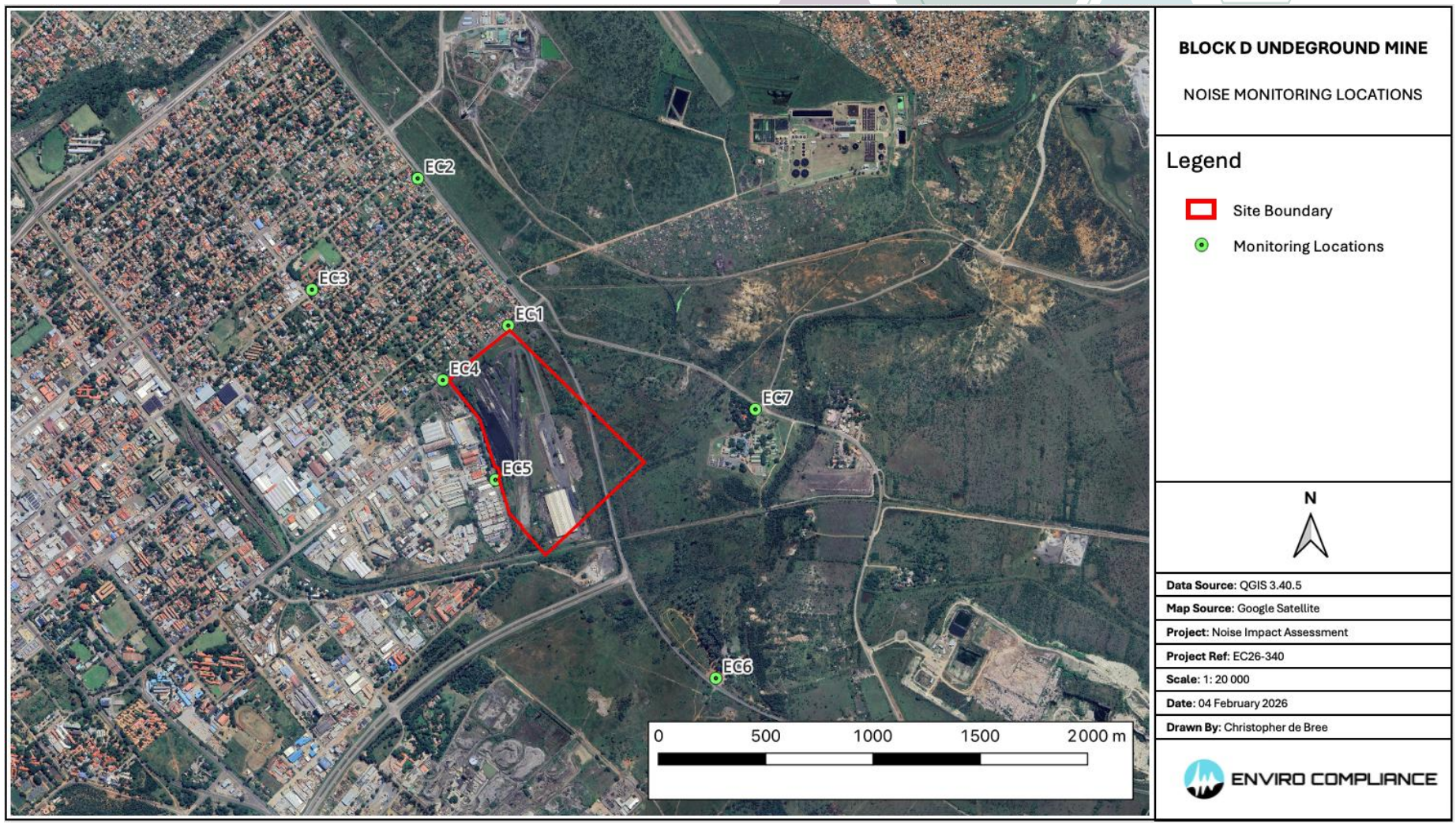


FIGURE 43: LOCATION OF SENSITIVE RECEPTORS AND NOISE MONITORING LOCATIONS (ENVIRO COMPLIANCE, 2026)

7.11.2 Day-time noise monitoring results

The results from the day-time noise monitoring survey conducted on 28th January 2026 are presented in Table 45 and Figure 44. Conditions during the baseline site survey were warm with sunny weather and calm conditions. Noise levels at all receptor locations were compared to the typical day-time rating level for noise in Urban (Class D) areas (60 dB(A)). Day-time noise levels (L_{Aeq}) at four locations were above the guideline rating level. The main sources of noise identified at each location included:

- EC1 (6A Tuin Street): Regional Road traffic, industrial activity at coal yard, birds, local road traffic, people talking and insects.
- EC2 (Buiten Street): Regional Road traffic, birds, local road traffic, people talking, distant vent shaft and insects.
- EC3 (Laerskool David Brink): Dog barking, birds, local road traffic, children playing, hooting and insects.
- EC4 (Cnr Tuin and Dawes Street): Industrial activity at coal yard, Birds, local road traffic, sirens, hooter and insects.
- EC5 (Kai Tires, Dawes Street): Industrial activity (grinding), offloading of coal, birds, local road traffic, reverse hooter and insects.
- EC6 (Shingwedzi Lifestyle): Regional Road traffic, birds, local road traffic and insects.
- EC7 (Sibanye Platinum Development Centre): Mining activity (vent shaft), birds, local road traffic, reverse hooter, train and insects.

From the day-time monitoring survey, it is evident that the current noise climate surrounding the proposed Block D underground mine operations is predominantly from the surrounding road traffic, industrial and mining noises and natural sources such as dogs, birds, insects and people. It is noted that the proposed Block D underground mine is planned to be operational during the day-time and night-time period.

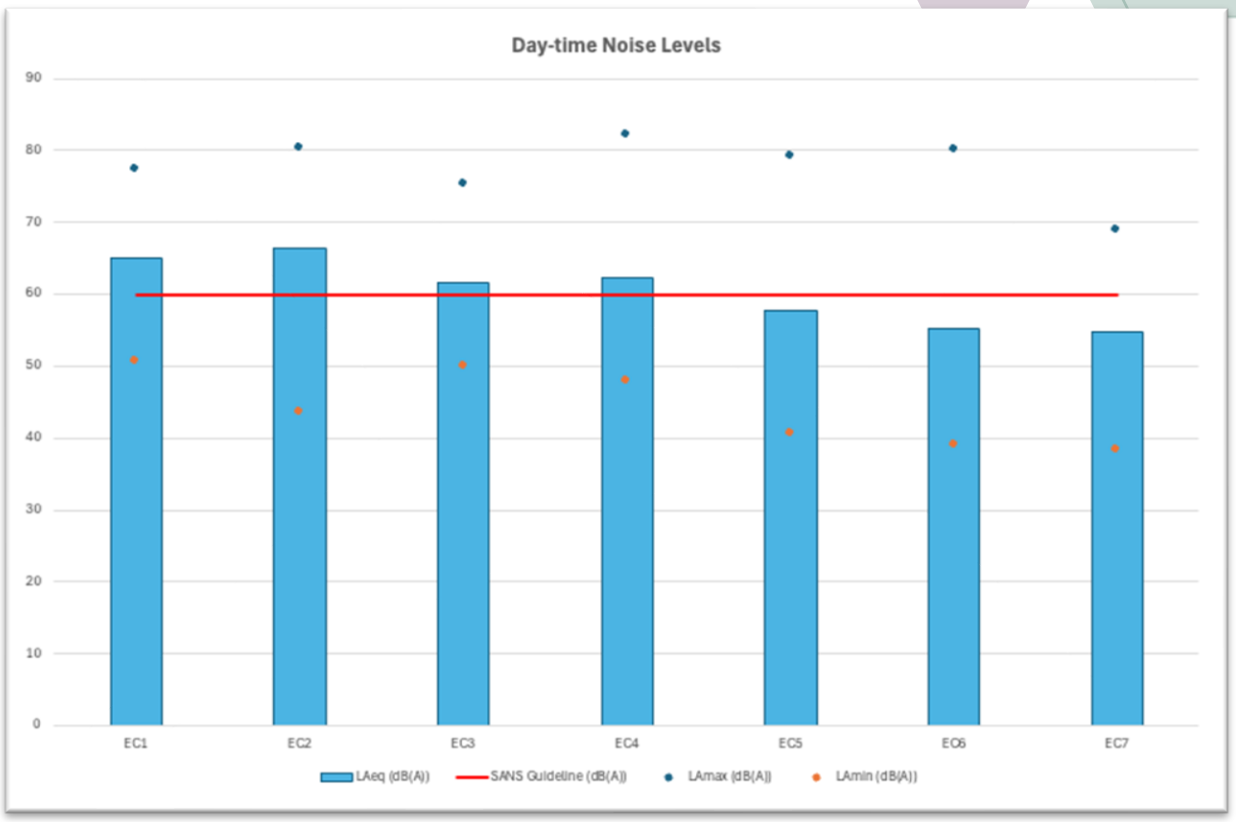


FIGURE 44: DAY-TIME NOISE LEVELS (ENVIRO COMPLIANCE, 2026)

TABLE 45: DAY-TIME NOISE MONITORING RESULTS (ENVIRO COMPLIANCE, 2026)

Monitoring Location	Time	L_{Amin} (dB(A))	L_{Aeq} (dB(A))	L_{Amax} (dB(A))	SANS Guideline (dB(A))	Compliant
EC1	06:45:00	77.30	50.70	65.10	60	No
EC2	07:02:00	80.3	43.7	66.5	60	No
EC3	07:16:00	75.4	50.0	61.7	60	No
EC4	07:30:00	82.1	48.0	62.4	60	No
EC5	07:44:00	79.1	40.7	57.8	60	Yes
EC6	08:02:00	80.1	39.1	55.3	60	Yes
EC7	08:17:00	68.9	38.4	54.8	60	Yes

7.11.3 Night-time noise monitoring results

The results from the night-time noise monitoring survey conducted on 28th and 29th January 2026 are presented in Table 46 and Figure 45. Conditions during the baseline site survey were cool with clear conditions experienced, with calm throughout. Noise levels at all receptor locations were compared to the typical night-time rating level for noise in Urban (Class D) areas (50 dB(A)).

Logarithmic Average L_{Aeq} noise levels at six of the monitoring locations were above the guideline level during the monitoring survey. The main sources of noise identified at each location include:

- EC1 (6A Tuin Street): Regional Road traffic, industrial activity at coal yard, local road traffic, people talking and insects.
- EC2 (Buiten Street): Regional Road traffic, dog barking, local road traffic, people talking, distant vent shaft and insects.
- EC3 (Laerskool David Brink): Dog barking, local road traffic, night club activities, people talking and insects.
- EC4 (Cnr Tuin and Dawes Street): Industrial activity at coal yard, local road traffic, sirens, hooter and insects.
- EC5 (Kai Tires, Dawes Street): Industrial activity (grinding), offloading of coal, local road traffic, reverse hooter and insects.
- EC6 (Shingwedzi Lifestyle): Regional Road traffic, local road traffic and insects.
- EC7 (Sibanye Platinum Development Centre): Mining activity (vent shaft), local road traffic, reverse hooter and insects.

From the night-time monitoring survey, it is evident that the current noise climate surrounding the proposed Block D underground mine is predominantly the surrounding local road traffic, industrial and mining noises and natural sounds such as dogs, birds, insects and people.

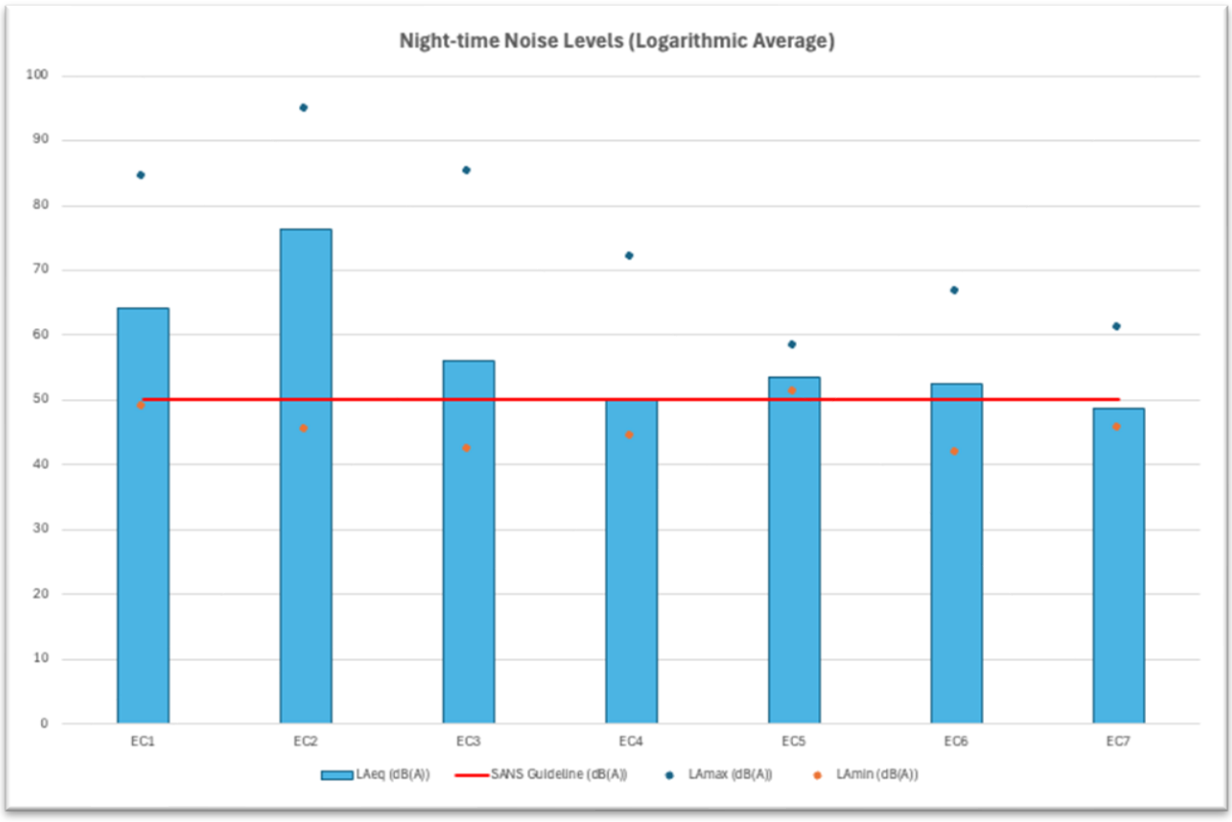


FIGURE 45: NIGHT-TIME NOISE LEVELS (ENVIRO COMPLIANCE, 2026)

TABLE 46: NIGHT-TIME NOISE MONITORING RESULTS (ENVIRO-COMPLIANCE, 2026

Monitoring Location	Time	L_{Amax} (dB(A))	L_{Amin} (dB(A))	L_{Aeq} (dB(A))	SANS Guideline (dB(A))	Compliant
Early Night						
EC1	22:07:47	86.3	49.8	64.4	50	No
EC2	22:12:55	71.5	47.2	58.4	50	No
EC3	22:24:09	71.9	43.9	54.4	50	No
EC4	22:39:55	74.4	45.1	50.3	50	No
EC5	22:52:11	57.6	52.7	54.9	50	No
EC6	23:06:43	63.8	42.3	53.1	50	No
EC7	23:22:29	62.1	44.7	48.0	50	Yes
Late Night						
EC1	00:35:40	81.3	47.9	64.2	50	No
EC2	00:49:11	97.9	42.7	79.4	50	No
EC3	00:59:36	88.2	39.9	57.1	50	No
EC4	01:18:04	67.0	43.5	49.6	50	Yes
EC5	01:31:17	59.1	48.8	51.9	50	No
EC6	01:45:35	68.3	41.3	51.8	50	No
EC7	02:00:38	59.9	46.5	49.5	50	Yes
Logarithmic average						
EC1	---	84.5	49.0	64.3	50	No
EC2	---	94.9	45.5	76.4	50	No
EC3	---	85.3	42.3	56.0	50	No
EC4	---	72.1	44.4	50.0	50	No
EC5	---	58.4	51.2	53.7	50	No
EC6	---	66.6	41.8	52.5	50	No
EC7	---	61.1	45.7	48.8	50	Yes

7.12 Archaeology and Cultural Heritage

Note: Information for this section was obtained from J.A. van Schalkwyk's heritage assessment (2026). Refer to **Appendix C5** for the full report.

The cultural landscape qualities of the region essentially consist of three components. The first is a rural area in which the human occupation is made up of a complex layering of Stone Age occupation. This was followed later by large scale settlement of agro-pastoralists dating as far back as the Early Iron Age. It has been suggested that for some time at least the occupying Stone Age population co-existed with the incoming agro-pastoralists but were either displaced or incorporated by the latter. The third component consists of two elements, a farming community of white settlers that arrived on the scene during the early part of the 1800s. Their settlement in the region soon led to the development of an urban element consisting of a number of

towns. Over time, the discovery and exploitation of the rich mineral wealth altered the region into a landscape signified by large-scale mining activities.

Based on the screening assessment undertaken by the Heritage specialist (including a review of available databases, publications, as well as available heritage impact assessments done for the purpose of developments in the region) and supported by the field survey, it was determined that very few sites of heritage significance occur or are known to occur in the region:

- Stone Age tools, mostly dating to the Middle Stone Age (MSA) are known to occur as surface scatters, usually in areas where suitable raw material is available, i.e. some of the gravel terraces along the riverbanks in the larger region, as well as specific watering points and pans;
- Sites dating the Late Iron Age are known to occur to the northwest, north and northeast of the project area;
- Historic structures, inclusive of buildings, bridges and monuments occur mostly in urban areas but also sporadically in the larger region;
- Industrial heritage manifest mainly as transport facilities (railway lines and stations) and early mining activities;
- Formal cemeteries and burial sites occur sporadically in the larger region.

During the field survey undertaken by the Heritage Specialist, no sites, features or objects of cultural significance were identified. This is based on the fact that the desktop assessment, as well as the field survey, produced no visual indicators, i.e. stone tools, historic artefacts, faunal remains, structures or graves on the site.

7.13 Palaeontology

Note: Information for this section was obtained from Marion Bramfod's Letter of Exemption to SAHRA (2025). Refer to **Appendix C7** the full report.

The project area lies on the Mathlagame Norite-anorthosite of Rustenburg Layered Suite (RLS) that is part of the Bushveld Igneous Complex. The RLS intruded through the Transvaal Supergroup rocks about 2055 million years ago. All these rocks are igneous in origin and do not preserve any fossils at all. In addition, their emplacement predates the evolution of visible life-forms and only microbes were present in certain environments. The insignificant to zero palaeo-sensitivity is confirmed by the grey colouration in the SAHRIS map (refer to Figure 46). Given that there is no chance of fossils occurring within the project footprint, exemption from further palaeontological impact assessments were requested.

FIGURE 46: SAHRIS MAP INDICATING THE PALEO-SENSITIVITY OF THE PROJECT REGION

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds are required
ORANGE/ YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

7.14 Visual

The initial establishment of the K6 and Bathopele operations and its associated infrastructure have already altered the visual landscape of the area. The highly sensitive receptors that surround the mining operation have already been visually impacted upon and the sense of place drastically altered due to the initial establishment of infrastructure that is not congruent to that of the visual backdrop.

7.15 Socio-Economic

Note: Information for this section was obtained from Sehuno_ZA's Social Impact Assessment (2025). Refer to **Appendix C8** for the full report.

The Block D project is situated on the eastern boundary of the town of Rustenburg, within the jurisdiction of the Rustenburg Local Municipality (RLM) and Bojanala Platinum District Municipality, in the North West Province of South Africa. The area is strategically positioned as one of the country's most important mining hubs, renowned for its vast mineral wealth, particularly PGMs, chrome, and gold. The municipality plays a

pivotal role in South Africa's mining industry and is central to the economy of the province. Covering an area of approximately 3,420km².

The Social Impact Assessment (SIA) utilised secondary data sources including Statistics South Africa Stats SA Census, community surveys, municipal development plans, and existing project reports to produce a Social Baseline of the project area (Table 47).

TABLE 47: SOCIAL BASELINE FINDINGS (SEHUNO_ZA, 2025)

Population size	562 031 (2022) Between 2011 and 2016, the population of the RLM increased from 549,575 to 626,522, reflecting a growth of approximately 14%. However, from 2016 to 2022, the population declined to 562,031, representing a decrease of about 10% of the population.
Gender	Females: 52% (2022) Males: 48% (2022) The population is slightly skewed towards females, who make up 52% of the population, while males account for 48%. This indicates a fairly balanced gender distribution with a marginal female majority.
Age Structure	The age distribution is an essential indicator of the development of an area's character and economically active aged segment. The age distribution in the RLM indicates a predominantly working-age population, with 71.3% of residents aged between 15 and 64 years in 2022, compared to 72.5% in 2011. This reflects a large pool of economically active individuals who can contribute labour to the surrounding mines, industries, and businesses. Consequently, there is a strong expectation within local communities for increased employment opportunities and inclusive economic participation to support household livelihoods and reduce poverty levels.
Ethnic Group	Predominantly Black African comprising 94% of residents. White residents make up 4.9%, while Coloured and Indian/Asian populations represent 0.8% and 0.1% respectively. A small fraction of 0.2% identifies as other or did not specify their race.
Dominant Languages	Setswana is the most predominant language in the RLM, spoken by 63.9% of the population. IsiXhosa (10.1%), Afrikaans (5.6%), Sesotho (5.3%), and Xitsonga (4.7%) are also spoken, while smaller proportions speak Isizulu (1.7%) and Sepedi (1.4%). Other languages from foreign countries account for 7.3%, reflecting a linguistically diverse community with a clear Setswana majority.
Places of Birth	Majority born in the North West Province (72.6%), followed by Eastern Cape (7.7%) and outside of South Africa (7.6%).
Dwelling Types	The majority of residents live in formal dwellings, accounting for 85.9% of households. Traditional dwellings make up 13.3%, while informal dwellings and other unspecified types represent a very small proportion at 0.5% and 0.4% respectively, indicating that most of the population resides in established housing structures. Generally, majority of the houses closest to the mines are informal in nature.
Home ownership	Home ownership in the RLM shows a diverse pattern. While 36% of households are fully owned and paid off, and 9% are owned but not yet paid off, a significant portion of residents 30% rent from private individuals. Additionally, 14.4% occupy their homes rent-free, with the remaining 9.2% falling into other unspecified categories, highlighting varied housing arrangements in the area.

Household services	**Drinking water** In RLM, service and infrastructure provision is fairly good. Water provision generally good, with approximately 90% of residents in formal housing having access to piped water inside their homes or within their yards. However, access remains uneven, as many residents living in informal settlements adjacent to mining areas do not have direct water connections and rely on communal standpipes and water tankers for their daily needs. **Sanitation** In RLM, service and infrastructure provision is fairly good. Water provision generally good, with approximately 90% of residents in formal housing having access to piped water inside their homes or within their yards. However, access remains uneven, as many residents living in informal settlements adjacent to mining areas do not have direct water connections and rely on communal standpipes and water tankers for their daily needs. **Refuse disposal** Waste management is effective for most households, with 75.6% of households receiving weekly municipal collection, while 16.7% depend on private waste disposal systems or no access to waste disposal. These are mostly in informal settlements. **Energy** Waste management is effective for most households, with 75.6% of households receiving weekly municipal collection, while 16.7% depend on private waste disposal systems or no access to waste disposal. These are mostly in informal settlements.
Economic Sector	RLM's economy is heavily dominated by the mining sector, which contributes approximately 72% of the total local economic output. This indicates a strong dependence on mineral extraction and related activities. Other sectors, such as community services (7.8%), finance (7.0%), and trade (5.8%), make moderate contributions, while industries like agriculture, construction, and electricity play a minor role, each contributing less than 2%. This means that the community in the RLM is highly dependent on the mining industry for employment, income, and local economic activity. When the mining sector performs well, employment and local spending increase but when production slows or mines close, the community is vulnerable to economic instability, job losses, and reduced municipal revenue.
Employment and Unemployment	The economic activity data indicates that 49.2% of residents are employed, while 17.7% are unemployed. Additionally, 2.8% are discouraged work-seekers, and 30.3% are not economically active. Most recent data from the RLM (2020), indicates that the unemployment rate is higher at 30.8%.
Employment sector	The employment distribution in RLM shows that 74.5% of employed residents work in the formal sector, while 11.1% are in the informal sector and 12.1% work in private households, with 2.2% unsure of their sector.
Household Income	The income data for RLM shows notable inequality, with 17.6% of residents having no income and 2.8% earning below R4800 per month, which is just above the South African minimum wage of R28.79 per hour, which translates to R4 606.4 per month. These figures indicate high poverty levels and limited affordability of household items including food, services. Only a small portion of the population falls within higher income brackets, reflecting economic disparity. This suggests that many households face challenges in meeting basic needs such as housing, healthcare, and education, emphasising the need for targeted socio-economic development and job creation initiatives.
Vulnerability	Various vulnerable groups were identified, including children, women-headed households, the elderly, and persons with disabilities.

Environmental Impact Assessment

8. ENVIRONMENTAL IMPACT ASSESSMENT

In respect of environmental matters, the Department of Environment, Forestry and Fisheries (DFFE) is responsible for drafting all relevant legislation and regulations governing mining and environmental issues. The DMPR, in turn, is responsible for implementing these laws and regulations insofar as the laws/regulations pertaining 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 57 and Table 58 provides identification and a description of identified environmental and social impacts that may result from the proposed Block D project during the following phases of the project:

- Possible anticipated impacted during the Operational Phase (Table 57); and
- Possible anticipated impact during the Decommissioning and Closure Phase (Table 58).

As the proposed Block D Underground Mining project is considered an expansion project of the current K6 and Bathopele shafts' current underground mining activities, and existing supporting infrastructure will be utilised, there is no construction phase.

To identify all possible impacts, the following specialist studies have been identified as necessary for the undertaking of the Basic Assessment process. Each specialist has identified, independently, all possible impacts at each stage of the proposed development of the additional infrastructure (Operational and Decommissioning and Closure Phases), coupled with the identification of the best suitable alternatives and mitigation measures moving forward:

- Wetland and Freshwater Assessment
- Hydropedology Assessment
- Groundwater Assessment
- Heritage Impact Assessment
- Palaeontology Impact Assessment
- Blasting Impact Assessment
- Social Impact Assessment

8.1 Site Sensitivity Verification

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 the NEMA, this Site Sensitivity Verification has been compiled to provide a rationale for the specialist studies undertaken as part of the environmental authorisation process and appended to the BAR. This section addresses the findings of the Department of Forestry, Fisheries and the Environment ("DFFE") Screening Tool Report (**Appendix D**), generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

As per the Environmental Screening Report compiled for Block D, the proposed site is located within the following areas of sensitivity as indicated in Table 48.

TABLE 48: ENVIRONMENTAL SENSITIVITY OF THE PROJECT AREA (DFFE SCREENING TOOL)

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture theme		X		
Animal species theme			X	
Aquatic biodiversity theme	X			
Archaeological and cultural heritage theme	X			
Civil aviation theme		X		
Defence theme				X
Palaeontology theme:			X	
Plant species theme				X
Terrestrial biodiversity theme:	X			

Other than the specialist studies that have been commissioned and the impacts identified and assessed, some specialist studies suggested by the Screening Tool Report that were not considered. This is supported by a motivation as provided in Table 49.

TABLE 49: SPECIALIST STUDIES REQUIRED AS PER THE SCREENING TOOL REPORT AND RELEVANT MOTIVATION FOR BLOCK D

Specialist Study	Included / not included	Motivation
Agricultural Impact Assessment	Not included	The proposed project is for the expansion of existing underground mining area at the K6 and Bathopele Shaft. The current surface area is already disturbed due the Transnet structures and roads. The expansion of the underground area will not have an impact on the agricultural probability on surface.
Landscape/Visual Impact Assessment	Not included	The proposed project does not include any surface infrastructure. All existing surface infrastructure at Bathopele and K6 Shaft will be utilised. It is not expected that the expansion of an existing underground mining area will have a visual intrusion or a change in the sense of place.

Specialist Study	Included / not included	Motivation
Archaeological and cultural heritage impact assessment	Included	Although there will be no surface disturbance, a Heritage Impact Statement has been undertaken to support the requirements of Section 38 (8) of the National Heritage Resources Act (Act 25 of 1999). Refer to **Appendix C5.**
Palaeontology Impact Assessment	Included	According to the SAHRA Palaeontological Sensitivity Map, the site is characterised as insignificant/zero in terms of Palaeontological Sensitivity and no studies are required. A request for exemption from undertaking a Palaeontological Impact Assessment were compiled and will be submitted to SAHRA. Refer to **Appendix C6**.
Terrestrial Biodiversity Impact Assessment	Not included	The proposed project is for the expansion of existing underground mining area at the Bathopele Shaft. The expansion of the underground area will not have an impact on the fauna and flora.
Aquatic Biodiversity Impact Assessment	Included	A Freshwater Impact Assessment has been undertaken to determine the presence/absent of watercourses and the potential impacts of undermining these watercourses. Refer to **Appendix C2**.
Hydrology Assessment	Included	A Hydrogeology Assessment has been undertaken. Refer to **Appendix C1**.
Noise Impact Assessment	Included	Blast and Vibration Impact Assessment has been undertaken. Refer **Appendix C4**.
Radioactivity Impact Assessment	Not included	Not Applicable
Traffic Impact Assessment	Not included	The proposed project does not include any surface infrastructure. All existing surface infrastructure will be utilised. The Bathopele and K6 Shafts are currently operational with the ore being hauled for processing to the UG2 and the processing site at the Kroondal Mine Concentrators via an existing conveyor network.
Climate Impact Assessment	Not included	The Bathopele and K6 Operations are existing, and the site is currently monitoring their ambient air quality with the assistance of the existing Air Quality Monitoring Network.
Health Impact Assessment	Not included	Multiple management procedures and monitoring procedures like air, water, ground etc. are in place. Environmental impacts such as compromised ambient air quality, surface contamination, groundwater contamination, soil contamination and social related health pressures is assessed only through the determinants of health which are quantified as part of this Basic Assessment Process.
Socio-Economic Assessment	Included	Social Impact Assessment undertaken. Refer to **Appendix C7**
Ambient Air Quality Impact Assessment	Not included	The proposed project does not include any surface infrastructure and is for the expansion of the existing underground mine area.

Specialist Study	Included / not included	Motivation
Seismicity Assessment	Included	Blast and Stability Impact Assessment has been undertaken. Refer **Appendix C8**.
Plant Species Assessment	Not included	The proposed project is for the expansion of existing underground mining area at the Bathopele and K6 Shaft. The expansion of the underground area will not have an impact on the fauna and flora.
Animal Species Assessment	Not included	The proposed project is for the expansion of existing underground mining area at the Bathopele and K6 Shafts. The expansion of the underground area will not have an impact on the fauna and flora.

8.2 Impact Assessment Methodology to be used

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 50: SCALE USED FOR THE EVALUATION OF THE ENVIRONMENTAL RISK RATING

Evaluation Component	Rating	Scale	Description
MAGNITUDE of negative impact (at the indicated spatial scale)	10	Very high	Bio-physical and/or social functions and/or processes might be severely altered.
	8	High	Bio-physical and/or social functions and/or processes might be considerably altered.
	6	Medium	Bio-physical and/or social functions and/or processes might be notably altered.
	4	Low	Bio-physical and/or social functions and/or processes might be slightly altered.
	2	Very low	Bio-physical and/or social functions and/or processes might be negligibly altered.
	0	Zero	Bio-physical and/or social functions and/or processes will remain unaltered.
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	10	Very high	**Positive:** Bio-physical and/or social functions and/or processes might be substantially enhanced.
	8	High	**Positive:** Bio-physical and/or social functions and/or processes might be considerably enhanced.

Evaluation Component	Rating	Scale	Description
	6	Medium	**Positive:** Bio-physical and/or social functions and/or processes might be notably enhanced.
	4	Low	**Positive:** Bio-physical and/or social functions and/or processes might be slightly enhanced.
	2	Very low	**Positive:** Bio-physical and/or social functions and/or processes might be negligibly enhanced.
	0	Zero	**Positive:** Bio-physical and/or social functions and/or processes will remain unaltered.
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 site and within the provincial boundaries.
	2	Local	Within a 5 km radius of the site.
	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.

Evaluation Component	Rating	Scale	Description
	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	***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. ***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. ***Low**:* The activity is localised and might have a negligible cumulative impact. ***None**:* No cumulative impact on the environment.		

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 (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x 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 51. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

TABLE 51: SCALE USED FOR THE EVALUATION OF THE ENVIRONMENTAL SIGNIFICANCE RATINGS

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.

8.3 Cumulative Impact

According to the NEMA EIA Regulations, 2014, cumulative impact in relation to an activity means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

The table below assesses the potential cumulative impacts of the proposed Block D Underground Mining Project.

Aspect	Cumulative impact	Significance
Soils	The proposed Block D underground mining project does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on soil resources, and therefore the cumulative impact on soils is expected to be low.	Low (-)
Terrestrial Biodiversity	The proposed Block D underground mining project does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on terrestrial biodiversity, and therefore the cumulative impact on terrestrial biodiversity is expected to be low.	Low (-)
Freshwater	The cumulative impact of the proposed project on freshwater biodiversity is anticipated to be moderate, given the already disturbed condition of wetland systems within the project area. Historical and ongoing land-use activities have reduced the ecological integrity and resilience of these systems, and while mitigation measures are expected to limit direct project-related impacts, residual effects such	Moderate (-)

Aspect	Cumulative impact	Significance
	as subtle changes in hydrology, water quality, and habitat structure may persist. The proposed project is therefore likely to contribute incrementally to existing pressures from surrounding industrial and urban development, potentially resulting in a continued decline in wetland functionality and a reduced capacity for natural ecosystem recovery.	
Groundwater	The groundwater report indicated that there is a correlation between the current depth to groundwater and topography, which indicates that there is no dewatering of the water table currently taking place. The change in groundwater level at the end of the assumed 7-year mining period is expected to drop ~12m, directly over the underground mining area. As there are no other known dewatering place, it is expected that the cumulative impact will be low.	Low (-)
Air quality	The proposed Block D Underground Mining Project does not constitute of surface infrastructure as the existing K6 and Bathopele shaft areas will be used as well as existing surface infrastructure. There are no additional impacts expected on Air Quality, and therefore the cumulative impact on air quality is expected to be low.	Low (-)
Noise	Mining activities in Block D underground mining area will be conducted entirely using existing underground and surface infrastructure, specifically accessed from the K6 Shaft and the Bathopele Shaft, both of which are currently operating. There is no additional noise impact foreseen, and therefore cumulative impact on noise is expected to be low.	Low (-)
Heritage	As the proposed mining at Block D will occur below ground, there will be no impact on any surface or low buried cultural heritage resources. The cumulative impact on heritage resources are expected to be low.	Low (-)
Blasting and vibration	As the proposed Block D underground mining project will be a continuation of the current K6 and Bathopele underground mining operations, and blasting in the mined-out areas will not take place, the cumulative impact is expected to be medium.	Medium)-)
Social	Cumulative social impacts during the closure phase includes the following: • Closure of the Block D underground expansion Project, combined with other regional mine closures, may lead to increased stress, disputes, or protests. Job losses and lack of new employment opportunities can heighten anxiety and potential social unrest. • The combined effect of job losses, contract terminations, and no new employment or business opportunities will reduce household incomes, weaken local businesses, and affect regional economic stability. • Closure may reduce the mine's capacity to fund SLP, CSI programmes, and other development initiatives, affecting schools, healthcare, and infrastructure. • Economic stress, unemployment, and lack of new employment opportunities may increase petty crime, theft, or social unrest in affected communities. • Retention and ongoing employment during the operational phase may continue to favour existing male dominated roles, limiting opportunities for women to enter or advance in mining-related positions. This may slow progress towards gender equity and restrict women's participation in income-generating opportunities and skills development.	Medium (-) to High (-)

8.4 Impacts and risks associated with the project

Impacts and risks identified during the impact assessment phase and the significance thereof are shown in Table 57 (operational phase) and Table 58 (decommissioning and closure phase). The following sections provide modelling results and a summary of the impacts to be expected.

8.4.1 Freshwater/wetland impacts

The impacts of the proposed Block D underground mining project are categorised into operational and closure phase impacts. During the operational phase, the primary activity will be underground mining, supported by associated activities such as drilling and blasting, underground transportation of ore and waste rock, dewatering, ventilation and air circulation, and the storage and handling of hazardous materials. Dewatering activities may result in a lowering of the groundwater table in particular and have the potential to reduce baseflow contributions to wetlands. In addition, chemical spills or leaks arising from the improper handling and waste may pose a risk of groundwater and surface water contamination. Ground instability associated with underground mining may also result in subsidence, which could alter surface hydrology and affect wetland structure and functioning. Impacts are expected to be of Medium Significance post the implementation of mitigation measures.

During the closure phase, groundwater flow paths may be altered as a result of the sealing and backfilling of underground mine workings. There is also potential for residual groundwater and surface water contamination due to remaining underground waste or incomplete rehabilitation. Conversely, the closure of mining activities and implementation of rehabilitation measures may result in positive impacts, including improved soil stability and the gradual recovery of ecosystem functions.

8.4.2 Groundwater impacts

8.4.2.1 Dewatering and disruption of private groundwater supply

The primary risk of the proposed Block D Underground mining project is the risk of dewatering and disruption of private groundwater supply. The hydrocensus identified 18 private boreholes in the immediate vicinity of the proposed underground mining area. There are no boreholes directly above the proposed Block D underground mining area. A numerical groundwater model was undertaken to simulate the following scenarios:

- Expected groundwater inflow volume into the underground mining operation.
- The expected groundwater level drawdown as a result of the groundwater inflow.
- The groundwater level recovery post-closure.

Groundwater Inflow

The modelled groundwater inflow volumes are presented in Table 52 and Figure 47.

TABLE 52: ESTIMATED GROUNDWATER INFLOW VOLUME (MVB CONSULTING, 2026)

Date	Average Groundwater Ingress (m^3/day)		
	K6 Shaft	Bathopele Shaft	Total Inflow
Year 1	326	634	960

Date	Average Groundwater Ingress (m^3/day)		
	K6 Shaft	Bathopele Shaft	Total Inflow
Year 2	302	586	888
Year 3	256	498	754
Year 4	123	238	361
Year 5	109	211	320
Year 6	105	204	310
Year 7	71	139	210
Average	**185**	**358**	**539**

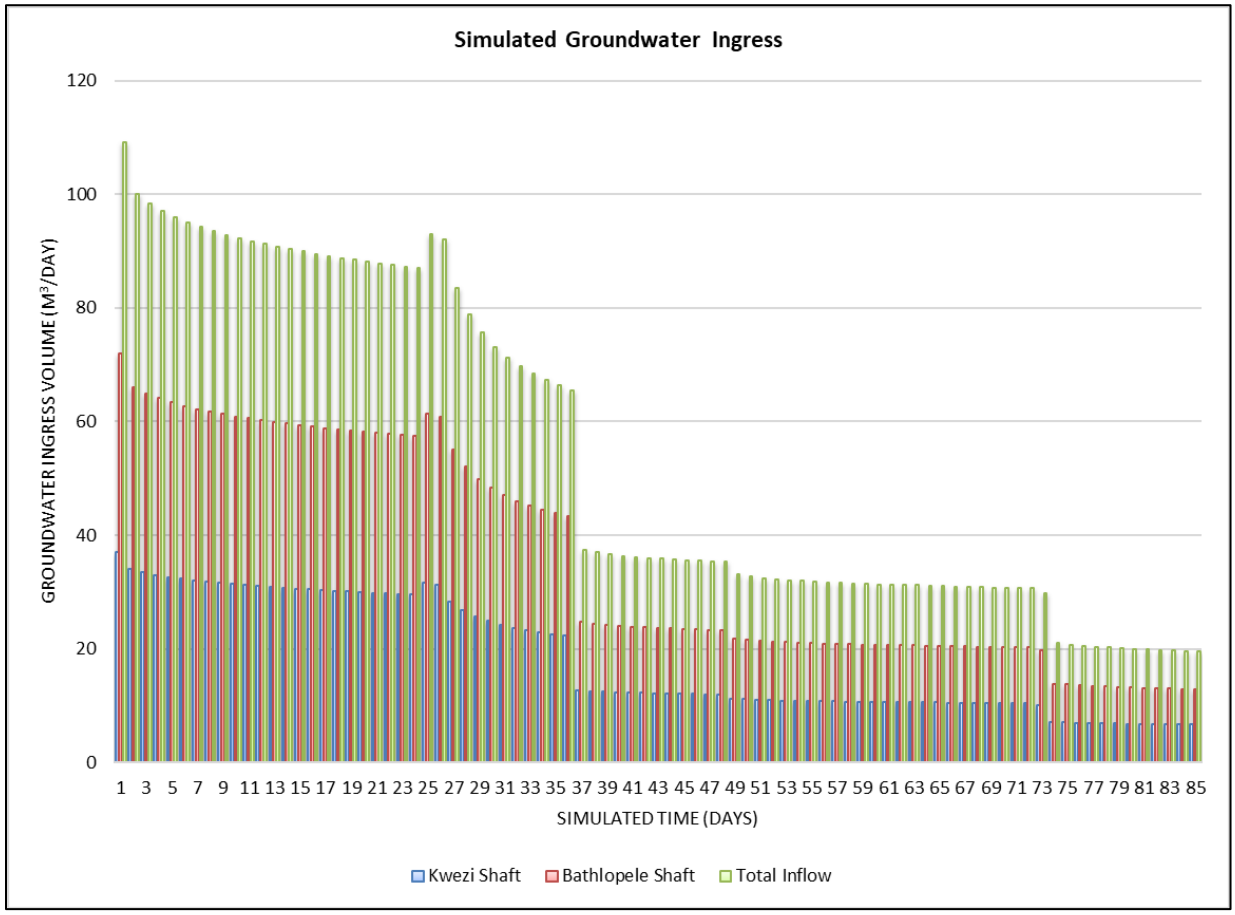


FIGURE 47: ESTIMATED GROUNDWATER INFLOW VOLUME- BLOCK D (MVB CONSULTING, 2026)

Groundwater Level Drawdown and Recovery

The change in groundwater level at the end of an assumed 7-year mining period is shown in Figure 48. The groundwater level is expected to drop approximately 12 m, directly over the mining area. The potentially impacted area is localised, and the private boreholes are not expected to be noticeably impacted, due to the current depth of the boreholes (between 32m and 50m). Boreholes that may be impacted includes the following:

- KDB18 (simulated drawdown approximately 4m).
- KDB02 (simulated drawdown approximately 2.5m).
- KDB03 (simulated drawdown approximately 2.5m).
- KDB17 (simulated drawdown approximately 1m).

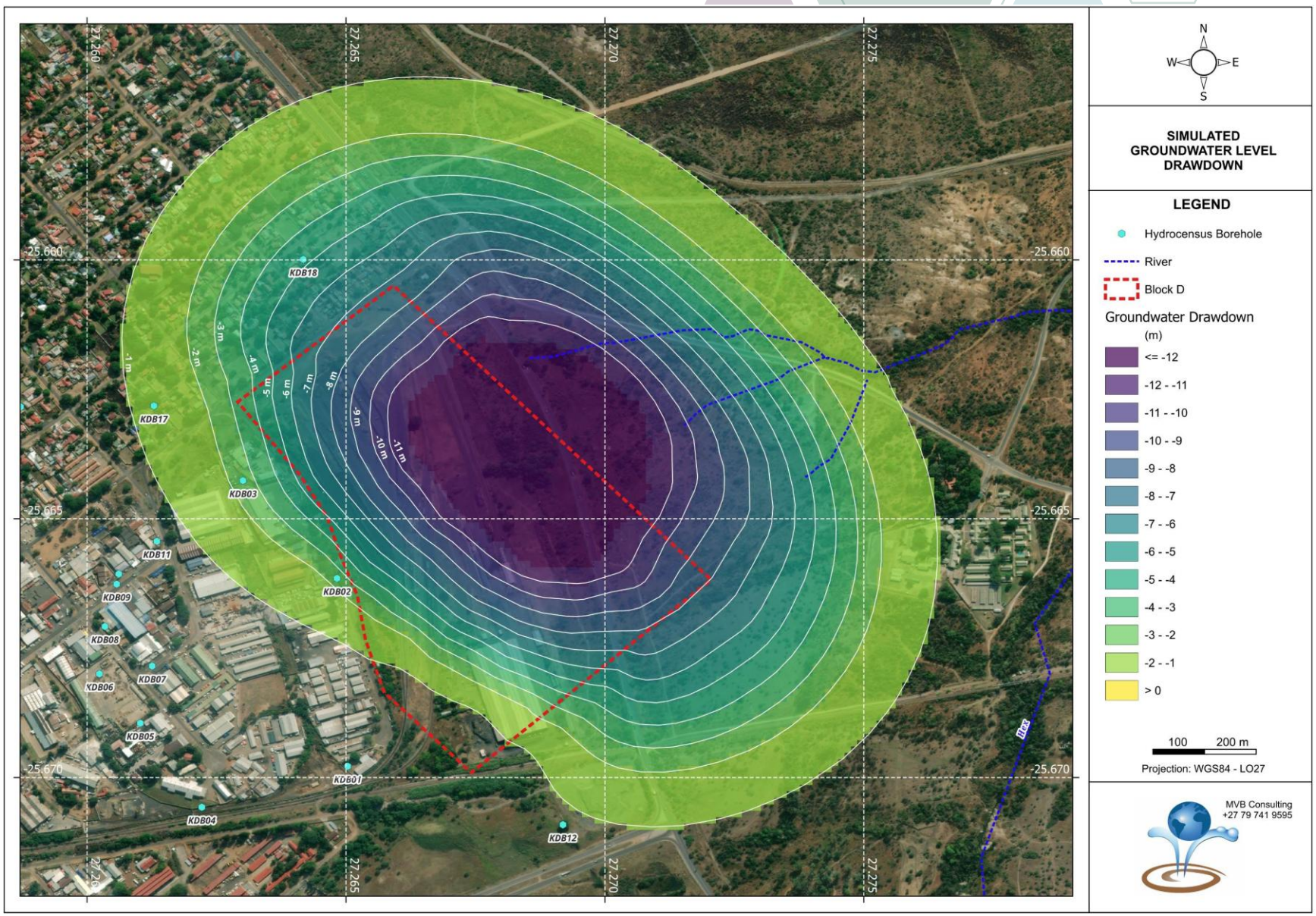


FIGURE 48: SIMULATED GROUNDWATER LEVEL DRAWDOWN WITHIN THE BLOCK D MINING AREA (MVB CONSULTING, 2026)

The groundwater level recovery will take approximately 11 years to fully recover post- closure, in the deeper drawdown area directly above the mine workings. Figure 49 and Figure 50 shows the groundwater level drawdown and recovery in borehole KDB18, which may be the worst affected borehole.

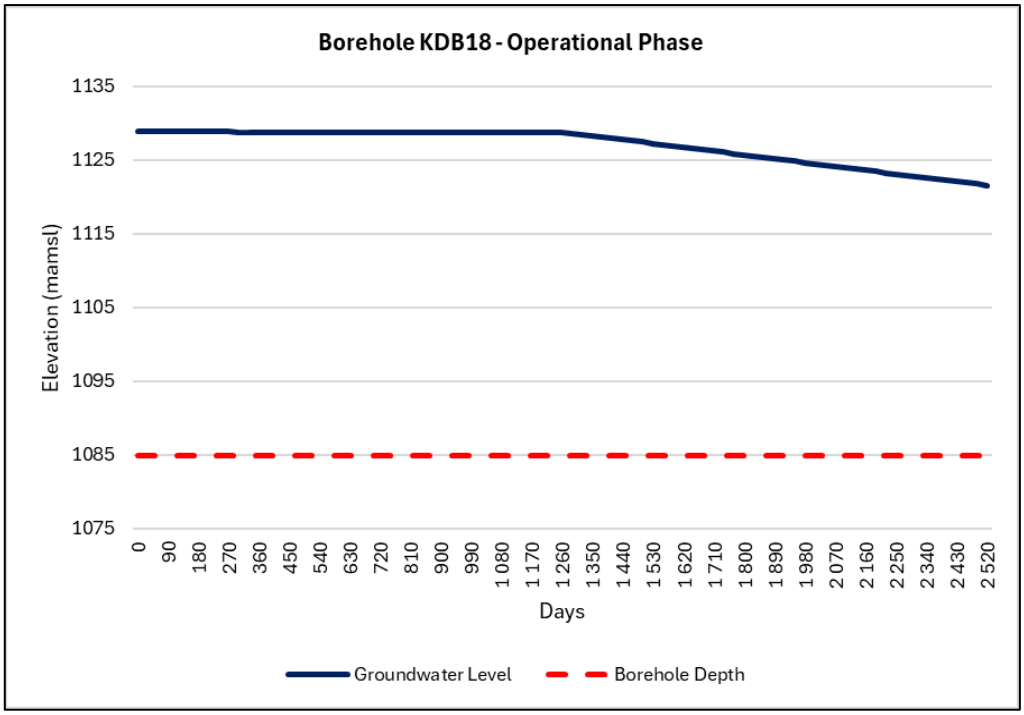


FIGURE 49: SIMULATED GROUNDWATER LEVEL RECOVERY IN BOREHOLE KDB18 (MVB CONSULTING, 2026)

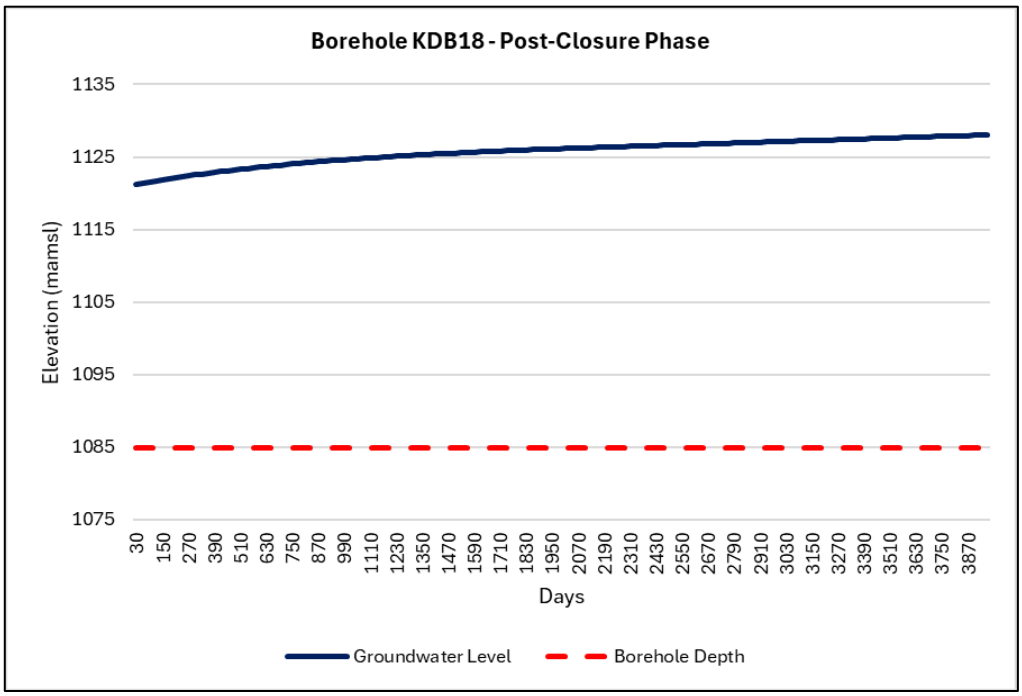


FIGURE 50: SIMULATED GROUNDWATER LEVEL DRAWDOWN IN BOREHOLE KDB18 (MVB CONSULTING, 2026)

8.4.2.2 Groundwater contamination

Geochemical modelling was undertaken to assess if the water quality will deteriorate and determine potential water quality that may decant in future. The modelling was undertaken by Dr. Robert Hansen from Geochemical Dynamic Systems (GeoDyn).

The geochemical risk assessment (GeoDyn, 2021) indicated that the mineral waste is unlikely to leach metal and metalloid contaminants into the groundwater in a post-closure scenario. Sulphate and nitrogen compounds were identified as potential leachates, however, the concentrations were shown to be unlikely to exceed regulatory guideline values, including the SANS 241 drinking water standards. However, some observations of sulphate and nitrogen species in downgradient groundwater monitoring boreholes are exceeded in the operational phase. Therefore, sulphur and nitrogen as well as pH, were the focus of the analyses of the assessment of historic groundwater monitoring data. Chloride is also a chemical of concern as concentrations are elevated in some of the water samples. Chloride may, however, originate from a variety of non-mining related sources, whereas sulphate is more specific to mining.

The objective of the geochemical assessment was to determine the long-term post-closure water quality in the underground mine workings. Geochemical modelling was conducted, using the modelling software PHREEQC, to determine the long-term geochemical behaviour of the mineral in the rock.

The simulation time for the geochemical models is 100 years post-closure. The model result is shown in Table 53.

TABLE 53: POST-CLOSURE WATER QUALITY GEOCHEMICAL MODELLING RESULT (GEODYN, 2021) (MVB CONSULTING, 2026)

Parameter	RPM WUL 2018	Drinking Water	Underground Mine Void
pH	**6-9.5**	**≥5 to ≤9.7**	7.8
Total Dissolved Solids		**≤1 200**	740
Calcium	**<150**		241
Sodium			52
Potassium			5
Magnesium			38
Bicarbonate			26
Sulphate	**<200**	**≤500**	378
Chloride	**<200**	**≤300**	41
Nitrate	**<10**	**≤11**	0.2
Ammonium		**≤1.5**	<0.001
Aluminium		**≤0.3**	<0.001
Iron		**≤2**	<0.001
Manganese		**≤0.4**	<0.001
Nickel		**≤0.07**	0.001

Parameter	RPM WUL 2018	Drinking Water	Underground Mine Void
Molybdenum			0.001

With reference to Table 53, the modelling results are as follows:

- The model results for the underground mine voids, indicates that the risk of the development of Acid Mine Drainage (AMD) conditions is negligible. The post-closure underground mine void geochemical system has acid neutralisation capacity, which is far more than the acid production capacity.
- The model sulphate concentration is below regulatory guideline values, i.e SANS 241 and R635 LCT0. This is due to the lower oxygen concentration in the underground mine voids. The TDS is significantly lower due to lower oxygen concentration in the underground mine voids.
- Model nitrate and ammonia concentrations are shown to be low in the 100-year post-closure scenario. This is due to denitrification process related to microbial organisms present in the groundwater system.
- Model metal and metalloid concentrations in the post-closure are very low. This is due to the relatively low sulphide mineral contents, the relatively low oxygen concentrations in the underground mine voids as well as the ability of the geochemical system to adsorb metals and metalloids, thereby removing them from the mine void water

The potential for groundwater contamination from the mining activities was investigated. The only mining related contaminant source that can potentially impact on the groundwater quality is the post-closure flooded mine workings The geochemical assessment, however, indicated that there are no chemicals of concern expected in the flooded mine workings.

With reference to Table 53, the only parameters that are expected to be elevated are calcium (241 mg/l) and sulphate (378 mg/l). It is important to note that both calcium and sulphate are marginally above the Water Use License limits, but sulphate is below the drinking water limits. A contaminant plume is therefore not expected to develop within the flooded mine workings after mining ceases.

The seepage of mine water from the flooded workings was therefore modelled as a percentage of the source concentration, rather than a specific contaminant parameter. This way the impacts can be related to a wide range of parameters by using the percentage of the source parameter concentration. As an example, if the water body in the flooded mine workings has a calcium concentration of 241 mg/L and sulphate a concentration of 378 mg/L, the concentrations down-gradient from the mine water body will be as follows (Table 54).

TABLE 54: GROUNDWATER QUALITY CONCENTRATIONS AS PERCENTAGE OF THE SOURCE CONCENTRATION (MVB CONSULTING, 2026)

Source Concentration Percentage	Calcium (mg/L)	Sulphate (mg/L)
Source	**241**	**378**
100	241	378
90	217	340
80	193	302
70	169	265
60	145	227
50	121	189

Source Concentration Percentage	Calcium (mg/L)	Sulphate (mg/L)
40	96	151
30	72	113
20	48	76
10	24	38

The result from the seepage migration assessment is shown in Figure 51 and Figure 52 for 50 years and 100 years post closure respectively. It is evident that the seepage migration from the flooded mine workings will be in a north-easterly direction, away from the Block D underground mining area. Because of this migration away from the industrial and residential areas, the proposed underground mining extension is not expected to impact on the groundwater quality in the private boreholes within the industrial or residential areas. Due to the good quality water that is expected in the flooded mine workings, this seepage migration will also not impact on any other receptors such as the Hex River.

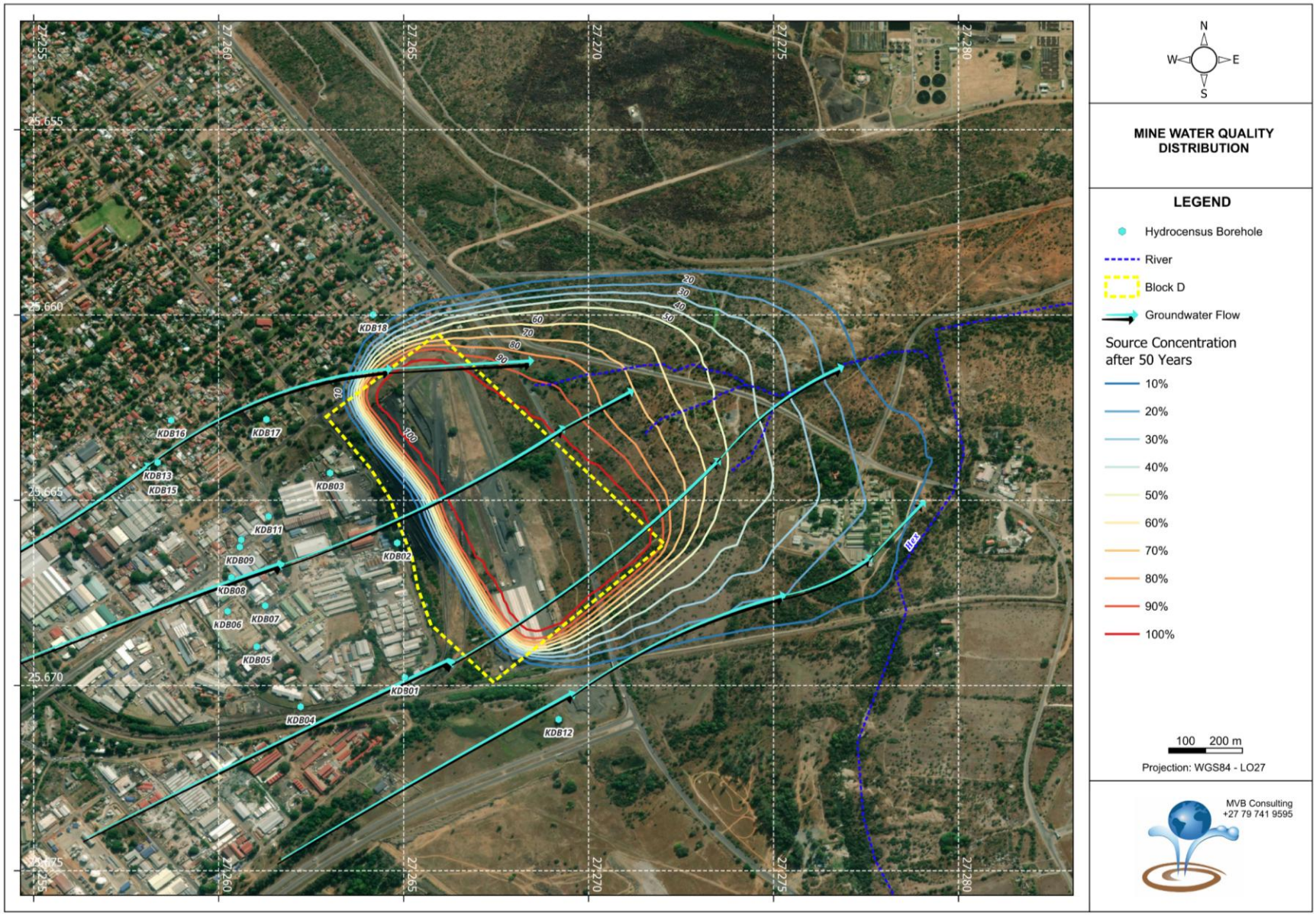


FIGURE 51: SIMULATED CONTAMINATION IMPACT AREA AFTER 50 YEARS

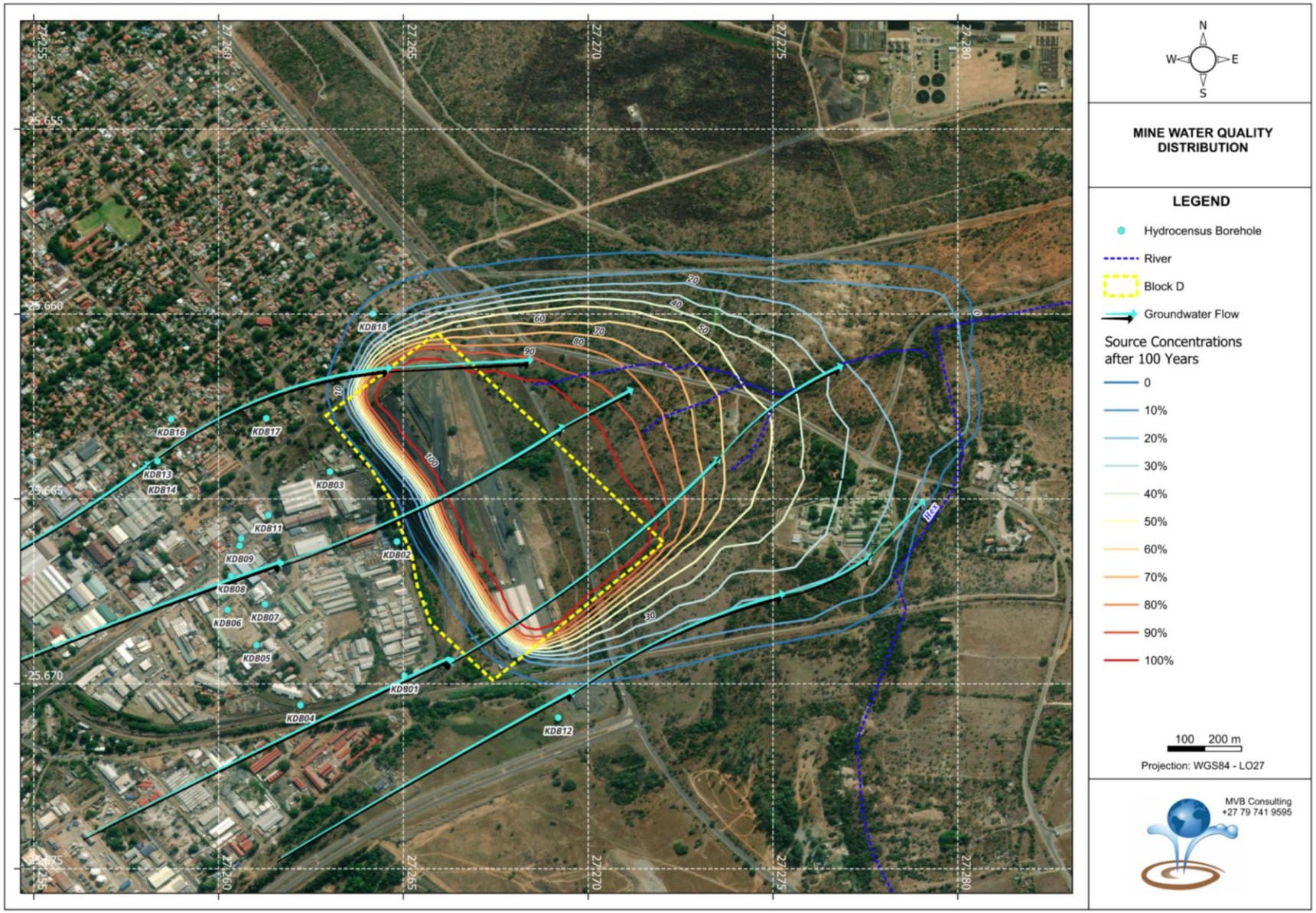


FIGURE 52: SIMULATED CONTAMINATION IMPACT AREA AFTER 100 YEARS (MVB CONSULTING, 2026)

8.4.3 Air Quality impacts

The proposed Block D Underground mining project does not constitute of surface infrastructure as the existing K6 and Bathopele shaft areas will be used as well as existing surface infrastructure. There are no additional impacts expected on Air Quality.

8.4.4 Noise impacts

The proposed Block D underground mine will not generate noise, therefore the impact is considered to be low. It must be noted, however. that the existing noise levels at the sensitive receptors is already elevated due to surrounding industries, mining activities and indirect activities such as heavy vehicle traffic.

8.4.5 Heritage impacts

Heritage impacts are typically classified as direct (physical alteration or destruction of heritage features), indirect (such as restricted access or visual intrusion), or cumulative impacts combining both. During the heritage impact assessment undertaken, no sites, features or objects of cultural historic significance have been identified in the project footprint area, therefore there is no impact on heritage features expected. In addition, as all activities will take place below ground (30m and deeper), there is no impact expected on any surface or low (shallow) buried cultural heritage resources.

8.4.6 Blast and vibration impacts

Note: Information for this section was obtained from Blast Management and Consulting's Blast Impact Assessment (2025). Refer to **Appendix C9** for the full report.

The project was evaluated as a new area next to existing mining operations which are currently operational.

8.4.6.1 Expected ground vibrations

Undermining surface structures by means of drilling and blasting will result in the said surface structures experiencing some form of vibration. These vibrations are typically measured as peak particle velocities, and reported in mm/sec. In South Africa, guidelines in terms of maximum allowable Peak Particle Velocity (PPV) is not readily available and thus, the guidelines set out by the United States Bureau of Mines (USBM) are typically used. The guidelines prescribed by the USBM is tabulated in Table 55.

TABLE 55: GROUND VIBRATIONS LIMITS AS PER USBM

Structure Description	Ground vibration limit (mm/sec)
National Roads/Tar roads	150
Electrical Line (Pylons)	75
Railways	150
Transformers	25
Gas/Fuel Lines	25
Water Wells	50
Telecoms Tower	50
General Houses of Proper Construction	25

Structure Description	Ground vibration limit (mm/sec)
Houses of Less Proper Construction	12.5
Rural buildings – Mud houses	6

The area surrounding the proposed Block D mining area was reviewed for structures, traffic, roads, human interface, animals' interface, etc. Various installations and structures were observed. Ground vibration on the surface is the only expected impact associated with the underground operations.

Underground blasting will produce mainly ground vibration on the surface. The actual blast may be heard depending on the depth below the surface. Analysis of impacts from blasting was based on the distance from the points of interest to the roof elevation of the mining area. Thus, the assessment is then based on distances between 30m and 1006m from the points of interest identified, with a possibility of double panels blasted simultaneously as a worst-case scenario.

The simulations for the underground workings on expected ground vibration levels from maximum charge mass (44kg) are presented in Figure 53 and Figure 54. These levels are then plotted and overlaid with the proposed mining area to observe possible influences at structures identified. Structures for consideration are also plotted in this model. Ground vibration predictions were done considering distances ranging from 30m to 1006m from the roof of the mining area.

The simulation provided shows ground vibration contours only for a limited number of levels. The levels used are considered the basic minimum limits that will be applicable for the type of structures observed surrounding the mining area. These levels are: 6mm/s, 12.5mm/s, 25mm/s and 50mm/s. This enables immediate review of possible concerns that may be applicable to any of the privately or publicly-owned structures, social gathering areas or sensitive installations.

Data is provided as follows: Vibration contours; a table with predicted ground vibration values and evaluation for each point of interest. Additional colour codes used in the tables are as follows:

Structure Evaluations:
Vibration levels higher than proposed limit applicable to Structures / Installations is coloured "Red"
People's Perception Evaluation:
Vibration levels indicated as Intolerable on human perception scale is coloured "Red"
Vibration levels indicated as Unpleasant on human perception scale is coloured "Mustard"
Vibration levels indicated as Perceptible on human perception scale is coloured "Light Green"
POI's that are found inside the shaft area is coloured "Olive Green"

The effects of Ground Vibration on the identified points of interest are presented in Table 56.

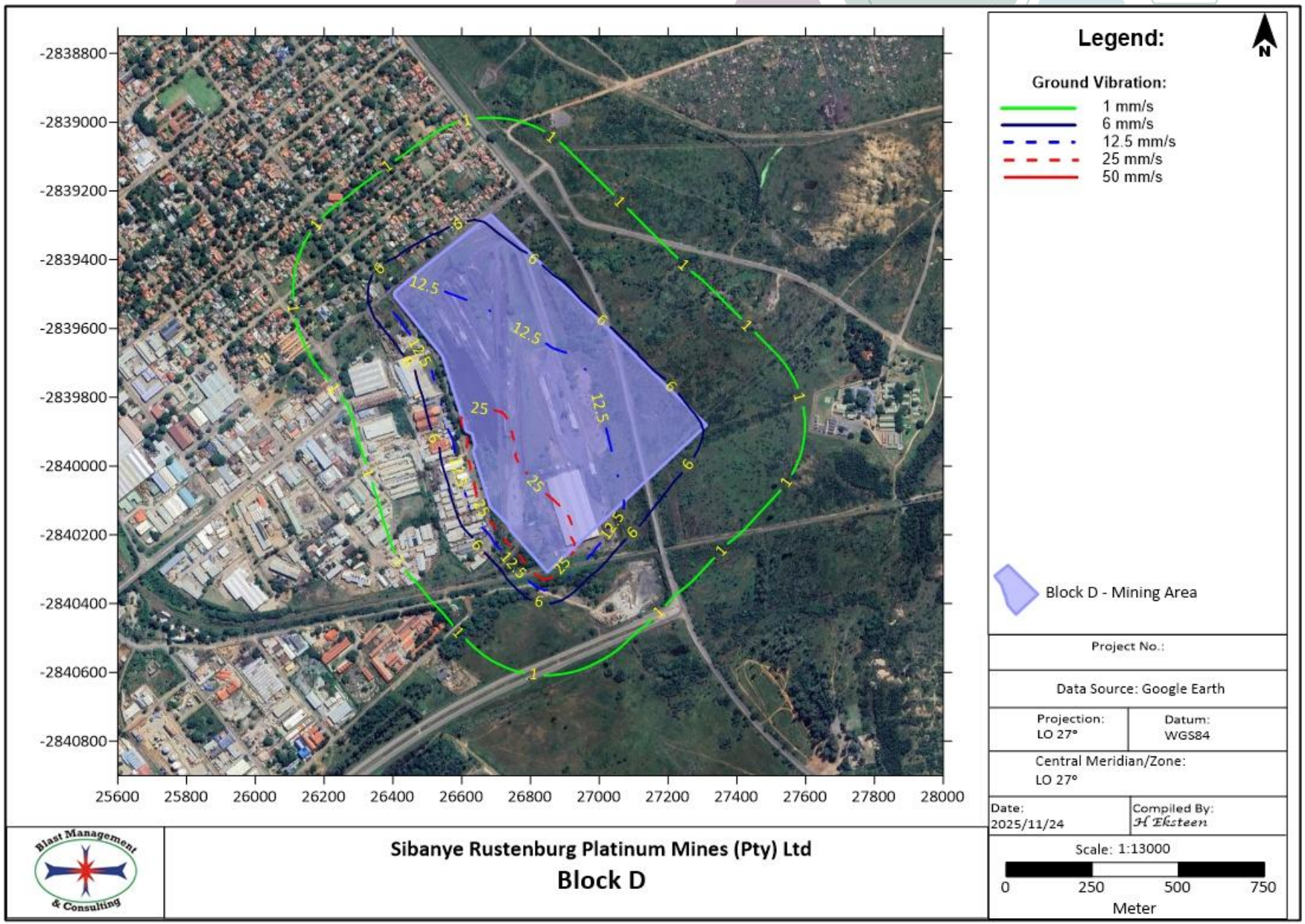


FIGURE 53: GROUND VIBRATION INFLUENCE FROM MAXIMUM CHARGE PER DELAY- CONTOURS (BMC, 2026)

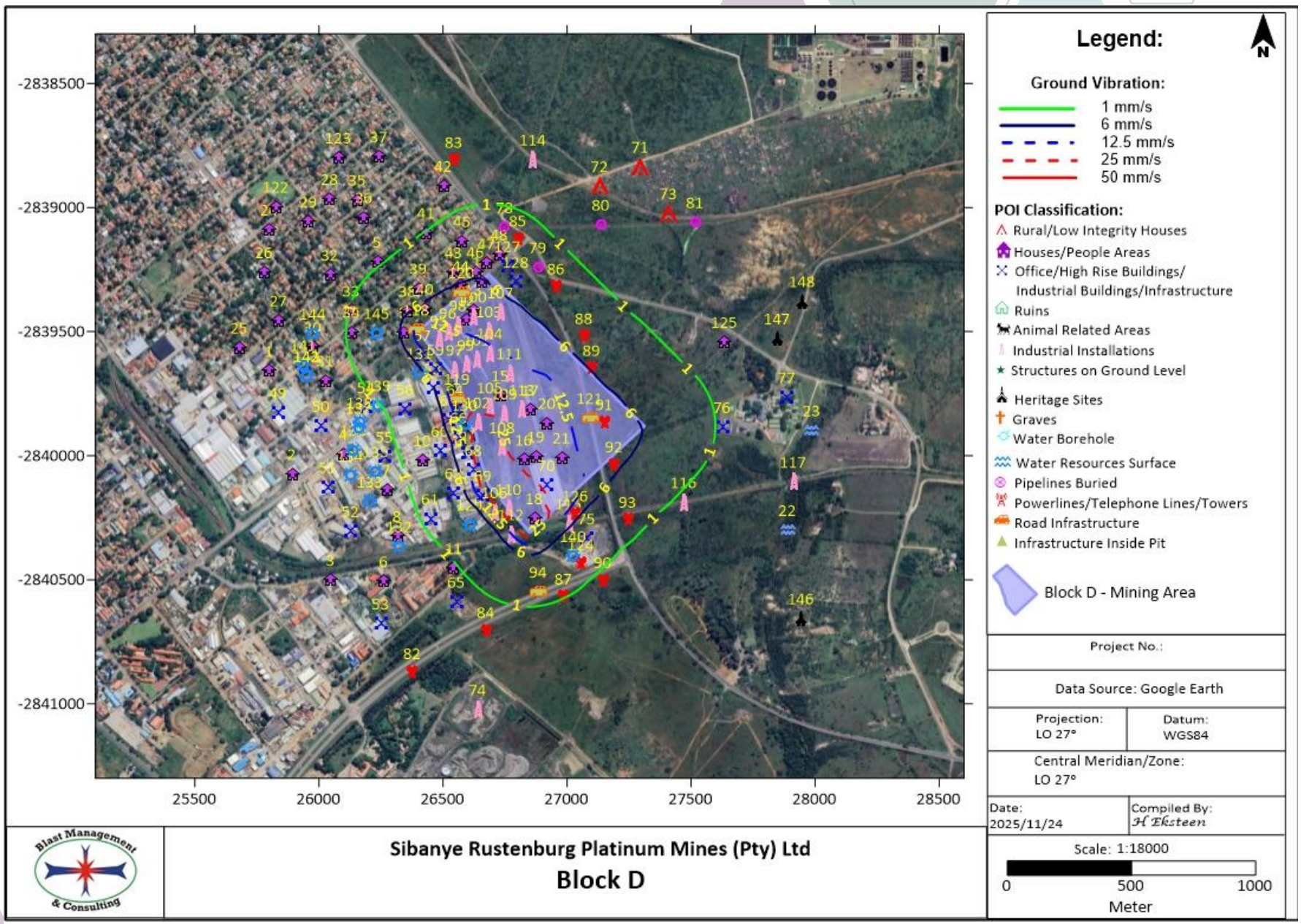


FIGURE 54: GROUND VIBRATION INFLUENCE FROM MAXIMUM CHARGE PER DELAY- CONTOURS WITH POINTS OF INTEREST (BMC, 2026)

TABLE 56: GROUND VIBRATION EVALUATION FOR MAXIMUM CHARGE- 44KG (BMC, 2025)

Tag	Description	Ground Vibration Limit (mm/s)	Distance (m)	Total Mass/Delay (kg)	Predicted PPV (mm/s)	Structure Response @ 10Hz	Human Tolerance @ 30Hz
1	Buildings/Structures	25	636	44	0.3	Acceptable	Too Low
2	Buildings/Structures	25	742	44	0.2	Acceptable	Too Low
3	Buildings/Structures	25	743	44	0.2	Acceptable	Too Low
4	Buildings/Structures	25	521	44	0.4	Acceptable	Too Low
5	Buildings/Structures	25	329	44	0.9	Acceptable	Perceptible
6	Buildings/Structures	25	574	44	0.4	Acceptable	Too Low
7	Buildings/Structures	25	400	44	0.7	Acceptable	Too Low
8	Buildings/Structures	25	423	44	0.6	Acceptable	Too Low
9	Buildings/Structures	25	94	44	7.2	Acceptable	Unpleasant
10	Buildings/Structures	25	228	44	1.7	Acceptable	Perceptible
11	Buildings/Structures	25	328	44	0.9	Acceptable	Perceptible
12	Buildings/Structures	25	81	44	9.2	Acceptable	Unpleasant
13	Buildings/Structures	25	88	44	8.0	Acceptable	Unpleasant
14	Buildings/Structures	25	103	44	6.2	Acceptable	Unpleasant
15	Buildings/Structures	25	63	44	13.9	Acceptable	Unpleasant
16	Buildings/Structures	25	49	44	21.2	Acceptable	Intolerable
17	Buildings/Structures	25	71	44	11.4	Acceptable	Unpleasant
18	Buildings/Structures	25	36	44	34.8	Problematic	Intolerable
19	Buildings/Structures	25	57	44	16.3	Acceptable	Unpleasant
20	Buildings/Structures	25	72	44	11.1	Acceptable	Unpleasant
21	Buildings/Structures	25	65	44	13.2	Acceptable	Unpleasant
22	Hexrivier	200	727	44	0.2	Acceptable	N/A
23	Hexrivier	200	691	44	0.3	Acceptable	N/A
24	Houses	12.5	737	44	0.2	Acceptable	Too Low
25	Houses	12.5	740	44	0.2	Acceptable	Too Low
26	Houses	12.5	678	44	0.3	Acceptable	Too Low
27	Houses	12.5	580	44	0.4	Acceptable	Too Low
28	Houses	12.5	643	44	0.3	Acceptable	Too Low
29	Houses	12.5	632	44	0.3	Acceptable	Too Low
30	Houses	12.5	445	44	0.6	Acceptable	Too Low
31	Houses	12.5	435	44	0.6	Acceptable	Too Low
32	Houses	12.5	434	44	0.6	Acceptable	Too Low
33	Houses	12.5	300	44	1.1	Acceptable	Perceptible

Tag	Description	Ground Vibration Limit (mm/s)	Distance (m)	Total Mass/Delay (kg)	Predicted PPV (mm/s)	Structure Response @ 10Hz	Human Tolerance @ 30Hz
34	Houses	12.5	289	44	1.1	Acceptable	Perceptible
35	Houses	12.5	571	44	0.4	Acceptable	Too Low
36	Houses	12.5	499	44	0.5	Acceptable	Too Low
37	Houses	12.5	655	44	0.3	Acceptable	Too Low
38	Houses	12.5	111	44	5.5	Acceptable	Unpleasant
39	Houses	12.5	153	44	3.2	Acceptable	Perceptible
40	Houses	12.5	90	44	7.7	Acceptable	Unpleasant
41	Houses	12.5	306	44	1.0	Acceptable	Perceptible
42	Houses	12.5	421	44	0.6	Acceptable	Too Low
43	Houses	12.5	136	44	3.9	Acceptable	Perceptible
44	Houses	12.5	99	44	6.6	Acceptable	Unpleasant
45	Houses	12.5	206	44	2.0	Acceptable	Perceptible
46	Houses	12.5	114	44	5.2	Acceptable	Unpleasant
47	Houses	12.5	123	44	4.6	Acceptable	Unpleasant
48	Houses	12.5	147	44	3.4	Acceptable	Perceptible
49	Industrial Structures	50	662	44	0.3	Acceptable	Too Low
50	Industrial Structures	50	547	44	0.4	Acceptable	Too Low
51	Industrial Structures	50	624	44	0.3	Acceptable	Too Low
52	Industrial Structures	50	587	44	0.4	Acceptable	Too Low
53	Industrial Structures	50	696	44	0.3	Acceptable	Too Low
54	Industrial Structures	50	360	44	0.8	Acceptable	Too Low
55	Industrial Structures	50	368	44	0.8	Acceptable	Too Low
56	Industrial Structures	50	233	44	1.6	Acceptable	Perceptible
57	Industrial Structures	50	75	44	10.5	Acceptable	Unpleasant
58	Industrial Structures	50	110	44	5.6	Acceptable	Unpleasant
59	Industrial Structures	50	68	44	12.3	Acceptable	Unpleasant
60	Industrial Structures	50	152	44	3.3	Acceptable	Perceptible
61	Industrial Structures	50	272	44	1.2	Acceptable	Perceptible
62	Industrial Structures	50	87	44	8.2	Acceptable	Unpleasant
63	Industrial Structures	50	148	44	3.4	Acceptable	Perceptible
64	Industrial Structures	50	60	44	14.9	Acceptable	Unpleasant
65	Industrial Structures	50	411	44	0.6	Acceptable	Too Low
66	Industrial Structures	50	75	44	10.3	Acceptable	Unpleasant
67	Industrial Structures	50	59	44	15.5	Acceptable	Unpleasant

Tag	Description	Ground Vibration Limit (mm/s)	Distance (m)	Total Mass/Delay (kg)	Predicted PPV (mm/s)	Structure Response @ 10Hz	Human Tolerance @ 30Hz
68	Industrial Structures	50	53	44	18.4	Acceptable	Intolerable
69	Industrial Structures	50	54	44	17.9	Acceptable	Intolerable
70	Industrial Structures	50	53	44	18.7	Acceptable	Intolerable
71	Informal Housing	6	747	44	0.2	Acceptable	Too Low
72	Informal Housing	6	579	44	0.4	Acceptable	Too Low
73	Informal Housing	6	695	44	0.3	Acceptable	Too Low
74	Mine Activity	200	753	44	0.2	Acceptable	N/A
75	Mine Buildings/Structures	25	183	44	2.4	Acceptable	Perceptible
76	Mine Buildings/Structures	25	338	44	0.9	Acceptable	Too Low
77	Mine Buildings/Structures	25	602	44	0.3	Acceptable	Too Low
78	Pipeline	50	235	44	1.6	Acceptable	N/A
79	Pipeline	50	194	44	2.2	Acceptable	N/A
80	Pipeline	50	474	44	0.5	Acceptable	N/A
81	Pipeline	50	745	44	0.2	Acceptable	N/A
82	Power Lines/Pylons	75	738	44	0.2	Acceptable	N/A
83	Power Lines/Pylons	75	500	44	0.5	Acceptable	N/A
84	Power Lines/Pylons	75	439	44	0.6	Acceptable	N/A
85	Power Lines/Pylons	75	218	44	1.8	Acceptable	N/A
86	Power Lines/Pylons	75	189	44	2.3	Acceptable	N/A
87	Power Lines/Pylons	75	305	44	1.0	Acceptable	N/A
88	Power Lines/Pylons	75	141	44	3.7	Acceptable	N/A
89	Power Lines/Pylons	75	107	44	5.8	Acceptable	N/A
90	Power Lines/Pylons	75	347	44	0.8	Acceptable	N/A
91	Power Lines/Pylons	75	90	44	7.7	Acceptable	N/A
92	Power Lines/Pylons	75	91	44	7.6	Acceptable	N/A
93	Power Lines/Pylons	75	243	44	1.5	Acceptable	N/A
94	R24 Road	150	254	44	1.4	Acceptable	N/A
95	Railway Line	150	62	44	14.5	Acceptable	N/A
96	Railway Line	150	68	44	12.4	Acceptable	N/A
97	Railway Line	150	54	44	17.9	Acceptable	N/A
98	Railway Line	150	75	44	10.5	Acceptable	N/A
99	Railway Line	150	61	44	14.7	Acceptable	N/A
100	Railway Line	150	85	44	8.6	Acceptable	N/A
101	Railway Line	150	67	44	12.5	Acceptable	N/A

Tag	Description	Ground Vibration Limit (mm/s)	Distance (m)	Total Mass/Delay (kg)	Predicted PPV (mm/s)	Structure Response @ 10Hz	Human Tolerance @ 30Hz
102	Railway Line	150	42	44	27.2	Acceptable	N/A
103	Railway Line	150	84	44	8.7	Acceptable	N/A
104	Railway Line	150	75	44	10.5	Acceptable	N/A
105	Railway Line	150	51	44	19.5	Acceptable	N/A
106	Railway Line	150	61	44	14.9	Acceptable	N/A
107	Railway Line	150	96	44	6.9	Acceptable	N/A
108	Railway Line	150	43	44	26.4	Acceptable	N/A
109	Railway Line	150	57	44	16.5	Acceptable	N/A
110	Railway Line	150	30	44	47.6	Acceptable	N/A
111	Railway Line	150	75	44	10.5	Acceptable	N/A
112	Railway Line	150	67	44	12.6	Acceptable	N/A
113	Railway Line	150	66	44	12.8	Acceptable	N/A
114	Railway Line	150	514	44	0.4	Acceptable	N/A
115	Railway Line	150	95	44	7.1	Acceptable	N/A
116	Railway Line	150	348	44	0.8	Acceptable	N/A
117	Railway Line	150	656	44	0.3	Acceptable	N/A
118	Road	150	63	44	13.9	Acceptable	N/A
119	Road	150	51	44	20.0	Acceptable	N/A
120	Road	150	91	44	7.6	Acceptable	N/A
121	Road	150	88	44	8.0	Acceptable	N/A
122	School	25	769	44	0.2	Acceptable	Too Low
123	School	25	750	44	0.2	Acceptable	Too Low
124	Silo	50	240	44	1.5	Acceptable	N/A
125	Structure	25	484	44	0.5	Acceptable	Too Low
126	Tower	25	91	44	7.6	Acceptable	N/A
127	Ventilation Shaft	50	136	44	3.9	Acceptable	Perceptible
128	Ventilation Shaft	50	123	44	4.6	Acceptable	Unpleasant
129	Hydrocensus Borehole (KDB01)	50	166	44	2.8	Acceptable	N/A
130	Hydrocensus Borehole (KDB02)	50	47	44	22.3	Acceptable	N/A
131	Hydrocensus Borehole (KDB03)	50	118	44	5.0	Acceptable	N/A
132	Hydrocensus Borehole (KDB04)	50	437	44	0.6	Acceptable	N/A
133	Hydrocensus Borehole (KDB05)	50	477	44	0.5	Acceptable	N/A
134	Hydrocensus Borehole (KDB06)	50	523	44	0.4	Acceptable	N/A
135	Hydrocensus Borehole (KDB07)	50	420	44	0.6	Acceptable	N/A

Tag	Description	Ground Vibration Limit (mm/s)	Distance (m)	Total Mass/Delay (kg)	Predicted PPV (mm/s)	Structure Response @ 10Hz	Human Tolerance @ 30Hz
136	Hydrocensus Borehole (KDB08)	50	480	44	0.5	Acceptable	N/A
137	Hydrocensus Borehole (KDB09)	50	433	44	0.6	Acceptable	N/A
138	Hydrocensus Borehole (KDB10)	50	418	44	0.6	Acceptable	N/A
139	Hydrocensus Borehole (KDB11)	50	319	44	1.0	Acceptable	N/A
140	Hydrocensus Borehole (KDB12)	50	198	44	2.1	Acceptable	N/A
141	Hydrocensus Borehole (KDB13)	50	497	44	0.5	Acceptable	N/A
142	Hydrocensus Borehole (KDB14)	50	499	44	0.5	Acceptable	N/A
143	Hydrocensus Borehole (KDB15)	50	497	44	0.5	Acceptable	N/A
144	Hydrocensus Borehole (KDB16)	50	444	44	0.6	Acceptable	N/A
145	Hydrocensus Borehole (KDB17)	50	191	44	2.2	Acceptable	N/A
146	Heritage – SSL/RPM/19	6	1006	44	0.1	Acceptable	Too Low
147	Heritage – SSL/RPM/25	6	656	44	0.3	Acceptable	Too Low
148	Heritage – SSL/RPM/125	6	822	44	0.2	Acceptable	Too Low

The ground vibration levels predicted for all points of interest evaluated ranged between 0.1mm/s and 47.6mm/s for structures surrounding the mining area. Only one structure (POI18 – Transnet Building) at a distance of 36m from the roof of the mining area, shows ground vibration levels predicted above the limit for the said structure. All other structures are located such that the levels of ground vibration predicted from the charge will be acceptable regarding structure response.

By implementing the mitigation measures (please refer to perceptible ground vibration section below, the ground vibration levels at the Transnet building will be reduced to ~19.7m/s, which will fall within the recommended ground vibration limit for this structure (25mm/s).

Vibration Impacts on Roads

The nearest R24 provincial road is at closest distance of 254m to the proposed mining area. No specific consideration regarding effects from blasting operations will be required for this road. There are other roads and gravel roads in the vicinity of the project area but are all expected to be within the recommended limits.

Cracking of Houses

The structures found in the areas of concern ranges from poorly to properly built brick-and-mortar structures, as well as industrial buildings and structures. There are various buildings found within the 750m range from the mining area. Building style, materials, and soil conditions will certainly contribute to additional cracking apart from influences such as blasting operations.

The proposed limits as applied i.e. 6mm/s, 12.5mm/s and 25mm/s are considered sufficient to ensure that additional damage is not introduced to the different categories of structures. It is expected that, should levels of ground vibration be maintained within these limits, the possibility of inducing damage is limited.

Perceptible ground vibration

On a human perception scale, several points of interest were identified where vibration levels, based on the maximum charge, may be perceptible, unpleasant or intolerable. Based on the maximum charge and ground vibration predicted over distance, it was identified that up to a distance of 508m people may experience levels of ground vibration as perceptible, up to 188 m as unpleasant and intolerable at 85m.

After a review of the possible impacts, Sibanye-Stillwater has proposed further mitigations to limit the human perception impacts induced by the blasting activities. Sibanye-Stillwater requested a review of the underground operations to reduce the range of ground vibration that human perception extends. Currently, the impacts were calculated according to the worst-case scenario of two (2) panels blasting simultaneously, producing a combined charge mass per delay of 44 Kg which was derived from the original blast design provided.

To facilitate additional mitigations, Sibanye-Stillwater has indicated that Block D will be divided into two areas/sections – a K6 section (area closest to the Eastend Residential Area) and a Bathopele section further away towards the southeastern side. These sections will then also have two different blast designs. According to these new blast designs received, the K6 operation will be blasting at a maximum of 12 kg of explosives per delay per panel, and the Bathopele operation will be blasting at a charge mass per delay of 22 Kg per panel.

To evaluate the human perception impact of these changes, a boundary where the human perception starts to become unpleasant at a ground vibration level of 4.6 mm/s was set along the road edge, closest to the private structures. From this boundary, the allowable charge mass per delay was calculated and plotted on a map inside the mining area. These were calculated according to each operation's specific area, and blast designs were to be used for their respective areas.

Further to this, Sibanye-Stillwater has imposed a mitigation to program their centralized blasting unit to fire only one (1) panel at a time in succession, which means that there will be a set time delay between every panel to be blasted for the shift. By implementing this mitigation measure, a revised charge mass per delay was calculated and modelled to assess the potential impact on surrounding public and private areas with regard to human perception.

These value contours were plotted and mapped to indicate the areas where the respective operations may need to further refine their blast designs. This would involve reducing the charge mass per delay per panel, even further, to limit the potential impact on the adjacent community, should mining progress into those specific areas.

The following Figure 55 and Figure 56 show the allowable charge masses per delay that may be used in the specific areas, based on the current mitigated processes and designs, to minimize the human perception potential. Should the operation wish to mine in areas that are currently indicated as problematic, the blast designs will need to be revised, and additional mitigation measures implemented. Figure 56 and Figure 58 indicates the ground vibration contours for each respective operation's influence on the mitigated blast designs.

Outcomes of the mitigations indicated that the revised planned blasting on the K6 Section, with panels detonating individually with a time delay in between, will be feasible to manage the expected human perception effectively. Concerning the Bathopele Section, single-panel blasting initiated with time delays in between is feasible up to the second last section of panels. Adjustments will be required for this row of panels. However, it will need to be confirmed with actual ground vibration measurements.

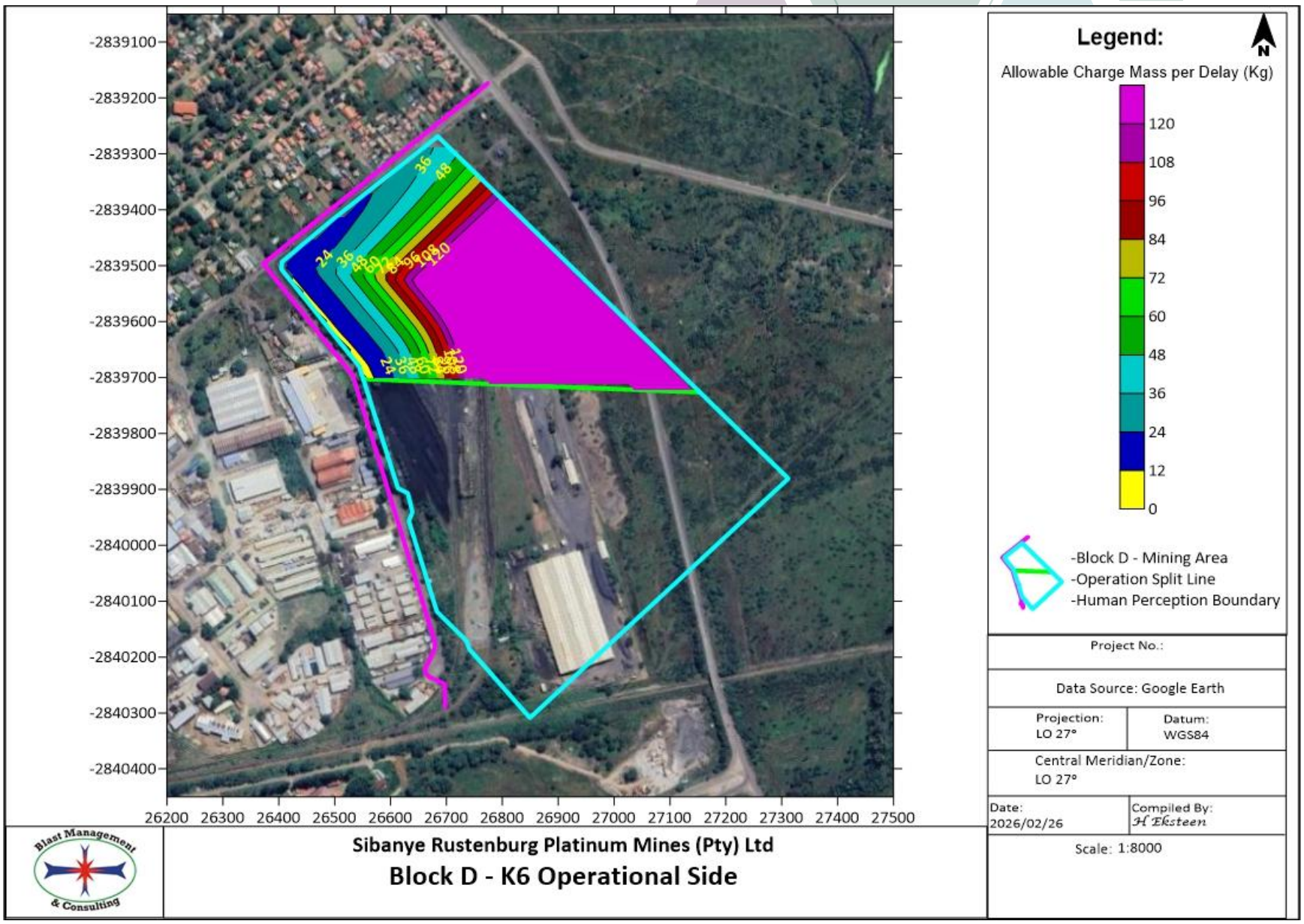


FIGURE 55: K6 OPERATIONAL AREA – ALLOWALBLE CHARGE MASS PER DELAY (BMC, 2026)

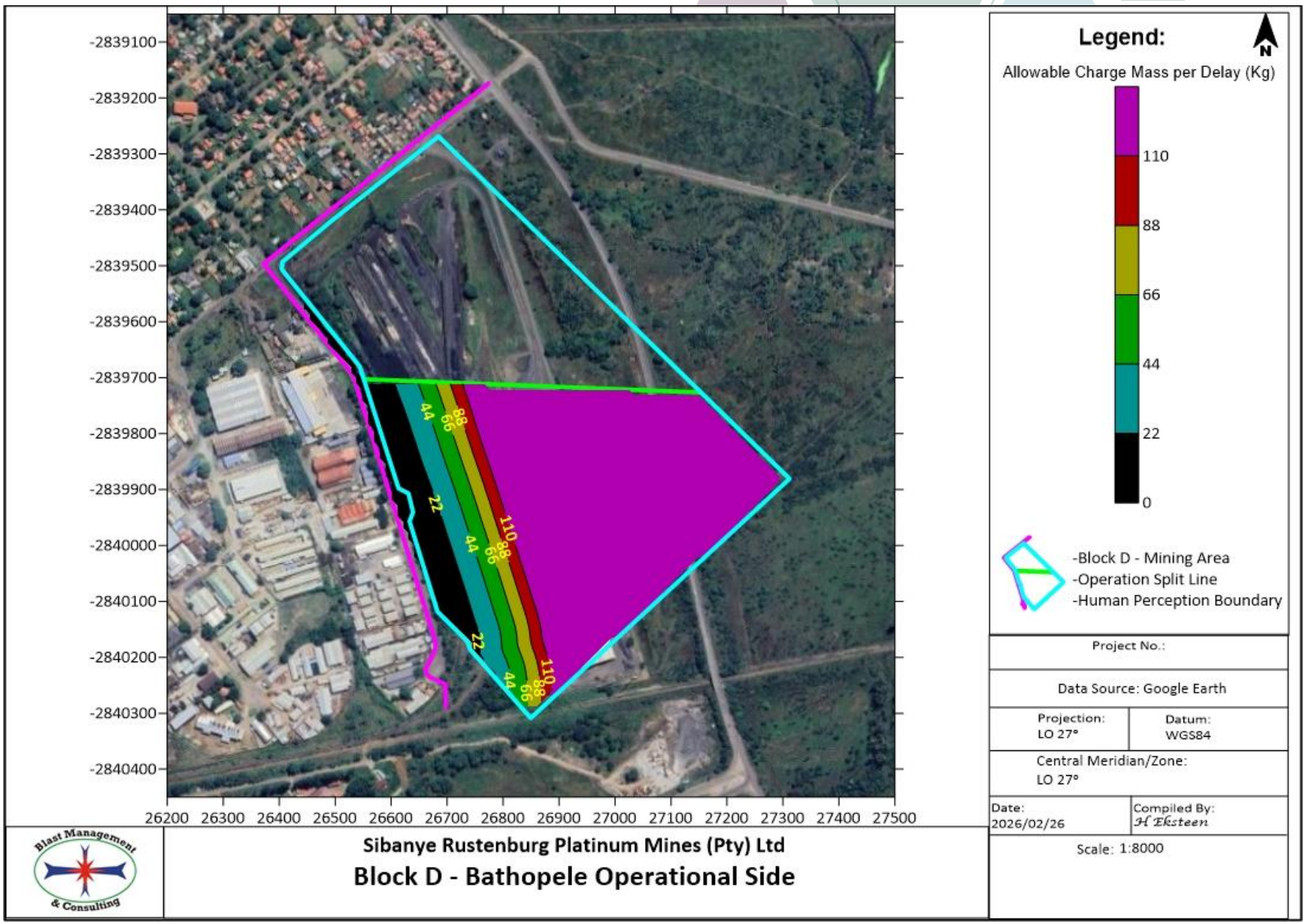


FIGURE 56: BATHOPELE OPERATIONAL AREA – ALLOWABLE CHARGE MASS PER DELAY (BMC, 2026)

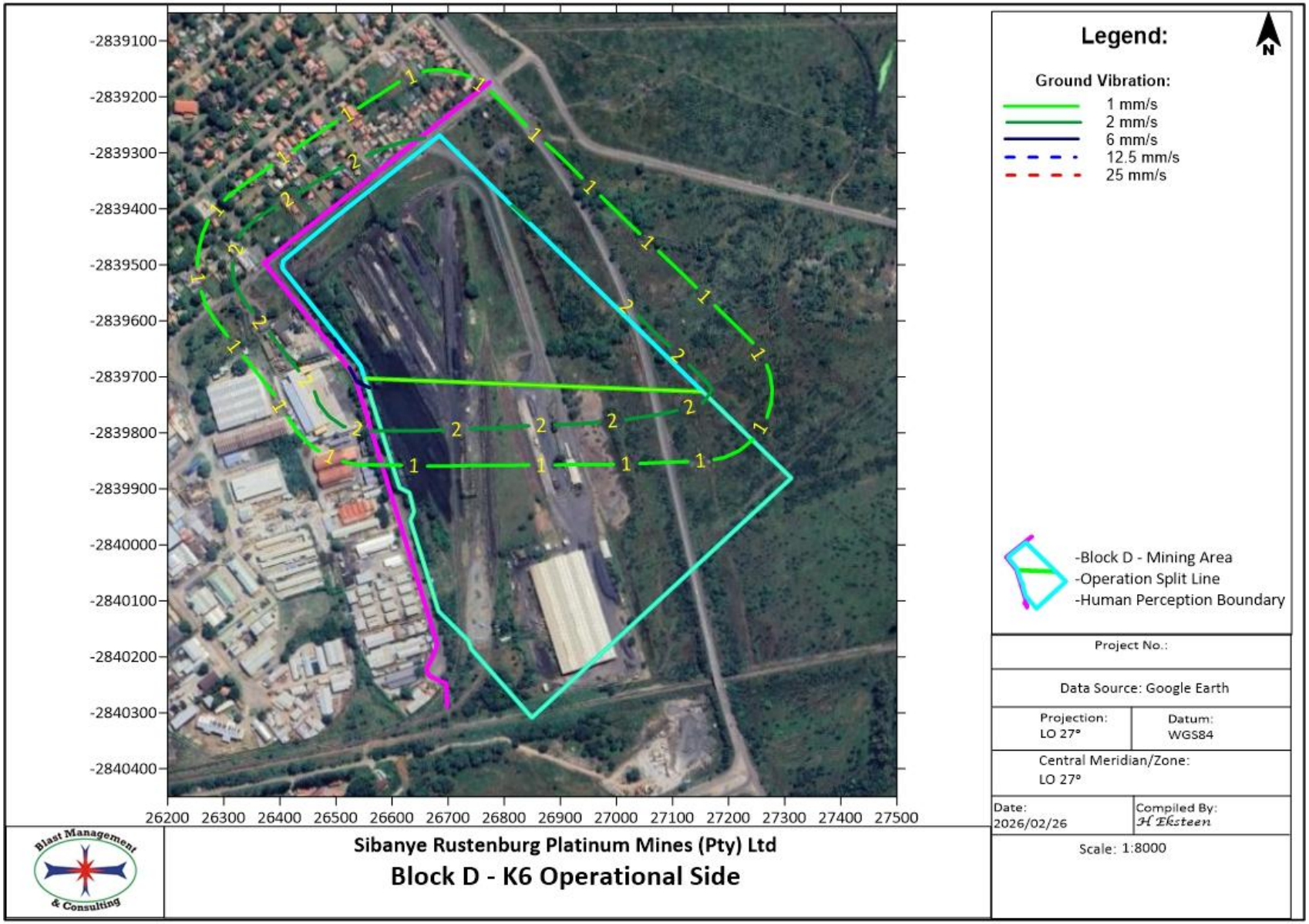


FIGURE 57: K6 – GROUND VIBRATION INFLUENCE FROM MITIGATED CHARGE PER DELAY (BMC, 2026)

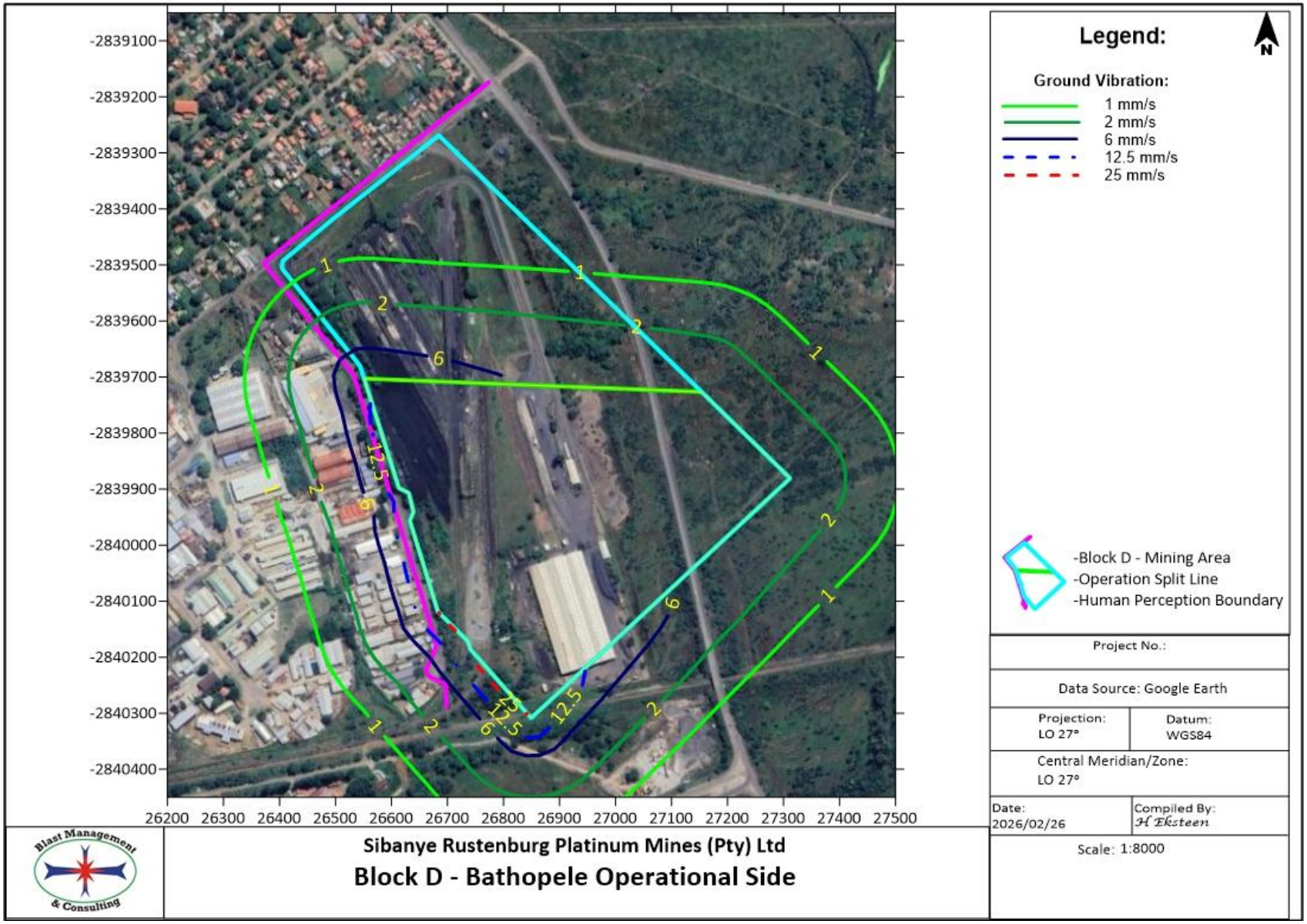


FIGURE 58: BATHOPELE – GROUND VIBRATION INFLUENCE FROM MITIGATED CHARGE PER RELAY (BMC, 2026)

8.4.7 Social Impacts

8.4.7.1 Job retention and household stability (Operational phase)

The operational phase, spanning the seven-year life of mine, represents the most socially significant period of the project. The primary positive impact is the retention of K6 and Bathopele shaft employees whose jobs would otherwise be at risk due to declining production. These positions represent not only direct employment but also indirect support for hundreds of dependents who rely on mine employees' wages. In mining communities, job losses often trigger household instability, migration, and increased poverty. By sustaining employment, SRPM prevents these negative outcomes and maintains social stability.

8.4.7.2 Sustained local economic support (Operational phase)

Retained employee's spending power sustains demand for goods and services in the surrounding economy. Local shops, transport providers, and informal businesses benefit directly from this circulation of income. Without these jobs, many small enterprises would face reduced turnover, leading to business closures and further unemployment.

8.4.7.3 Continuation of procurement opportunities (Operational phase)

The current procurement for underground mining activities will continue. These include:

- Trackless Mobile Machinery equipment parts
- Underground hygiene and sanitation
- Employee Personal Protection Equipment
- Mining stores (drill steel, support units, explosives)
- Underground belt installation and extension

The impact is expected to be medium because procurement will continue through existing channels, benefiting established vendors, but emerging local suppliers may not gain access, as no new suppliers are likely to be considered. The significance increases because enhancement measures support Small, Medium and Micro Enterprises (SMMEs), build local supplier capacity, and encourage partnerships with local businesses.

8.4.7.4 Community developed needs and commitments (Operational phase)

The continuation of operations allows SRPM to uphold community commitments made in their Social and Labour Plans (SLPs) covering Mining Right NW 30/5/1/2/2/82 MR which includes Bathopele Shaft, as well as Mining Right Numbers: NW 30/5/1/2/2/80 MR which includes K6. As per these SLPs, community needs around the RLM include the following:

- Employability
- Decent standard of living
- Appropriate literacy for employability, competitive entrepreneurship and the future
- Health and wellbeing
- Food security and nutrition

To address the community needs above, SLP commitments include investments in schools, clinics, housing, and infrastructure to enhance inclusive economic growth, sustainable human settlements, skilled and capable human capital physical and mental wellbeing as well as food security. Such contributions extend benefits beyond employees to the wider community, reinforcing the company's Social License to Operate (SLO) and improving public services that might otherwise be underfunded.

8.4.7.5 Employment and economic expectations (Operational phase)

Once closure is communicated for Bathopele and K6 shafts, nearby community members may anticipate employment or procurement opportunities for the proposed Block D project, despite the project being designed to retain the existing workforce rather than create new jobs. If these expectations are not carefully managed, disappointment and mistrust could arise, particularly among unemployed youth, local leaders and communities who often view mining projects as sources of opportunity. Even though Block D is designed to retain the existing workforce from Bathopele and K6, it is unlikely that all the current employees from these shafts will be retained. As a result, there is potential for conflict to arise from these job losses. In addition, unmet expectations from unemployed people hoping to get employment can lead to disappointment, mistrust, and reputational damage. This is particularly sensitive among unemployed youth and local leaders, who may pressure the company for opportunities that do not exist.

8.4.7.6 Limited new employment and business opportunities (Operational phase)

The retention of existing employees and the absence of new job or business opportunities result in minimal direct economic benefits for the local community. Local residents, particularly unemployed youth and small businesses, are excluded from participating in the mine's activities, resulting in minimal income generation and reduced prospects for local economic empowerment.

8.4.7.7 Community health concerns – air quality (Operational phase)

Even though no new ventilation shafts will be constructed as current infrastructure from Bathopele and K6 will be utilised for the project, feedback from stakeholders on the project has indicated air quality concerns from dust emissions, particularly the release of fine particulate matter ($PM_{2.5}$ and PM_{10}), diesel emissions from machinery, dust from ventilation outlets, and chemical pollutants. There are perceptions that these could be triggers for asthma attacks, bronchial irritation, respiratory deterioration and the imposition of financial stress to address these potential health impacts. While it is understood that the operation will be fully underground, perceptions of cumulative impacts from this were noted.

8.4.7.1 Blasting and noise impact (Operational phase)

A project-specific blasting study for Block D assessed potential surface vibration arising from underground blasting, covering receptors within 750 metres (houses, public buildings, roads, rail, factories, boreholes, and heritage sites). As per the models used, most structures and houses were found to be between 0.2 and 7.7mm/s, which is below recognised structural damage thresholds. However, these thresholds could still be perceptible to residents and occasionally unpleasant. One structure (POI 18), located approximately 36 metres from the mining roof, may require protective measures or adjusted blast sequencing if simultaneous panel blasts are contemplated.

SRPM committed to conducting seismic monitoring before and throughout the mining lifecycle and to repairing or compensating any confirmed mining-related damages. These inputs reinforce the importance of accessible monitoring data and clear communication with affected households.

8.4.7.2 Land use and stability concerns (Operational phase)

While physical disruption to surface land use is expected to remain minimal, the underground expansion may raise concerns about land stability, grazing areas, or culturally significant sites. Engagements with land users leasing areas from Transnet indicated that the weight of stored materials such as chrome and coal at the loading bays combined with underground activity and potential loss of ground support, could increase perceptions of land instability and safety risks for buildings and workers. This was also evident during stakeholder engagements, where residents requested further assurance regarding land stability, particularly relating to subsidence risks and the long-term safety of surface properties above the mining footprint. Concerns were raised that underground activity may gradually affect ground conditions, especially in areas with ageing infrastructure. SRPM reiterated that mining would occur at depth and that no changes to surface land use are anticipated. Even where technical studies indicate negligible risk, perceptions of insecurity and fears of property damage may persist and influence community attitudes toward the project. In addition, land users and businesses on the Transnet property expressed concerns regarding limited communication by Transnet about the project, leading to potential fears concerning the future of their businesses. Therefore, transparent communication and early stakeholder engagement will therefore be essential to address these concerns.

8.4.7.3 Economic dependency on mining (Operational phase)

The local economy remains heavily reliant on mining. While this dependency provides short-term stability, it creates long-term vulnerability when closure eventually occurs. Communities without diversified economic opportunities face severe hardship once mining ends, making dependency a structural risk

8.4.7.4 Persistent migration and informal settlements (Operational phase)

Mining projects often attract migrant workers seeking employment, even when no new jobs are available. This can lead to growth in informal settlements, overcrowding, and competition for limited resources as is currently the case within the RLM. Such pressures strain housing, healthcare, and schooling systems, creating social tension between migrants and established residents.

Increased population pressures from migration and dependency can overwhelm local services. Clinics may face longer queues, schools may become overcrowded, and housing shortages may worsen. This can fuel dissatisfaction with both the company and local government, even if the project itself is not directly responsible.

8.4.7.5 Loss of employment and household destabilisation (Closure phase)

The most immediate and severe impact of closure is the retrenchment of the 204 employees retained during operations. Without redeployment or alternative employment, these households will lose their primary source of income. This destabilisation can lead to increased poverty, food insecurity, and reduced access to education and healthcare. Families dependent on mining wages may be forced into debt or migration, creating long-term vulnerability.

8.4.7.6 Economic dependency on mining

The local economy remains heavily reliant on mining, which provides short-term stability but creates long-term vulnerability when closure eventually occurs. Communities without diversified economic opportunities face significant hardship once mining ends, making economic dependency a structural social

risk that must be carefully managed. During engagements, residents also sought clarity about the possibility of future expansion beyond Block D and requested assurance that any additional mining phases would undergo a new licensing process with full public participation. They expressed concern that uncertainty around future activities may generate unrealistic expectations regarding employment and procurement opportunities. SRPM confirmed that any expansion would require a separate authorisation process with transparent consultation. These inputs underscore the importance of managing expectations proactively and maintaining consistent communication about the project's scope and limitations.

8.4.7.7 Local economic decline (Closure phase)

Mining wages sustain demand for goods and services in the surrounding economy. Once operations cease, local businesses particularly informal traders and small enterprises will face reduced turnover. Many may close, resulting in secondary job losses and weakening the resilience of the local economy. This ripple effect extends beyond employees to the broader community, amplifying the socio-economic shock.

8.4.7.8 Reduction in SLP contributions (Closure phase)

Closure of the Block D shaft will reduce SRPM's commitments to schools, clinics, housing, and infrastructure. Communities that have come to rely on these investments will face service gaps, leaving healthcare and education under strain. The reduction of company-funded development projects can undermine community well-being and reduce trust in both the company and local government.

8.4.7.9 Psychological and Social Stress (Closure phase)

Retrenchment and uncertainty about the future often generate psychological distress. Employees may experience anxiety, depression, and loss of identity, while families may face insecurity. Social tensions may rise within households and communities, potentially manifesting in conflict, unrest or antisocial behaviours. The emotional toll of closure is therefore as significant as the economic consequences.

8.4.7.10 Sudden decline in regional social and economic stability due to abrupt withdrawal of mine benefits (Closure phase)

During mine closure, current employees and their dependents may experience a sudden and significant loss of income, services, and socio-economic benefits that were previously provided or supported by the mining operation. The most severe long-term risk is the abrupt collapse of socio-economic stability once mining ends. Without proactive closure planning, retraining, or diversification of local economies, the region could experience a sharp decline in livelihoods, services, and community well-being. Early interventions are therefore required to prepare employees and communities for transition.

TABLE 57: ASSESSMENT OF IDENTIFIED IMPACTS OF THE PROPOSED BLOCK D UNDERGROUND PROJECT: OPERATIONAL PHASE

OPERATIONAL PHASE																				
ACTIVITY	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Topography																				
Underground mining of Block D area	**Potential subsidence due to underground mining activities** The underground mining activities will remove material from underground by means of bord and pillar mining methods. The removal of the material could potentially lead to surface subsidence.	8	4	1	4	3	3	60		Medium	Negative	Maintain the recommended pillar size/safety factor that will ensure that no surface subsidence occurs. Bord and pillar mining methods must be undertaken, no total extraction mining method to be implemented. Backfilling of mined out areas with waste rock material to assist in stability of underground mining area.	4	3	1	2	2	3	36	
Soils																				
The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on soil resources.																				
Terrestrial Biodiversity																				
The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on terrestrial biodiversity.																				
Freshwater and Wetlands																				
Underground mining of Block D area	**Impact on wetland baseflow** The lowering of the groundwater table due to dewatering, may potentially reducing baseflow to wetlands and streams	8	4	2	3	4	4	84		Medium	Negative	Minimize dewatering volumes and duration to only what is operationally necessary. Use targeted/localized dewatering rather than broad-scale pumping. Implement groundwater level monitoring around sensitive wetlands and streams. Apply adaptive management: adjust dewatering practices based on monitoring results.	8	4	2	3	4	4	84	
Underground mining of Block D area	**Surface Water Contamination** Accidental spills, leaks or improper handling of chemicals and waste potentially results in groundwater and/ or surface water contamination	8	4	2	3	4	3	63		Medium	Negative	Store chemicals, fuels, and hazardous materials in bunded/contained areas for underground works. Develop and implement spill response and emergency plans; train staff accordingly for underground works. Regularly inspect and maintain storage and handling facilities. Ensure proper waste management and disposal practices. Conduct routine water quality monitoring in nearby surface and groundwater systems.	6	4	2	3	3	2	36	
Underground mining of Block D area	Subsidence (ground movement) potentially **altering surface hydrology and wetland structure**	8	4	2	3	4	4	84		Medium	Negative	Conduct geotechnical assessments to inform the risks of subsidence. Design mining operations to minimize the risk and extent of subsidence. Implement early warning systems for ground movement. Adapt mining methods or support structures if monitoring indicates increased risk.	6	4	2	3	3	3	54	
Hydropedology																				
Underground mining of Block D area	Potential decrease in subsurface lateral flow and return flow	4	3	2	3	2	3	42		Medium	Negative	All mitigation measures as presented in the groundwater section.	4	2	1	2	1	2	20	
Groundwater																				

OPERATIONAL PHASE																				
ACTIVITY	**POTENTIAL ENVIRONMENTAL IMPACT**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**								**CUMULATIVE**	**STATUS**	**RECOMMENDED MITIGATION MEASURES / REMARKS**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**							
		M	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**				**M**	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**
Abstraction of fissure water for underground mining purposes	**Reduction in the groundwater levels** The proposed Block D Underground mining operation could lead to dewatering and disruption of private groundwater supply The groundwater level is expected to drop approximately 12 m, directly over the mining area. The potentially impacted area is localised, and the private boreholes are not expected to be noticeably impacted. Boreholes that may be impacted includes the following: • KDB18 (simulated drawdown approx. 4m). • KDB02 (simulated drawdown approx. 2.5m). • KDB03 (simulated drawdown approx. 2.5m). • KDB17 (simulated drawdown approx. 1m). The groundwater level recovery will take approximately 11 years to fully recover post- closure, in the deeper drawdown area directly above the mine workings.	8	5	2	4	3	4	88		Low	Negative	Seal any water intersection that may be encountered during the mining process. Drill cover boreholes ahead of the mining face to identify any water-bearing features. If encountered, these should be sealed using chemical grout. If a reduction in groundwater supply is confirmed through monitoring activities, Sibanye-Stillwater should replace the groundwater source by drilling new or deeper boreholes as an alternative water source. It is recommended that Sibanye-Stillwater drill three to five monitoring boreholes within the potentially affected area to monitor the groundwater levels.	4	2	2	2	3	2	26	
Undertaking of underground mining activities	**Contamination of groundwater due to contaminant seepage from the mining operations** The geochemical study showed that the water in the mine void will be good quality. This water will remain in the void with little potential impact to neighbouring areas. Potential groundwater and contaminant flow is away from private groundwater users	4	3	3	4	3	4	68		Low	Negative	Quarterly monitoring of drilled boreholes for groundwater quality aspects will be undertaken. The results of the water quality monitoring will be used to verify the rate of movement of the groundwater pollution plume.	4	2	2	2	2	2	24	
Air Quality																				
The proposed Block D Underground Mining Project does not constitute of surface infrastructure as the existing K6 and Bathopele shaft areas will be used as well as existing surface infrastructure. There are no additional impacts expected on Air Quality.																				
Noise																				
Mining activities in Block D will be conducted entirely using existing underground and surface infrastructure, specifically accessed from the K6 Shaft and the Bathopele Shaft, both of which are currently operating. There is no additional noise impact foreseen.																				

OPERATIONAL PHASE																				
ACTIVITY	**POTENTIAL ENVIRONMENTAL IMPACT**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**								**CUMULATIVE**	**STATUS**	**RECOMMENDED MITIGATION MEASURES / REMARKS**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**							
		M	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**				**M**	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**
Heritage																				
Underground Mining Activities	Direct or indirect impact to Cultural Heritage Resources	2	5	1	1	1	1	10		Low	Negative	Implementation of cultural heritage chance find procedure, should heritage resources be encountered	2	5	1	1	1	1	10	
Blast and Vibration																				
Underground blasting activities	**Ground vibration** Blasting impact to structures directly above mining area. (Shallow)	10	3	1	1	4	5	95		Medium	Negative	Undertake specific blast design that considers the distance between point of concern and blast Implement single panel blasting Using electronic initiation to ensure single hole firing, Use of specialist to assist with drilling and blasting mitigation Monitor the levels of ground vibration on surface to ensure levels are compliant to limits proposed.	4	3	1	1	2	3	33	
	Ground vibration Blasting impact to structures above mining area. (Deep)	4	3	1	1	4	3	39		Medium	Negative		2	3	1	1	2	2	18	
	Ground vibration Blasting impact to structures outside the mining area.	4	3	2	1	4	3	42		Medium	Negative		2	3	2	1	2	2	20	
	Ground vibration Blasting impact to private houses.	4	3	2	1	4	3	42		Medium	Negative		2	3	2	1	2	2	20	
Underground blasting activities	**Perceptible ground vibration** Based on the maximum charge and ground vibration predicted over distance, ground vibration levels has the possibility to be perceptible up to 508m, up to 188 m as unpleasant and intolerable at 85 m.	8	3	1	4	2	5	90		Medium	Negative	Changed blast design for K6 area closest to Eastend Residential Area Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels Monitor the levels of ground vibration on surface to ensure levels are compliant to limits proposed. Use the existing Sibanye-Stillwater grievance mechanism that allows community members to report blasting-related concerns easily and ensures that all complaints are recorded, investigated, and resolved in a fair and timely manner. Install clear and visible signage near blasting areas for community members to see	4	3	1	2	2	3	36	
Social																				
Block D underground mining operations	**Job Retention and household stability** Sustain 204 jobs from the existing Bathopele and K6 shafts that are nearing closure and contributing to local livelihoods and household income	8	3	3	0	1	5	75		Medium	Positive	SRPM must maintain transparent communication with employees about job security and operational plans. SRPM must explore opportunities for local procurement to extend economic benefits beyond wages.	10	3	3	0	1	5	85	
Block D underground mining operations	**Sustained Local Economic Support** Retained employee's spending power sustains demand for goods and services in the surrounding economy.	6	3	3	0	1	4	52		Medium	Positive	SRPM needs to strengthen partnerships with local businesses through supplier development programs. SRPM must encourage employee spending in local communities by supporting cooperative markets and small enterprises. SPRM must monitor economic dependency and promote diversification initiatives with municipalities.	8	3	3	0	1	4	60	
Block D underground mining operations	**Continued Procurement Opportunities** Ongoing procurement from current suppliers by extension of contracts	6	3	3	0	1	4	52		Medium	Positive	SRPM must support local SMMEs through transparent procurement processes. SRPM must continue to build supplier capacity through training and enterprise development. SRPM must encourage partnerships with local businesses for long-term contracts.	8	3	3	0	1	4	60	

OPERATIONAL PHASE																				
ACTIVITY	**POTENTIAL ENVIRONMENTAL IMPACT**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**								**CUMULATIVE**	**STATUS**	**RECOMMENDED MITIGATION MEASURES / REMARKS**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**							
		M	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**				**M**	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**
												SRPM must enforce the conditions of the contractor social management plan regarding local recruitment and procurement.								
Block D underground mining operations	**Community Development Commitments** Continue SLP/CSR programs to benefit host communities	6	4	2	0	4	4	64		Medium	Positive	Ensure consistent delivery of SLP projects and align SLP projects with municipal IDPs to maximize community benefit and ensure relevance, avoid duplication, and foster collaboration Publicly report progress on SLP commitments to build trust and transparency. Develop project exit plans with the relevant stakeholders to ensure continued beneficiation for local communities. The SLP projects should ensure employment generated by community projects prioritises locals, particularly women, youth, and vulnerable groups. Promote partnerships with NGOs or development agencies to leverage expertise and funding where appropriate, and to strengthen the developmental impact.	8	3	3	0	4	4	72	
Block D underground mining operations	**Employment and economic expectations** Nearby community members may anticipate employment or procurement opportunities for the proposed Block D project, despite the project being designed to retain the existing workforce rather than create new jobs	8	1	3	0	5	5	85		Medium	Negative	Engage employees at K6 and Bathopele on employee reduction as these shafts are nearing closure. In alignment with the 2021-2025 SLP, develop mechanisms and strategies to prevent job losses or to implement appropriate plans to ameliorate the social and economic impact that the downscaling may have on employees, communities and the economy. Engage communities early and consistently to clarify project scope and employment realities. Use existing community forums, including Ulwazi platform, newsletters, and radio to manage expectations. Build trust by demonstrating transparency and responsiveness to concerns raised by stakeholders as per the Sibanye's complaints and grievances procedure	8	1	3	0	4	4	64	
Block D underground mining operations	**Limited employment and business opportunities resulting in decline in economic growth** Retention of workers and business suppliers. Limited new job opportunities	8	4	2	3	4	5	105		Medium	Negative	Continue the implementation of current 2021-2025 SLP projects Ensure that communities are thoroughly engaged on the upcoming SLP projects (2026-2029) to ensure projects are relevant and responsive to stakeholder needs. Implement socio-economic initiatives that provide indirect employment or income-generating opportunities for local residents, such as community agricultural projects, or skills workshops. Facilitate programs for small business development and enterprise support, enabling local residents to supply goods and services to the mine or other markets. Communicate project information clearly, especially with regards to limited new opportunities and reasons for retaining current employees.	6	3	2	3	3	3	51	
Block D underground mining operations	**Community Health Concerns - Air Quality** Communities near ventilation shafts may experience concerns about dust emissions and air quality.	8	3	2	2	3	3	54		High	Positive	Share monitoring results with communities to build trust and address perceptions. Implement dust suppression and emission control technologies where necessary. Ensure the complaints and grievances procedure is adhered to, as a platform for stakeholders to engage the mine on issues and concerns relating to environmental concerns, including air quality impacts.	6	3	2	1	2	3	42	
Block D underground mining operations	**Blasting and noise impact** Residents may perceive and feel underground blasting vibrations; nuisance and anxiety can arise even	8	3	2	2	3	3	54		High	Negative	Changed blast design for K6 area closest to Eastend Residential Area Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels Monitor the levels of ground vibration on surface to ensure levels are compliant to limits proposed.	6	3	2	1	2	3	42	

OPERATIONAL PHASE																				
ACTIVITY	**POTENTIAL ENVIRONMENTAL IMPACT**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**								**CUMULATIVE**	**STATUS**	**RECOMMENDED MITIGATION MEASURES / REMARKS**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**							
		M	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**				**M**	**D**	**S**	**I**	**R**	**P**	**TOTAL**	**SS**
	where no damage is expected											Use the existing Sibanye-Stillwater grievance mechanism that allows community members to report blasting-related concerns easily and ensures that all complaints are recorded, investigated, and resolved in a fair and timely manner." Install clear and visible signage near blasting areas for community members to see								
Block D underground mining operations	**Land use and stability concerns** While physical disruption to land use will remain minimal, the underground expansion may raise concerns about land stability.	8	3	2	0	3	4	64		High	Negative	Implement continuous monitoring of land subsidence, ground vibrations, and water table changes. Share monitoring results only as and when requested Demonstrate negligible risk and build trust. Establish rapid response protocols in case unexpected land stability issues arise. Implement a grievance mechanism so community members can report concerns about land use or stability. Maintain transparency throughout the LoM to prevent misinformation and mistrust	6	3	2	0	3	4	56	
Block D underground mining operations	**Economic dependency on mining** Communities without diversified economic opportunities face severe hardship once mining ends, making dependency a structural risk.	8	3	3	2	2	4	72		High	Negative	During final closure planning phase, collaborate with local government to promote alternative industries (agriculture, tourism, manufacturing). Support skills development programs that prepare workers for non-mining employment. Encourage entrepreneurship through training and microfinance initiatives.	6	3	3	1	2	4	60	
Block D underground mining operations	**Persistent migration and informal settlements** Mining projects often attract migrant workers seeking employment, even when no new jobs are available. This can lead to growth in informal settlements, overcrowding, and competition for limited resources. Such pressures strain housing, healthcare, and schooling systems, creating social tension between migrants and established residents.	8	4	3	0	4	5	95		High	Negative	SRPM to work with municipalities, neighbouring mines and other relevant stakeholders to plan for housing, healthcare, and schooling needs. Communicate clearly with stakeholders and employees that no new jobs are being created to manage expectations. Prioritise employment of local community members for semi-skilled and unskilled opportunities to prevent immigration	8	4	2	0	3	4	68	

TABLE 58: ASSESSMENT OF IDENTIFIED IMPACTS OF THE PROPOSED BLOCK D UNDERGROUND PROJECT: DECOMMISSIONING AND CLOSURE PHASE

DECOMMISSIONING AND CLOSURE PHASE																				
ACTIVITY	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Topography																				
No impact on Topography is expected during the closure phase of the project.																				
Soils, land use and land capability																				
The proposed Block D underground project does not constitute of surface infrastructure as existing infrastructure from the Bathopele and K6 shaft area will be used. There are no additional impacts expected on soil resources during the closure phase.																				
Terrestrial Biodiversity																				
The proposed Block D underground project does not constitute of surface infrastructure as existing infrastructure from the Bathopele and K6 shaft area will be used. There are no additional impacts expected on terrestrial biodiversity during the closure phase.																				
Freshwater and wetlands																				
Backfilling of waste rock material to mined out underground areas	**Alteration of groundwater flow paths** Sealing and backfilling of shafts potentially causes waterlogging or changes to wetland hydrology	8	4	2	3	3	4	80		Medium	Negative	Implementation of the mitigation measures as stipulated for groundwater Monitor groundwater post-closure as per the final closure and rehabilitation plan. Apply adaptive management if monitoring indicates negative hydrological changes.	6	4	2	3	3	3	54	
Backfilling of waste rock material to mined out underground areas	**Residual groundwater and surface water contamination**	8	4	2	3	3	4	80		Medium	Negative	Implement long-term water quality monitoring for both groundwater and surface water, as per the final closure and rehabilitation plan. Undertake remedial actions if contamination is detected post-closure.	6	4	2	3	3	3	54	
Hydropedology																				
Underground mining of Block D area	Potential decrease in subsurface lateral flow and return flow	4	2	2	3	2	3	39		Medium	Negative	All mitigation measures as presented in the groundwater section.	2	1	1	1	1	2	12	
Groundwater																				
Backfilling of waste rock material to mined out underground areas	**Deterioration of groundwater quality** Rainwater and groundwater seepage into the mining operations may become contaminated and when entering the groundwater system, the contaminants will migrate from these facilities. Due to contaminant migration from re-watered workings, down-gradient receptors may be impacted on. Receptors include surface streams and private groundwater users. The geochemical assessment, indicated that there are no chemicals of concern expected in the flooded mine workings, therefore the impact is expected to be low.	2	3	1	2	2	2	20		Low	Negative	Monitoring of groundwater quality for a period of 5 years post closure of the Block D Underground Mining Area	2	2	1	2	2	2	18	

DECOMMISSIONING AND CLOSURE PHASE																				
ACTIVITY	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Rewatering of the mine workings	**Recovery of the groundwater levels** The groundwater level recovery will take approximately 11 years to fully recover post- closure, in the deeper drawdown area directly above the mine workings.	6	4	2	2	2	4	64		Low	Positive	Monitoring of groundwater levels for a period of 5 years post closure of the Block D Underground Mining Area	6	4	2	2	2	4	64	
Air Quality																				
The proposed Block D underground project does not constitute of surface infrastructure as existing infrastructure from the Bathopele and K6 shaft area will be used. There are no additional impacts expected on air quality during the closure phase.																				
Noise																				
No impact on Noise is expected during the closure phase of the project.																				
Heritage																				
It is the opinion of the heritage consultant that there are no known sites, features or objects of cultural heritage significance that would be compromised in the event of any subsidence occurring as a result of the underground mining. No impacts on heritage resources are expected.																				
Blast and Vibration																				
As there will be no blasting during the closure phase, no impacts on blast and vibration is expected during the closure phase.																				
Social																				
Decommissioning and Closure of the Block D underground operations	**Employment Loss and Household Destabilisation** Retrenchment of the 204 employees retained during operations. Without redeployment or alternative employment, these households will lose their primary source of income. This destabilisation can lead to increased poverty, food insecurity, and reduced access to education and healthcare.	8	5	3	4	4	5	120		Medium	Negative	Develop retrenchment packages that include financial support, retraining, and job placement services. Partner with government and NGOs to create alternative employment pathways. Begin closure planning and engagements with affected employees and Future Forums early to avoid sudden shocks. Strengthen the existing Community Affairs team's capacity to manage closure-related communication and community expectations. Support community structures, including Ward Committees to maintain social stability during transition. Facilitate dialogues with stakeholders to prevent community conflict or unrest linked to job losses.	8	4	2	3	2	5	95	
Decommissioning and Closure of the Block D underground operations	**Local Economic Decline** Mining wages sustain demand for goods and services in the surrounding economy. Once operations cease, local businesses particularly informal traders and small enterprises will face reduced turnover. Many may close, resulting in secondary job losses and weakening the resilience of the local economy.	8	5	3	0	4	5	100		Medium	Negative	Support diversification of the local economy before closure through investment in non-mining sectors. Provide business development training and seed funding for small enterprises as per the SLP. Encourage partnerships between local businesses and regional markets to reduce dependency on mining wages.	8	4	3	3	3	4	84	

DECOMMISSIONING AND CLOSURE PHASE																				
ACTIVITY	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Decommissioning and Closure of the Block D underground operations	**Reduction of Social and Labour Plan (SLP) contributions** Retrenchment and uncertainty about the future often generate psychological distress. Workers may experience anxiety, depression, and loss of identity, while families face insecurity	6	3	2	2	2	4	60		Medium	Negative	Ensure closure planning is transparent, participatory, and inclusive. Share clear timelines and responsibilities with employees. Provide counselling and psychosocial support for employees and families. Offer workshops on resilience, stress management, and career transition. Maintain open communication channels to reduce uncertainty and anxiety.	6	3	2	2	2	3	45	
Decommissioning and Closure of the Block D underground operations	**Sudden decline in regional social and economic stability due to abrupt withdrawal of mine benefits** The most severe long-term risk is the abrupt collapse of socio-economic stability once mining ends. Without proactive closure planning, retraining, or diversification of local economies, the region could experience a sharp decline in livelihoods, services, and community well-being.	8	5	4	4	4	4	100		Medium	Negative	Phase closure activities gradually, to allow affected employees, their dependents and communities time to adjust. Implement retraining and skills transfer programs for employees well before closure. Invest in alternative industries and infrastructure that can sustain livelihoods post-mining as per the SLP.	6	5	3	3	4	4	84	

Environmental Management Programme (EMPr)

9. Environmental Management Programme (EMPr)

9.1 Objectives of the EMPr

Environmental protection is a critical component of sustainable development, especially in projects and operations that interact with the natural environment. An Environmental Management Progamme (EMP) is a strategic document that outlines how a project or operation will manage its environmental impact in a responsible, sustainable and legally compliant manner. It therefore serves as the central framework in which potential environmental risks have been identified and monitoring, preventative and corrective measures have been formulated with the aim of preventing, reducing and mitigating anticipated risks throughout the lifecycle of the project.

The primary objectives of the EMP therefore include:

- Establishment of environmental objectives that not only support long-term sustainability goals but also align to social demands/societal expectations and fulfill applicable legal and regulatory obligations.
- Understanding the potential environmental impacts of project implementation during each lifecycle phase of the project with the aim of developing appropriate mitigation measures which enables the achievement of the established environmental objectives.
    - The initiation of the development of supporting in-depth monitoring and management plans/procedures stemming directly as an extension of the mitigation measures, with the aim of achieving the overarching environmental objectives.
- The understanding and implementation of a mitigation hierarchy, originating with early detection of potential environmental impact occurrence, followed by preventive actions, and, where necessary, corrective measures to address any residual effects.
- Establishing clear organizational and administrative roles in environmental management in support of on-site environmental stewardship through the development of measurable compliance indicators and initiating the development of detailed RACI framework's that defines and allocates active responsibilities to ensure accountability and effective implementation.

Development of measurable compliance indicators underpinning auditing activities and requirements, with the aim of ensuring the initiation and undertaking of the essential data for comprehensive reporting and impact understanding, ensuring full compliance with applicable regulatory standards.

- Providing for active environmental training across all internal teams and external stakeholders ensuring a unified understanding and commitment to the environmental objectives, compliance indicators and promoting consistent and effective implementation at every level; and
- Maintaining continuous awareness of impacts on receiving communities through the establishment of a grievance mechanism, which supports the investigation and resolution of concerns. This process aims to ensure that mitigation measures are reviewed and adjusted as necessary to address community feedback effectively.

Figure 59 provides an overview of the interconnectedness of the EMP objectives with the main goal of achieving and maintaining Environmental Sustainability:

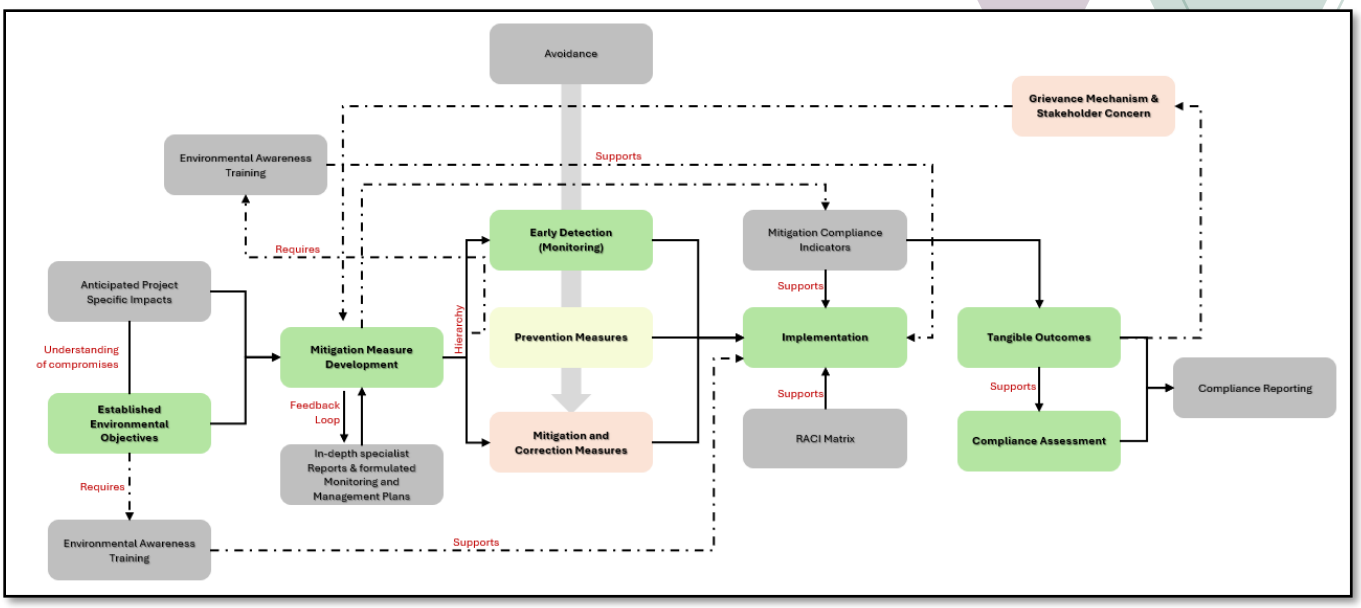


FIGURE 59: EMPR OBJECTIVES (AVDCG, 2025)

9.2 Content of the Environmental Management Programme Report

The EMPr has been structured in accordance with the requirements as specified in Appendix 4 of the National Environmental Management Act (Act No. 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations17 . Refer to Table 59.

TABLE 59: REQUIREMENTS OF AN EMPR

No	Description	Reference
1	An EMPr must comply with Section 24N of the Act and include-	
a)	details of: (i) the EAP who compiled the EMPr; and (ii) the expertise of the EAP to prepare an EMPr, including a Curriculum Vitae;	Section 1
b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2
c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 2

[17] Environmental Impact Assessment Regulations, 2014 GN R982 in GG 38282 of 4 December 2014 as amended

No	Description	Reference
d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and in the case of a closure activity, closure; and (v) where relevant, operation activities;	Section 9
f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; and (iii) comply with any applicable provisions of the Act regarding closure, in the case of a closure activity	Section 9
g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 9
h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 9
i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 9
j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9
k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 9
l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 9
m)	an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 9

9.3 Implementation of the EMPr

The implementation of the EMPr with specific reference to the identified mitigation measures will lie with the On-Site Environmental Officer.

The ***On-Site Environmental Officer*** (Highest level of control) on site will ultimately be responsible for overseeing the Compliance Monitoring on site. During the operational phase of the development, the On-Site Environmental Officer will be ultimately responsible to:

- Ensure continuously workshopping of the EMPr commitments with the site to ensure full understanding of responsibilities and actions to ensure compliance.

- Setting aside a budget for maintenance.
- Ensure that allocated responsible resources maintain facilities and infrastructure in good working order to effectively fulfil its intended purpose and to prevent negative environmental impacts.
- Immediately remedy any aspects that contribute to negative environmental impacts.

9.4 Environmental Objectives

EMPr Objective: *"Establishment of environmental objectives that not only support long-term sustainability goals but also align to social demands/societal expectations and fulfil applicable legal and regulatory obligations."*

EMP Objective: "*Understanding the potential environmental impacts of project implementation during each lifecycle phase of the project with the aim of developing appropriate mitigation measures which enables the achievement of the established environmental objectives."*

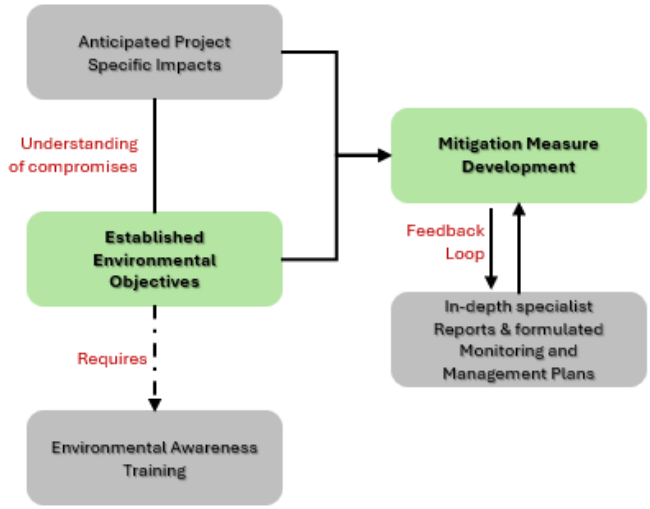


FIGURE 60: ENVIRONMENTAL OBJECTIVES (AVDCG, 2025)

An environmental objective is a specific, measurable goal/target established by a project related to improving, preserving, or managing environmental baseline conditions. Essentially, they serve as benchmarks for sustainable development and environmental protection and allows for the development of mitigation measures as strategies or actions designed to avoid, reduce or minimise the negative impacts of activities on the baseline environment within the project context.

The below provides for the project specific environmental objectives against the anticipated impacts associated with the project.

Environmental Aspect	Environmental Objective	Anticipated Environmental Impacts
Topography	To limit the occurrence of ground subsidence	Potential subsidence
Freshwater/ Wetland	Contamination of surface water sources Decreased surface water levels	• To limit the occurrence of surface water contamination through ○ Compliance with the National Water Act (Act 36 of 1998) GN704 Regulation (Clean/ dirty water separation)

Environmental Aspect	Environmental Objective	Anticipated Environmental Impacts
		○ Effective general, hazardous and chemical management To effectively implement water demand management
Groundwater	Groundwater resource conservation through: • Continuous monitoring of groundwater levels • Effective general, hazardous and chemical waste management • Protection of groundwater quantity and quality	Lowered groundwater levels • Decreased groundwater quality
Air Quality	To limit the release of dust, gases and particulate matter during operations	Degraded air quality
Noise	To reduce the impacts of noise pollution on mine workers and surrounding communities	Noise pollution
Heritage	To prevent damage/ destruction to potential archaeological findings	Destruction/ damage to cultural heritage resources
Blast and Vibration	To limit the potential impacts of ground vibration on nearby buildings, roads and infrastructure	• Blasting impact to structures above mining area. (Shallow) • Blasting impact to structures above mining area. (Deep) • Blasting impact to structures outside the mining areas • Blasting impact to private houses.
Socio-Economic	• Management of doorstep community expectations and understanding (job opportunities, job opportunity timeframes, project context, project related impacts, community health & safety). • Management of affected doorstep communities (project related impacts). • Realization of social benefits that meet doorstep community needs.	• Job retention and household stability • Sustained local economic support • Continued procurement opportunities and community development commitments • Dissatisfaction of nearby communities if employment opportunities are not favourable to them, potentially resulting in protests • Limited employment and business opportunities resulting in the decline of economic growth • Community health concerns related to air quality • Concerns around land use stability • Economic dependency on mining • Persistent migration and informal settlements • Increased job security for the Bathopele and Kwezi Shaft employees if the project is approved • During the closure phase, there will be employment loss, household destabilisation and a decline in the local economy. These impacts may result in

Environmental Aspect	Environmental Objective	Anticipated Environmental Impacts
		increased psychological and social stress.

9.5 Mitigation and Management Measures

9.5.1 Mitigation Measures

EMP Objective: "*Understanding the potential environmental impacts of project implementation during each lifecycle phase of the project with the aim of developing appropriate mitigation measures which enables the achievement of the established environmental objectives.*

EMP Objective: "*The understanding and implementation of a mitigation hierarchy, originating with early detection of potential environmental impact occurrence, followed by preventive actions, and, where necessary, corrective measures to address any residual effects."*

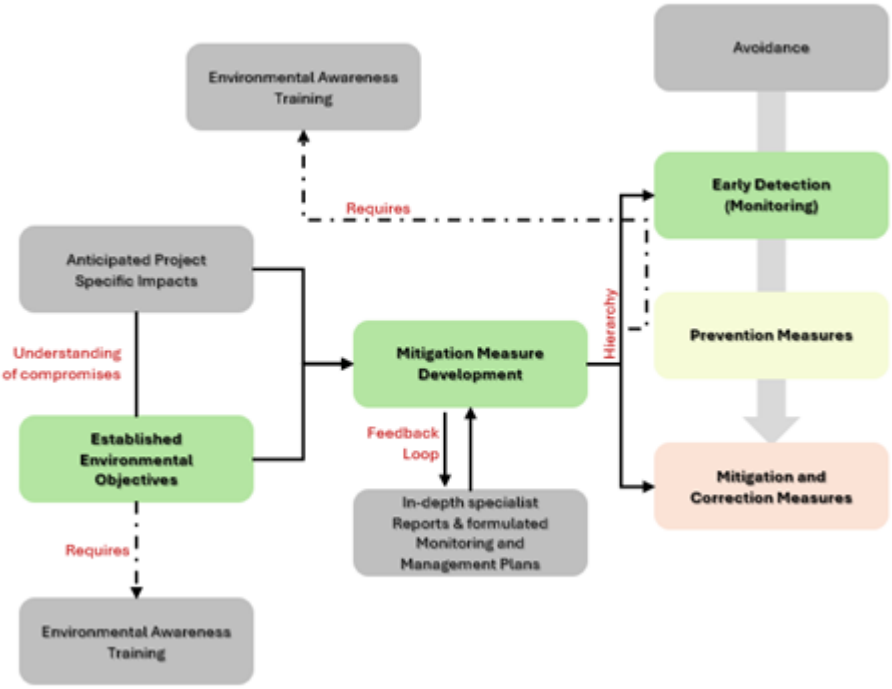


FIGURE 61: MITIGATION MEASURE DEVELOPMENT (AVDCG, 2025)

This chapter outlines the mitigation and management measures developed to address potential environmental impacts identified in the assessment process. Central to this approach is the application of the mitigation hierarchy, a best-practice framework designed to guide the identification and implementation of appropriate responses/actions to environmental risks.

The mitigation hierarchy consists of four sequential steps:

1. **<u>Avoidance</u>**

i. Identification of potential environmental risks to enable their avoidance at the source. This includes integrating environmental considerations into early project design and decision-making to avoid sensitive areas or high-risk activities.

2. Early Detection

i. Identification of potential emerging environmental risks to enable their prevention at the source. This involves the development and implementation of comprehensive monitoring programmes designed to support early detection of emerging environmental risks. These programmes inform the application of targeted operational controls and management practices to avoid or prevent the likelihood and severity of potential impacts. The process also includes the consideration and execution of appropriate preventive actions.

3. Preventative Action

i. Implementing operational controls, design features, and management practices to avoid or prevent the likelihood and severity of potential impacts, where complete avoidance is not feasible.

4. Mitigation and Corrective Action

i. Where impacts occur despite preventive efforts, appropriate mitigation measures are deployed to reduce environmental risk significance, followed by corrective actions to address any residual or unforeseen effects.

This hierarchy ensures that the focus remains on minimising environmental harm from the outset, while also providing a clear protocol for managing impacts if they arise. The measures presented in this chapter are designed to be practical, effective, and aligned with relevant regulatory and best-practice standards.

To support this framework, the chapter has also allowed for the development of measurable compliance indicators with the aim of ensuring the initiation and undertaking of the essential data for comprehensive reporting and impact understanding in support of implementation success on site.

EMP Objective: *"Development of measurable compliance indicators underpinning auditing activities and requirements, with the aim of ensuring the initiation and undertaking of the essential data for comprehensive reporting and impact understanding, ensuring full compliance with applicable regulatory standards"*

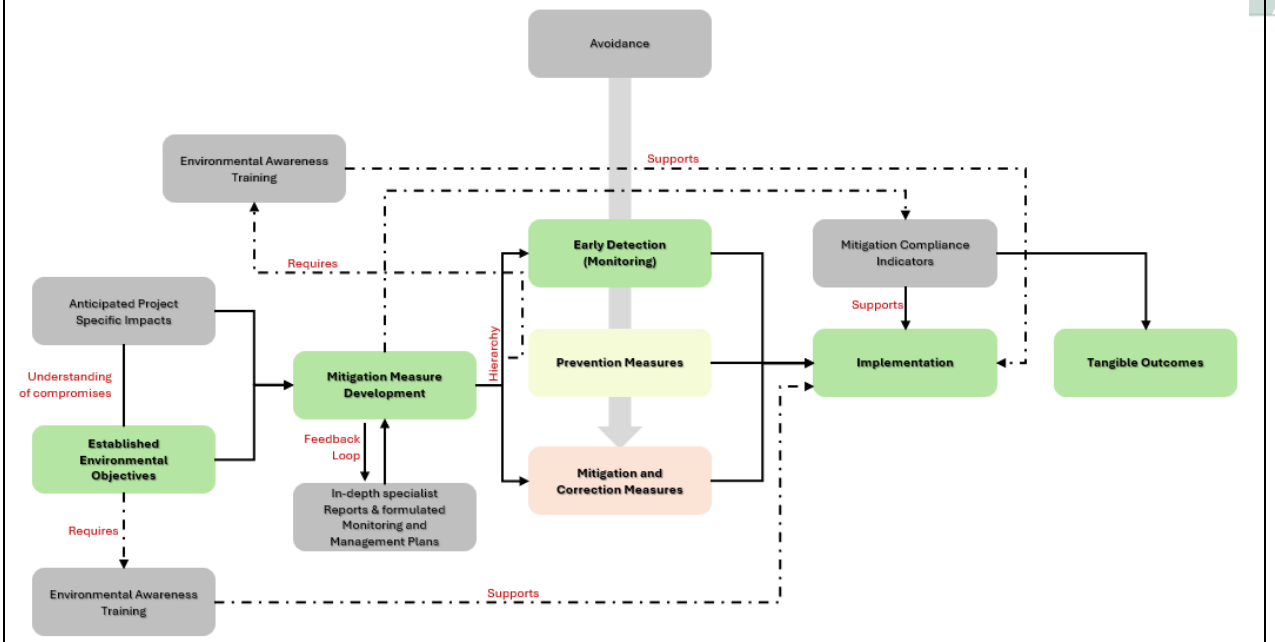


FIGURE 62: EMP OBJECTIVE (AVDCG, 2025)

Table 60 provides for the Mitigation and Management Measures to be implemented for all phases of the project and has been developed taking into account the most-up-to-date specialist assessments

TABLE 60: MITIGATION MEASURES APPLICABLE TO THE PROPOSED PROJECT

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL MANAGEMENT PROGRAMME
TOPOGRAPHY		
• Potential subsidence	• Underground mining of Block D increases instability and the risk of ground subsidence	***Mitigation Objective*** • To limit the occurrence of ground subsidence ***Operational Phase*** • Maintain recommended pillar size to enhance stability • Conduct geotechnical assessments to inform the risks of subsidence • Bord and pillar mining methods must be undertaken, no total extraction mining method to be implemented. • Backfilling of mined out areas with waste rock material to assist in stability of underground mining area. ***Closure Phase*** • Maintain pillar size to ensure that no surface subsidence occurs
FRESHWATER/ WETLANDS		

• Contamination of surface water sources
• Decreased surface water levels
• Alteration of groundwater flow paths
	• Mining activities (inclusive of mining and processing procedures) may contribute contaminants (and thereby polluting) to the nearby Unchanneled Valley Bottom Wetlands and non-perennial drainage features
	• Dewatering of the mine may create a cone of depression, decreasing water levels of nearby water sources such as the nearby Unchanneled Valley Bottom Wetlands and non-perennial drainage features
	• During the closure phase, sealing and backfilling of the underground mining area could potentially cause water logging or changes in wetland hydrology
		Mitigation Objective
		• To limit the occurrence of surface water contamination through
		  ○ Compliance with the National Water Act (Act 36 of 1998) GN704 Regulation (Clean/ dirty water separation)
		  ○ Effective general, hazardous and chemical management
		• To minimise the impact of dewatering activities
		Operational Phase
		• Develop (if not in place), update (if in place) and implement a site-specific Surface Water Quality Monitoring Programme which meets the requirements of the applicable Water Use Licence
		• Implementation and adherence to Spill Management Procedures to limit the amount of contamination seeping into surface water resources
		• Implementation and adherence to Waste Management Procedures to limit the amount of contamination seeping into surface and groundwater resources
		• Manage and monitor dewatering processes in the underground mine to mitigate the potential occurrence of a cone of depression, decreasing surface water levels
		• Minimize dewatering volumes and duration to only what is operationally necessary.
		• Use targeted/localized dewatering rather than broad-scale pumping
		• Store chemicals, fuels, and hazardous materials in bunded/contained areas for underground works.
		• Develop and implement spill response and emergency plans; train staff accordingly for underground works.
		Regularly inspect and maintain storage and handling facilities.
		• Ensure proper waste management and disposal practices.
		• Conduct routine water quality monitoring in nearby surface and groundwater systems.
		Closure Phase:
		• Design closure and backfilling to maintain or restore natural groundwater flow paths
		• Monitor groundwater post-closure, as per the approved final rehabilitation and closure plan
		• Implement a 5-year post-closure water quality monitoring for both groundwater and surface water

GROUNDWATER		

• Lowered groundwater levels
• Decreased groundwater quality
	• Potential over abstraction from groundwater dewatering of the aquifer
	• Rewatering of mine workings
		Mitigation Objective
		Groundwater resource conservation through:
		• Continuous monitoring of groundwater levels
		• Protection of groundwater quantity and quality
		Operational Phase
		• Implementation of Groundwater Monitoring and Management Plan to analyse any changes in groundwater levels or quality
		• Chemically grout water ingress points (if required)
		• If a reduction in groundwater supply is confirmed through monitoring activities, Sibanye-Stillwater should replace the groundwater source by drilling new or deeper boreholes as an alternative water source.
		• Compliance with National Water Act (Act 36 of 1998) GN704 Regulation Compliance (separation of clean and dirty water), with specific emphasis on appropriate dewatering procedures.
		  ○ Per regulation *6(c)* of the GN704, *every person in control of a mine or activity must collect the water arising within any dirty area, including water seeping from mining operations, outcrops or any other activity, into a dirty water system*. Therefore, the operations must ensure that dewatering activities are channelled into an appropriate dirty water storage system.
		  ○ Further, according to regulation *6(d)* the dirty water system must be *designed, operated and maintained in a manner to prevent spillage of dirty water into clean water systems more than once every 50 years*.
		  ○ Regulations 6(c) and (d) ensure that dirty water (i.e., the water abstracted from the underground workings) does not mix with clean water and does not contaminate clean water resources or groundwater.
		• Maintain pillars around existing boreholes to prevent any disruptions to groundwater users
		• Implementation and adherence to Spill Management Procedures to limit the amount of contamination seeping into groundwater resources
		• Implementation and adherence to Waste Management Procedures to limit the amount of contamination seeping into groundwater resources.
		• It is recommended that Sibanye-Stillwater drill three to five monitoring boreholes within the potentially affected area to monitor the groundwater levels.
		Closure Phase:
		• Monitoring of groundwater quality for a period of 5 years post closure of the Block D Underground Mining Area
		• Monitoring of groundwater levels for a period of 5 years post closure of the Block D Underground Mining Area

AIR QUALITY		
Degraded air quality		***Mitigation Objective:***

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL MANAGEMENT PROGRAMME
	Mining of Block D will require processes of blasting and excavation. It is not expected that these activities will have additional impacts to the ambient air quality as these activities are undertaken underground	To limit the release of dust, gases and particulate matter during operations ***Operational Phase:*** • Apply dust suppression measures at dust generation points (e.g., conveyor belts) • Ensure materials are covered during transportation to reduce the amount of dust spread • Continuation of the current Air Quality Monitoring Programme to monitor dust fallout
NOISE		
Noise pollution	Underground mining activities intensify noise levels, impacting mine workers	***Mitigation Objective:*** To reduce the impacts of noise pollution on mine workers and surrounding communities ***Operational Phase:*** • Continuous monitoring of noise levels underground to ensure noise levels are compliant with Noise Control Regulations in terms of Section 25 of the Environment Conservation Act (Act no. 73 of 1989) • Provision of Personal Protective Equipment (PPE) to all mine workers ***Closure Phase*** • No mitigation proposed
HERITAGE		
• Destruction/ damage to cultural heritage resources	• Underground mining activities which may expose potential archaeological artefacts • Potential subsidence which may damage potential archaeological artefacts	***Mitigation Objective:*** To prevent damage/ destruction to potential archaeological findings ***Operational Phase:*** • Implementation of cultural heritage chance find procedure, should heritage resources be encountered ***Closure Phase*** • No mitigation proposed
BLAST AND VIBRATION		
Blasting induced ground vibration	• Blasting impact to structures above mining area. (Shallow) • Blasting impact to structures above mining area. (Deep) • Blasting impact to structures outside the mining area. • Blasting impact to private houses. • Perceptible ground vibration	***Mitigation Objective:*** To limit the potential impacts of ground vibration on nearby buildings, roads and infrastructure ***Operational Phase:*** • Undertake specific blast design that considers the distance between point of concern and blast • Implement single panel blasting where required • Using electronic initiation to ensure single hole firing, • Use of specialist to assist with drilling and blasting mitigation • Changed blast design for K6 area closest to Eastend Residential Area • Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels • Monitor the levels of ground vibration on surface to ensure levels are compliant to limits proposed. • Use the existing Sibanye-Stillwater grievance mechanism that allows community members to report blasting-related concerns easily and ensures that all complaints are recorded, investigated, and resolved in a fair and timely manner. • Install clear and visible signage near blasting areas for community members to see
SOCIAL		
• Job retention and household stability • Sustained local economic support • Continued procurement opportunities and community development commitments • Dissatisfaction of nearby communities if employment opportunities are not favourable to them, potentially resulting in protests • Limited employment and business opportunities resulting in the decline of economic growth • Community health concerns related to air quality • Concerns around land use stability • Economic dependency on mining • Persistent migration and informal settlements • Increased job security for the Bathopele and Kwezi Shaft employees if the project is approved • During the closure phase, there will be employment loss, household destabilisation and a decline in the local economy. This impacts may result in increased psychological and social stress.	***Mitigation Objectives:*** • Management of doorstep community expectations and understanding (job opportunities, job opportunity timeframes, project context, project related impacts, community health & safety). • Management of affected doorstep communities (project related impacts). • Realization of social benefits that meet doorstep community needs. ***Operational Phase:*** • Strengthen transparent communication with employees and communities about job security, project scope, employment realities, environmental results, and no new job creation. • Maintain consistent community engagement, using existing platforms (Ulwazi, radio, newsletters) to manage expectations and address concerns early. • Ensure effective implementation of current and future SLPs, aligning all projects with municipal IDPs, community priorities, and ongoing stakeholder consultations. • Publicly report progress and share monitoring results (SLP commitments, air quality, land stability, etc.) to build trust and demonstrate accountability. • Support local employment and job protection, prioritising locals—particularly women, youth, and vulnerable groups—and developing strategies to mitigate job losses tied to downscaling. • Engage employees at shafts nearing closure and plan mechanisms to manage reductions responsibly while communicating clearly. • Promote economic resilience for households and communities through financial literacy training, household resilience support, and programs that diversify income sources.

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL MANAGEMENT PROGRAMME
		• Strengthen local procurement and supplier development, ensuring transparent processes, long-term contracts, and expanded opportunities for SMMEs. • Encourage community-based enterprise development, entrepreneurship, microfinance access, cooperative markets, and small business support. • Collaborate with municipalities and government to reduce economic dependency on mining and promote alternative industries such as agriculture, tourism, and manufacturing. • Implement socio-economic initiatives that offer indirect employment or income (e.g., agricultural projects, skills workshops, community enterprises). • Maintain rigorous environmental monitoring and response, including air quality, dust control, land subsidence, ground vibrations, and water table changes, with rapid-response protocols where needed. • Ensure strong grievance and complaints mechanisms, enabling stakeholders to raise issues about environmental impacts, land stability, or social concerns, and ensuring transparent follow-up. ***Closure Phase:*** • Plan closure early and transparently, engaging employees, Future Forums, and communities with clear timelines, responsibilities, and ongoing communication to reduce uncertainty. • Provide strong employee support, including retrenchment packages, psychosocial counselling, resilience workshops, and open communication channels to manage stress and anxiety. • Implement retraining and transition programs, offering skills development, career-transition workshops, and job placement assistance well before closure. • Promote alternative employment pathways by partnering with government, NGOs, and industry to create new opportunities outside mining. • Drive economic diversification, investing in non-mining sectors, alternative industries, and infrastructure that can sustain long-term livelihoods as per the SLP. • Support small business development, offering training, seed funding, and creating linkages between local enterprises and broader markets, as per the SLP. • Strengthen community and institutional resilience, supporting Ward Committees, building capacity in local institutions, and ensuring SLP projects transition smoothly to municipal or community ownership. • Establish a positive post-closure legacy, including legacy funds, visible investments, and a dedicated closure SLP (e.g., for Block D) informed by updated studies.

9.5.2 Management Plans

EMP Objective: *"The initiation of the development of supporting in-depth monitoring and management plans/procedures stemming directly as an extension of the mitigation measures, with the aim of achieving the overarching environmental objectives."*

The following existing SRPM procedures are already in place supporting the development of the proposed mining of Block D (Table 61).

TABLE 61: MANAGEMENT PROCEDURES AT SIBANYE-STILLWATER

Reference Number	Management Procedure
SS-ZA-PGM's-PRO-ENV-ALL-0006	Environmental PGM Operations Procedure for Hazardous Material Management
SS-ZA-PGM's-PRO-ENV-LND-0001	Biodiversity Management Procedures
SS-ZA-PGM's-PRO-ENV-LND-0002	Heritage Resources Procedure
SS-ZA-PGM's-PRO-ENV-WAT-0001	Water Management Procedure
SS-ZA-PGM's-PRO-ENV-WST-0001	Waste Management Procedure
SS-ZA-PGM's-PRO-ENV-WST-0002	Spillage Response and Remediation Procedure

9.5.2.1 Additional Management Plans to be Implemented:

9.5.2.1.1 Heritage Chance Find Procedure

The possibility of the occurrence of subsurface archaeological finds cannot be excluded. Therefor a "Heritage Chance Find Procedure" should be put in place as part of the EMPr.

This Chance Find Procedures is discussed below:

Procedure Aim: Established monitoring and reporting procedures to ensure compliance with relevant legislation and associated procedures if during any phase of the project any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made.

Applicability Responsibility: This procedure applies to the applicant's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. All relevant stakeholders (with primary focus during the construction phase of the project) must be properly inducted to ensure they are fully aware of the procedures regarding chance finds).

Main Preventative Actions: The operations must be stopped and a qualified archaeologist must be contacted for an assessment of any possible finds such as stone tool scatters, artefacts or bone and fossil remains as to allow for guidance on the appropriate way forward from the qualified specialist.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
    - It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.

- The senior on-site Manager will inform the On-Site Environmental Officer of the chance find and its immediate impact on operations.
    - The On-Site Environmental Officer will then contact a professional archaeologist or palaeontologist, depending on the nature of the finds, for an assessment of the finds.
    - If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required, subject to permits issued by the South African Heritage Resources Agency (SAHRA).
    - If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA DAU (Nokusho Ngobeni/Natasha Higgitt 021 202 8660) must be alerted as per section 35(3) of the NHRA. Non-compliance with this section of the NHRA is an offence in terms of section 51(1)e of the NHRA and item 5 of the Schedule.
    - If unmarked human burials are uncovered, the SAHRA DAU (Nokusho Ngobeni/Natasha Higgitt 021 202 8660), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with this section of the NHRA is an offence in terms of section 51(1)e of the NHRA and item 5 of the Schedule.

9.6 Environmental Awareness Training

The following Environmental Awareness Training will be implemented by SRPM in order to inform employees and contractors of the environmental risk that may result from their work, or the risk of their interaction with the sensitive environment. The training will be conducted as part of the induction process for all new employees (including contractors) that will perform work in terms of the proposed activities.

The environmental awareness training will aim to:

- Promote general environmental awareness as well as awareness specific to the project.
- Inform personnel about the availability and importance of adherence to the EMPr, Environmental
- Authorization as well as any other permits or licenses issued for the project.

The environmental awareness training programme will include:

- Induction of all personnel in a language and method most suitable.
- Signing of an attendance register and declaration of ensuring environmental protection.

Topics that will be included in the induction include:

- What is the environment and why must it be protected?
- What are the environmental sensitivities of the area in which activities are being undertaken?
- How mining activities can adversely impact of the environment?
- What are the mitigation measures for adverse impacts?
- What is the social responsibility of all site employees during construction?
- How should environmental incidents be recorded?

All new employees will be inducted by the Construction Manager prior to commencing with work on site. Proof of the induction will be kept. Refresher environmental awareness training will be conducted as and when the need arises. An example of this is when there are repeated non-compliances. The Construction Manager will ensure daily toolbox talks include alerting the workforce to particular environmental concerns

associated with the tasks for that day or the area / habitat in which they are working, etc. Awareness posters and pamphlets must be provided to create environmental awareness throughout the site.

Proof of awareness training must be kept for the entire lifecycle of the project in the form of (1) signed attendance registers; (2) Presentations / Information Packs and (3) Minutes of Meetings.

9.7 Performance Assessment and Reporting

Unless otherwise instructed by the Competent Authority (DMPR) or as a condition to the environmental authorisation, internal environmental compliance audits on the EMPr will be undertaken annually, and the resultant audit reports will be submitted to the DMPR. External environmental compliance audits on the EMPr will be undertaken biennial (once every two years) by an independent EAP, and a copy of the external audit report will be submitted to the DMPR.

The assessment should be a systematic evaluation of activities onsite and aims to determine:

- The level of compliance with the conditions of the EA and EMP, as well as the extent to which the avoidance, management and mitigation measures provided for in the EMP achieve the objectives and outcomes of the EMP;
- Identify shortcomings in the EMP;
- The evaluation of management commitments within the EMP that might require reconsideration or additional mitigation measures in light of current management practices;
- The evaluation and identification of management commitments that may not be appropriate to activities undertaken on site; and
- Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMP.

The Performance Assessment must include:

- Review of existing EA and EMP reports.
- Review of performance in relation to existing management commitments as documented in the approved EMP; and
- Site inspection and general environmental audit.

9.8 Grievance and Complaints Procedure

Sibanye-Stillwater has an existing grievance procedure, which aims to log and close out grievances and/or complaints received from stakeholders in a structured manner. The step-by-step complaints and grievance procedure is illustrated in Figure 63.

FIGURE 63: SIBANYE-STILLWATER COMPLAINTS AND GRIEVANCE PROCEDURE

9.9 Monitoring

9.9.1 Groundwater Monitoring

9.9.1.1 Current groundwater monitoring programme

SRPM has an existing groundwater monitoring programme. Refer to Table 62 for the groundwater monitoring points related to the K6 and Bathopele Operations. The groundwater monitoring points are shown in Figure 64.

TABLE 62: SRPM GROUNDWATER MONITORING POINTS RELATING TO K6 AND BATHOPELE OPERATIONS

Site Name	Site Description	Coordinates	Frequency of Monitoring
Bathopele Operations			
WV BH01	Waterval Borehole 1 west of Hex river	S25.675707 E27.275331	Quarterly
WV BH04	Waterval Borehole 4 east of Hex river	S25.677843 E27.279291	Quarterly
WV BH05	Waterval Borehole 5 west of Hex river	S25.679552 E27.279072	Quarterly
WV BH06	Waterval Borehole 5 west of Hex river	S25.682383 E27.284225	Quarterly
GW01	Downstream of WV opencast towards Hex River	S25.680786 E27.28675	Quarterly
GW09	Downstream of WV opencast towards Hex River	S25.683134 E27.292221	Quarterly
GW14	Downstream E of Waterval shaft vent towards Hex River	S25.68796 E27.29729	Quarterly
GW45	Downstream SW of Waterval shaft towards Hex River	S25.68865 E27.29973	Quarterly
NB35	Downstream SW of Bathopele shaft towards Hex River	S25.68976 E27.30047	Quarterly
NB36	Downstream SW of Bathopele shaft towards Hex River	S25.69080 E27.30220	Quarterly
K6 Operations			
AK6 G01	K6 monitoring borehole	S25.64667 E27.26481	Quarterly
AK6 G05	Curtain borehole between K6 development and Oosteinde	S25.65338 E27.26196	Quarterly
AK6 G07	South-western monitoring borehole	S25.64969 E27.26140	Quarterly
AK6 G09	Curtain borehole between K6 development and Oosteinde	S25.65483	Quarterly

Site Name	Site Description	Coordinates	Frequency of Monitoring
Bathopele Operations			
		E27.26280	

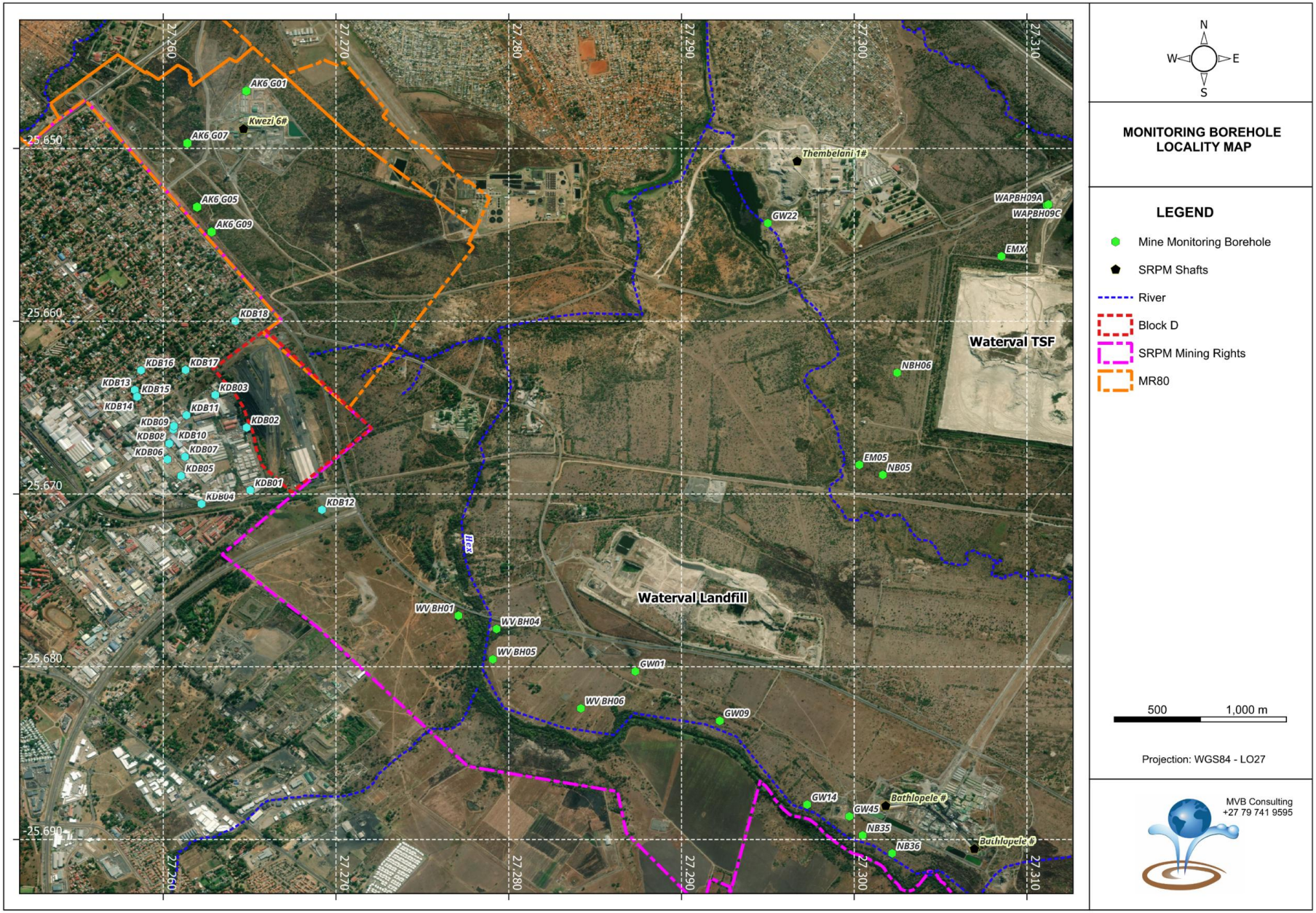


FIGURE 64: GROUNDWATER MONITORING POINTS FOR K6 AND BATHOPELE OPERATIONS (MVB, 2026)

The variables to be tested for groundwater quality and the Water Use Licence Limits for each operational area is shown in Table 63.

TABLE 63: GROUNDWATER VARIABLES AND WUL LIMITS FOR BATHOPELE AND K6 OPERATIONS

Variable	Unit	Water Quality Limits (Bathopele WUL[18])	Groundwater water Quality Reserve (K6 WUL[19])
pH @ 25˚C	pH units	6 - 9.5	6.5 – 9.5
Electrical conductivity (EC) @25˚C	ms/m	150	412
Chloride	(mg/l)	200	325.94
Magnesium	(mg/l)	100	205.5
Sodium	(mg/l)	200	313.5
Sulphate	(mg/l)	200	1169
Nitrate	(mg/l as N)	10	11
Fluoride	(mg/l)	1.0	1.5
Calcium	(mg/l)	150	288.84

9.9.1.2 Recommended groundwater monitoring points

The hydrogeological assessment recommends that an additional three to five monitoring boreholes are drilled within the potentially affected area to monitoring the groundwater levels. The groundwater levels in these boreholes should be monitored quarterly and the monitoring data should be communicated to the property owners. The recommended locations for these additional monitoring boreholes are shown in Figure 65.

[18] Bathopele Water Use Licence Number 07/A21D/AIJGC/7026, issued 16 January 2018

[19] K6 Water Use Licence Number 03/A22H/ABGJ/3973, issued 22 June 2021, amended on 17 June 2025

FIGURE 65: LOCATION OF RECOMMENDED ADDITIONAL MONITORING BOREHOLES (MVB, 2026)

9.9.2 Surface Water Monitoring

SRPM has an existing surface water monitoring programme. Refer to Table 64 for the surface water monitoring points related to the K6 and Bathopele Operations. The surface monitoring points are shown in Figure 66 and Figure 67.

TABLE 64: SURFACE WATER MONITORING POINTS APPLICABLE TO THE BATHOPELE AND K6 OPERATIONS

Site Name	Site Description	Coordinates	Classification	Frequency of Monitoring
Bathopele Operations				
K088	Hex River- upstream of Bathopele Mine and RPM-RS	S25.69564 E27.30712	Natural	Monthly
K122	Hex River- downstream of Bathopele Mine	S25.68454 E27.28544	Natural	Monthly
K052	Hex River at road to Rustenburg	S25.67654 E27.27787	Natural	Monthly
K141	Tannery discharge towards Hex River	S25.67718 E27.28133	Natural	Monthly
K095	Bathopele Mine (Waterval East Shaft) decline Settling Dam	S25.69100 E27.30707	Facility	Monthly
K096	Bathopele Mine (Waterval Central Shaft) portal Settling Dam	S25.68844 E27.30154	Facility	Monthly
K127	Bathopele Mine central vent shaft discharge	S25.68848 E27.29869	Facility	Quarterly
K153	Bathopele Mine (Waterval Shaft) diesel loading bay oil separator	S25.68855 E27.30557	Facility	Quarterly
K154	Bathopele Mine (Waterval Shaft) Atlas Copco workshop oil separator	S25.68832 E27.30523	Facility	Quarterly
K6 Operations				
ATS08	Dorpspruit upstream (before Prison dam)	S25.64757 E27.25344	Natural	Monthly
AK6 S01	Hex river upstream of K6 Shaft	S25.66552 E27.27950	Natural	Monthly
AK6 S03	Hex River downstream of K6 Shaft	S25.63321 E27.29059	Natural	Monthly
AK6 S12	Water leaving property at K6 Shaft	S25.65056 E27.26639	Natural	Monthly
AK6 S02	K6 pollution control dam	S25.64850 E27.26717	Facility	Monthly
AK6 S09	K6 Oil Separator at Workshop	S25.64865 E27.26600	Facility	Monthly
AK6 S10	K6 Settler Dam	S25.64998	Facility	Monthly

Site Name	Site Description	Coordinates	Classification	Frequency of Monitoring
		E27.26466		
AK6 S11	K6 Erichson Dam	S25.64996 E27.26468	Facility	Monthly

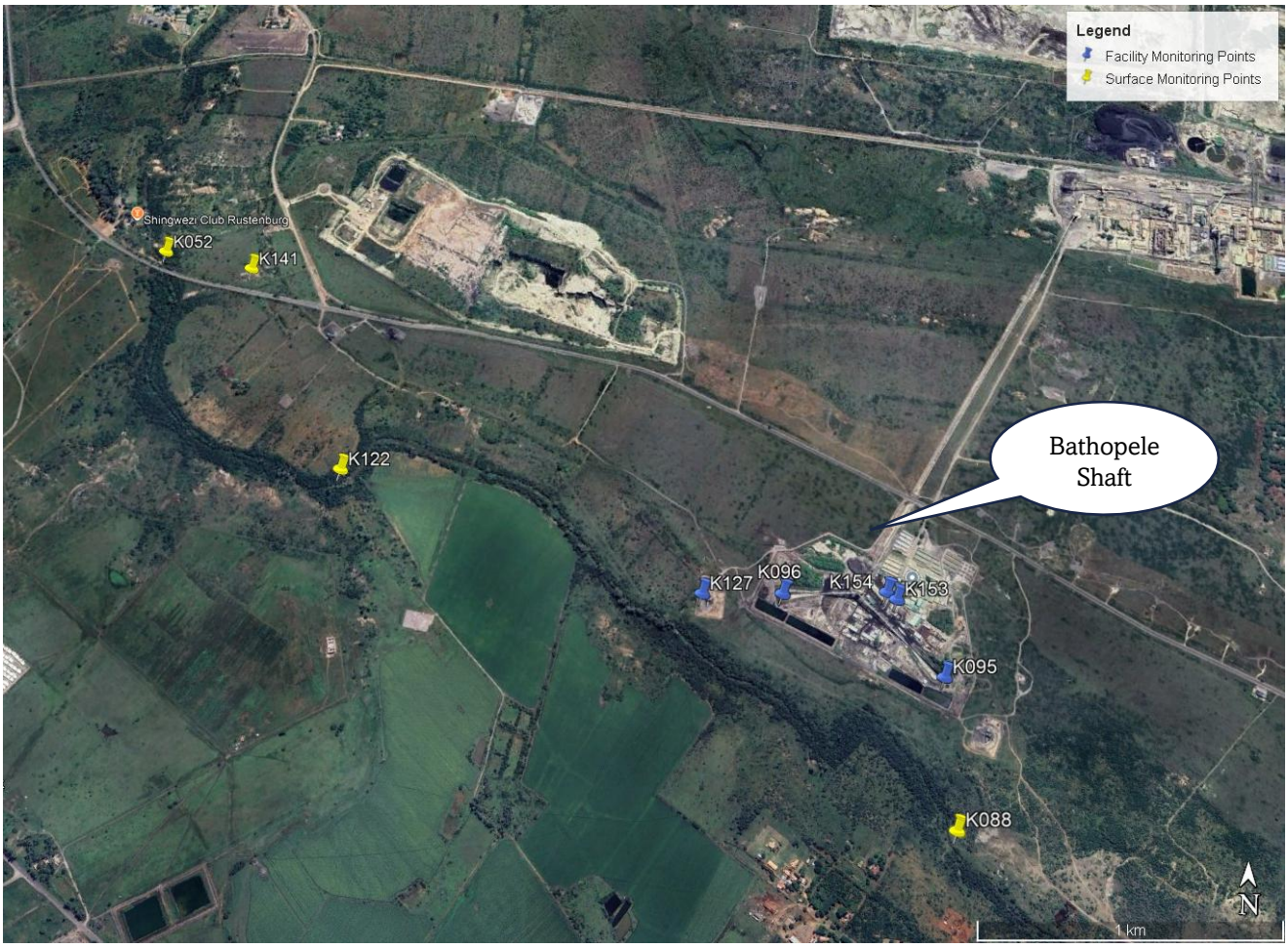


FIGURE 66: SURFACE AND FACILITY MONITORING POINTS AT THE BATHOPELE SHAFT

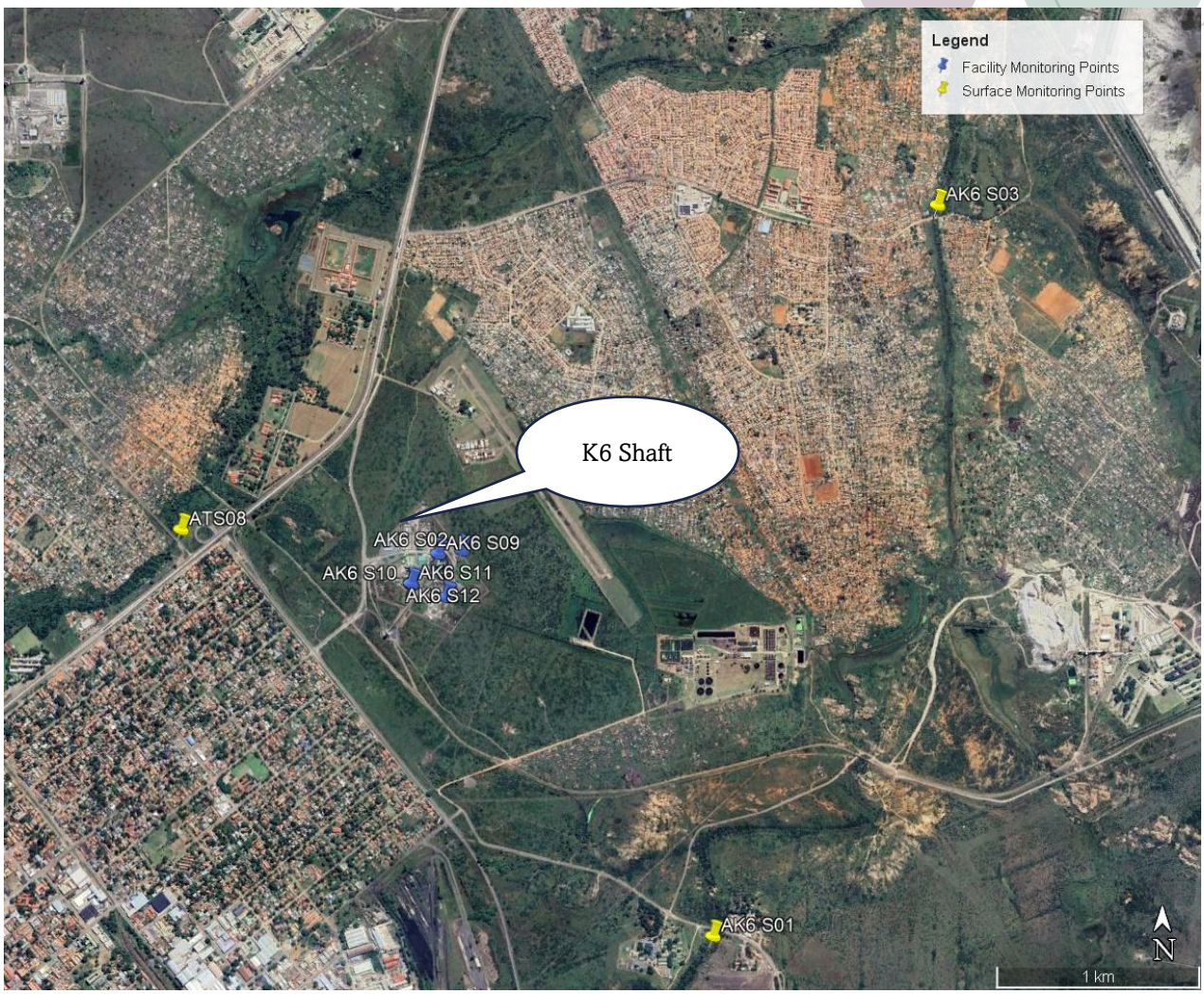


FIGURE 67: SURFACE WATER AND FACILITY MONITORING POINTS AT THE K6 SHAFT

The following metrics are used to determine the surface water quality[20] for the Bathopele Shaft (Aquatico Scientific, 2025).

TABLE 65: VARIABLES FOR THE SURFACE WATER MONITORING PROGRAMME AT THE BATHOPELE SHAFT

Variable	Units	Limits (based on the 2018 WUL)
pH @ 25˚C	pH units	6.0/9.0
Electrical Conductivity (EC) @ 25˚C	mS/m	85
Total hardness	Mg $CaCO_3$/l	50
Sodium (Na)	mg/l	20
Magnesium (Mg)	mg/l	45
Calcium (Ca)	mg/l	141

[20] Tested variables are based on the 2018 WUL (WUL No. 07/A21D/ AIJGC/ 7026)

Variable	Units	Limits (based on the 2018 WUL)
Fluoride (F)	mg/l	0.75
Ammonium (NH_4) as N	mg/l	1
Orthophosphate (PO_4) as P	mg/l	0.125
Aluminium (Al)	mg/l	5
Iron (Fe)	mg/l	0.5
Manganese (Mn)	mg/l	0.18
Copper (Cu)	mg/l	0.3
Hexavalent chromium (Cr^{6+})	mg/l	4.9
Dissolved oxygen	Mg/l	7.0/8.0

The following metrics are used to determine the surface water quality for the K6 Shaft (Aquatico Scientific, 2025).

TABLE 66: VARIABLES FOR THE SURFACE WATER MONITORING PROGRAMME AT THE K6 SHAFT

Variable	Units	Limits (based on the 2013 General Authorisation Limit)	DWAF (1996) for Aquatic Ecosystems
pH @ 25˚C	pH units	5.5/9.5	-
Electrical Conductivity (EC) @ 25˚C	mS/m	150	-
Flouride (F)	mg/l	1	0.75
Total oxidised nitrogen as N	mg/l	-	0.5
Nitrate (NO_3) as N	mg/l	15	0.5
Ammonium (NH_4) as N	mg/l	6	0.5
Orthophosphate (PO_4) as P	mg/l	10	0.005
Aluminium (NH_4) as N	mg/l	-	0.005
Cadmium (Cd)	mg/l	0.005	0.00015
Chromium (Cr)	mg/l	-	0.007
Hexavalent chromium (Cr^{6+})	mg/l	0.05	0.007
Copper (Cu)	mg/l	0.01	0.0003
Iron (Fe)	mg/l	0.3	-
Manganese (Mn)	mg/l	0.1	0.18
Lead (Pb)	mg/l	0.01	0.0002
Boron (B)	mg/l	1	-
Zinc	mg/l	0.1	0.002
Arsenic (As)	mg/l	0.02	0.01
Selenium (Se)	mg/l	0.02	0.002
Total suspended solids (TSS)	mg/l	25	100

9.9.3 Air Quality monitoring

SRPM has an existing air quality monitoring programme for its Rustenburg Operations. The purpose of the dust monitoring programme is to:

- Quantify the operation's contribution to dust deposition in the area;
- Identify potential problem or high-risk areas; and
- Assess compliance of the operation to relevant governing air quality standards.

Dust monitors that are subject to the dust fallout limits set out by the National Dust Control Regulations, can be either of the following:

- Residential monitors- means any dust monitor situated within an area classified for residential use as per the local town planning scheme.
- Non-Residential monitors - means any dust monitor situated within an area not classified for residential use as per the local town planning scheme.

SRPM dusting monitoring points related to the K6 and Bathopele Operations are detailed in Table 67.

TABLE 67: SRPM DUST MONITORING POINTS IN RELATION TO K6 AND BATHOPELE OPERATIONS

Nr	Description	Coordinates		Classification
Sib DB52	Rustenburg WWTP	25°39'9.86"S	27°17'0.85"E	Non-residential
Sib DB36	Waterval TSF W, Hex River offices	25°39'52.99"S	27°16'38.27"E	Non-residential
Sib DB43	Bathopele Shaft W	25°40'52.93"S	27°17'22.34"E	Non-residential
Sib DB25	Bathopele Shaft	25°41'12.16"S	27°18'20.48"E	Non-residential
Sib DB26	Waterval Village	25°41'44.23"S	27°19'29.78"E	Residential
Sib DB46	UG2 concentrator / WV TSF S	25°40'31.51"S	27°18'56.23"E	Non-residential
Sib DB47	Waterval WWTW	25°40'54.84"S	27°19'29.17"E	Non-residential
KPM SB14	Rustenburg WWTW Entrance	S25.65441	E27.27816	Non-residential
KPM SB16	K6 Correctional Services	S25.64351	E27.26007	Non-residential
KPM SB17	K6 Airport	S25.64135	E27.26609	Non-residential
KPM SB18	K6 Skydiving Club	S25.64423	E27.26750	Non-residential
KPM SB36	K6 shaft, S	S25.65122	E27.26602	Non-residential
KPM SB40	Dawid Brink Primary School	S25.65670	E27.25719	Residential
KPM SB41	Corner of Beneden street and Buiten street	S25.64774	E27.25570	Residential

It is the intention of SRPM to continue Air Quality Monitoring on a monthly basis.

In addition, SRPM proposes to add an additional dust bucket to its current air quality monitoring programme as is shown in Figure 68.

FIGURE 68: PROPOSED POSITION OF ADDITIONAL DUST BUCKET FOR INCLUSION IN THE CURRENT AIR QUALITY MONITORING PROGRAMME

9.9.4 Blasting Monitoring

A Monitoring Programme for recording blasting operations has been recommended by Blast Management Consulting (2026) in the Blast Impact Assessment conducted.

The following elements should be part of such a monitoring program:

- Ground vibration results;
- Comprehensive blast information;

Ground vibration monitoring requires identified locations for monitoring. Monitoring of ground vibration is done to ensure that the generated levels of ground vibration comply with recommendations.

A baseline monitoring programme should be conducted when the blasting activities start at Block D. This process should consist of three to five seismographs monitoring the first blasting activities on an ad-hoc basis. The monitoring positions should be determined on site with the relevant representatives. This process should be done until sufficient data is collected for a baseline study.

Furthermore, it is recommended that a continuous monitoring program in the manner of fixed seismograph stations, monitoring twenty-four (24) Hours a day is used for the monitoring program.

Five monitoring positions were identified as possible locations that will need to be considered. Not all points will be required at once but active monitoring and observation of where blasting is done will dictate the requirements for the areas around the mining area. Monitoring positions are indicated in Figure 69 and Table

68 lists the positions with coordinates. These points will need to be re-defined after the first blasts done and the monitoring programme defined.

TABLE 68: LIST OF POSSIBLE MONITORING POINTS (BMC, 2026)

Tag	Description	Y	X
18	Buildings/Structures	-26869.42	2840251.16
32	Houses	-26045.58	2839270.05
40	Houses	-26428.88	2839405.75
68	Industrial Structures	-26623.78	2840056.40
104	Railway Line	-26689.89	2839585.95

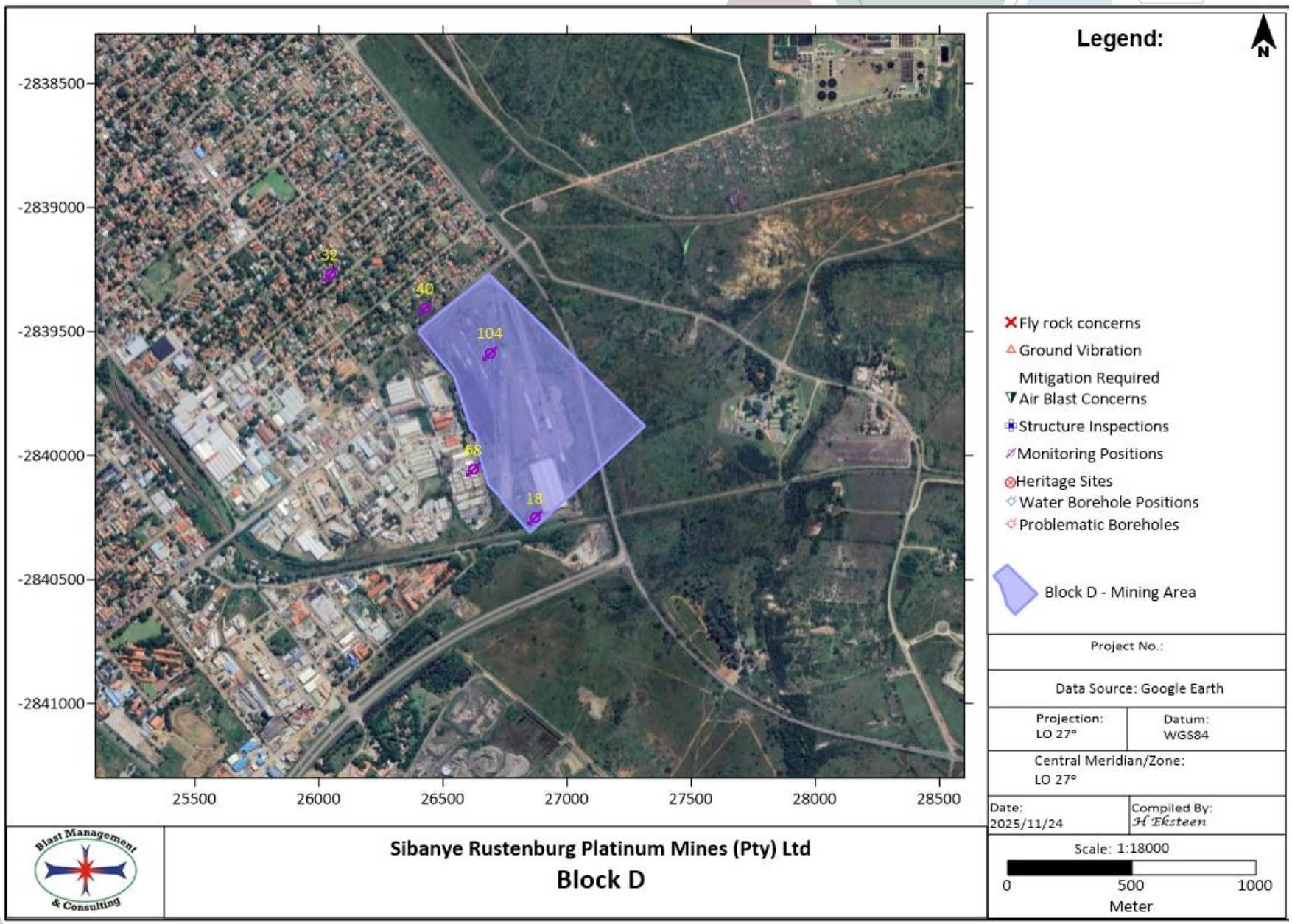


FIGURE 69: SUGGESTED MONITORING POSITION FOR BLAST MONITORING (BMC, 2026)

9.9.5 Photographic inspection

It is recommended that a photographic survey of all structures within 190 m of the mining area is conducted prior to commencement of blasting activities. This would include the first two rows of houses at Eastend closest to the proposed Block D Underground Minina area, as well as the first line of industrial properties along the western boundary. The mine will be operating for an estimated of seven (7) years. This will give advantage on any negotiations with regards to complaints from neighbours on structural issues due to blasting. This process can however only succeed if done in conjunction with a proper monitoring program. It is expected that ground vibration levels will be significantly less than proposed limits at 190 m, but this process will ensure record of the pre-blasting status of the nearest structures to the mining area.

Figure 70 shows extent of the range of 190 m around the mining area with pointe of interest identified. It must be noted that a point may represent a group of structures found in the vicinity of the point identified.

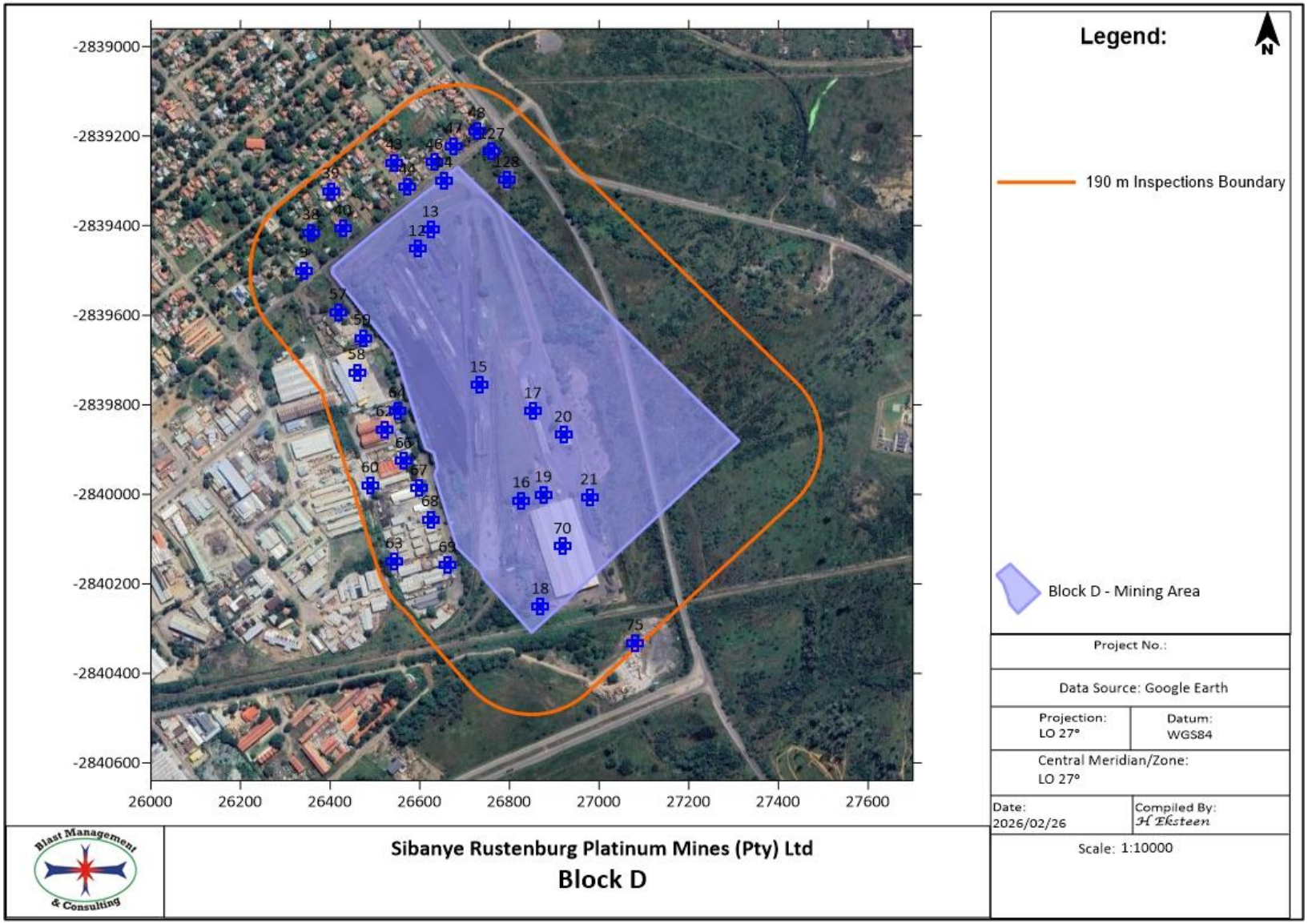


FIGURE 70: 190M AREA AROUND THE MINING AREA IDENTIFIED FOR STRUCTURE INSPECTIONS AND PHOTOGRAPHIC SURVEY (BMC, 2026)

Closure and Financial Provision

10. CLOSURE AND FINANCIAL PROVISION

10.1 Key Closure Objectives

SRPM has two existing Final Rehabilitation, Decommissioning and Mine Closure Plans for its Rustenburg Operations, namely:

- Preliminary Rehabilitation, Decommissioning and Mine Closure Plan for Rustenburg Platin Mine (SRPM) (Golder, 2021)
    - This plan includes the Bathopele Operations
- Preliminary Rehabilitation, Decommissioning and Mine Closure Plan for the PSA Platinum Mining Operations (Golder, 2021)
    - This plan includes the K6 Operations

The following key closure objectives have been formulated to be implemented at SRPM towards achieving the closure vision (Golder, 2021):

- Creating a safe, physically stable rehabilitated landscape that limits long-term erosion potential and environmental degradation
- Sustaining long term catchment yield and water quality
- Focussing on establishing a functional post-mining landscape that supports the surrounding land uses and is aligned with regional planning
- Interconnecting rehabilitated landscapes with surrounding regionally biologically diverse areas
- Encouraging, where appropriate, the re-instatement of terrestrial and aquatic wetland biodiversity over time
- Creating opportunities for alternative post-mining livelihoods by aligning to regional planning

10.2 Financial Provision

This current environmental authorisation application is for the Block D underground mining project, which is entails the inclusion of the Block D mining area into SRPM's existing MR80. As previously stated, existing infrastructure that is currently utilised at both K6 and Bathopele operations will be utilised for the continuation of mining at Block D from K6 and Bathopele Shafts.

The following existing infrastructure at K6 Shaft will be utilised in support of the underground mining at Block D from the K6 Shaft:

- K6 decline shaft, ventilation shafts, silos,
- Transportation of ore via the Klipfontein railway line from K6 Shaft silo to the Klipfontein siding where the ore is being transferred to trucks.
- Trucking ore via a gravel road from the Klipfontein siding to the existing Kopaneng ore stockpile area
- Conveying ore via a conveyor from Kopaneng to K1 Plants for processing
- Trucking of ore via a gravel road to the ore feedbin at K2 Plant for processing
- Tailings from both K1 and K2 Concentrator are deposited onto K150 and K2 TSFs

The following existing infrastructure at Bathopele Mine Complex will be utilised in support of the underground mining at Block D from the Bathopele Central Shaft:

- Central Shaft, ventilation shafts, stockyard
- Transportation of ore via a conveyor from Bathopele Mine Complex to Waterval Concentrator for processing.
- Tailings material from the Waterval Concentrator is deposited onto the Paardekraal TSF.

The above-mentioned infrastructure is existing and have already been included into the financial provision as detailed in Table 69. Refer to **Appendix E** for the Financial Provisioning.

TABLE 69: FINANCIAL PROVISION FOR EXISTING INFRASTRUCTURE

Infrastructure	Financial Provision amount as per spreadsheet in Appendix E of the Final BAR
1. K6 Shaft and associated infrastructure (Shaft, Vent shafts and railway)	Appendix B - A sum of **R 44 908 988.55** has been allocated to the K6 Shaft and associated infrastructure from the guaranteed sum of R 214 704 579.72. The guarantee was submitted to the DMPR in 2024 with Guarantee No. CQ/G/30309/0424/015 - Dated: 10 April 2024.
2. Railway and loop	Appendix C - A sum of **R 2 033 760.00** has been allocated to the railway line from the guaranteed sum of R1 058 881 681.00. The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/1016/001 – dated 1 October 2016.
3. Gravel road, Kopaneng stockpile and conveyor	Appendix C - A sum of **R 961 616.04** has been allocated to the gravel road, Kopaneng stockpile and conveyor from the guaranteed sum of R1 058 881 681.00. The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/1016/001 – dated 1 October 2016
4. K2 Plant and associated infrastructure (including gravel road from railway loop)	Appendix B - A sum of **R 63 960 271.30** has been allocated to the K2 Plant and associated infrastructure from the guaranteed sum of R 214 704 579.72 The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/0424/015 - Dated: 10 April 2024
5. K1 Plant and associated infrastructure (including TSF)	Appendix C - A sum of **R 129 869 266,64** has been allocated to the K1 Plant and associated infrastructure from the guaranteed sum of R1 058 881 681.00. The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/1016/001 – dated 1 October 2016.
6. Bathopele Shaft and associated infrastructure (Shaft, Vent shafts and Conveyor)	Appendix C - A sum of **R 78 454 127.89** has been allocated to the Bathopele Shaft associated infrastructure from the guaranteed sum of R1 058 881 681.00. The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/1016/001 - Dated: 01 October 2016

Infrastructure	Financial Provision amount as per spreadsheet in Appendix E of the Final BAR
7. Waterval Concentrator, conveyor and associated infrastructure. (including TSF)	Appendix C - A sum of **R 322 368 459.69** has been allocated to the Bathopele Shaft associated infrastructure from the guaranteed sum of R1 058 881 681.00. The guarantee was submitted to the DMPR in 2016 with Guarantee No. CQ/G/30309/1016/001 - Dated: 01 October 2016

Based on the information provided above, additional financial provision for the Block D underground mining project will not be required due to the following reasons:

- This environmental authorisation application is for the inclusion of underground mining of Block D in the SRPM MR80 area for the purposes of the continuation of the K6 and Bathopele underground mining.
- No additional surface infrastructure will be constructed for the continuation of mining to Block D and as such additional surface disturbance has been deemed non-existent. The mining of Block D will utilise the existing K6 and Bathopele Shaft and associated infrastructure to access the underground areas and will utilise existing infrastructure to process the ore.
- Financial Provision must consider the cost for final rehabilitation, decommissioning and mine closure plan for rehabilitation and impact management for the disturbed areas. SRPM does submit a Financial Provision for the Kwezi operations on an annual basis to the DMPR for consideration.

Conclusion and Recommendations

11. CONCLUSION AND RECOMMENDATIONS

This chapter summarises the key findings of the Basic Assessment study and presents the EAP's conclusion and recommendations.

11.1 Summary of potential impacts

A summary of the assessment of potential environmental impacts associated with the proposed project is provided in Table 70. The mitigated assessment assumes that technical design controls, as included in the project description, together with mitigation measures included would be implemented when the proposed project is constructed and operated.

TABLE 70: SUMMARY OF POTENTIAL IMPACTS FOR THE PROPOSED PROJECT

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Topography			
Operation	Potential subsidence due to underground mining activities	Medium (-)	Low (-)
Closure	No impact on Topography is expected during the closure phase of the project.		
Soils			
Operation	The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no additional impacts expected on soil resources.		
Closure			
Biodiversity (Fauna and Flora)			
Operation	The proposed Block D Underground mining area does not constitute of surface infrastructure as existing surface infrastructure from K6 and Bathopele Shaft areas will be utilized. The are no direct impacts expected on terrestrial biodiversity.		
Closure			
Freshwater and wetlands			
Operation	Impact on wetland baseflow	Medium – High (-)	Medium – High (-)
Operation	Surface Water Contamination	Medium (-)	Low (-)
Operation	Alteration of surfacy hydrology due to subsidence (ground movement)	Medium-High (-)	Low (-)
Closure	Changes in wetland hydrology	Medium (-)	Medium (-)
Closure	Residual surface water contamination	Medium (-)	Low (-)
Hydropedology			
Operation	Potential decrease in subsurface lateral flow and return flow	Medium (-)	Low (-)
Closure	Potential decrease in subsurface lateral flow and return flow	Low (-)	Low (-)
Groundwater			

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Operation	Reduction in the groundwater levels	Medium-High (-)	Low (-)
Operation	Contamination of groundwater due to contaminant seepage from the mining operations	Medium (-)	Low (-)
Closure	Deterioration of groundwater quality	Low (-)	Low (-)
Closure	Recovery of the groundwater levels	Medium (+)	Medium (+)
Air Quality			
Operation	The proposed Block D Underground Mining Project does not constitute of surface infrastructure as the existing K6 and Bathopele shaft areas will be used as well as existing surface infrastructure. There are no additional impacts expected on Air Quality.		
Closure			
Noise			
Operation	Mining activities in Block D will be conducted entirely using existing underground and surface infrastructure, specifically accessed from the K6 Shaft and the Bathopele Shaft, both of which are currently operating. There is no additional noise impact foreseen.		
Closure			
Heritage			
Operation	Given that mining will occur below ground, there will be no impact on any surface or low buried cultural heritage resources.	Low (-)	Low (-)
Closure		Low (-)	Low (-)
Blasting and Vibration			
Operation	Ground vibration: Blasting impact to structures directly above mining area (Shallow)	Medium-high (-)	Low (-)
Operation	Ground vibration Blasting impact to structures above mining area. (Deep)	Low (-)	Low (-)
Operation	Ground vibration: Blasting impact to private houses and structures outside the mining area	Medium (-)	Low (-)
Operation	Ground vibration: Blasting impact to structures outside the mining area.	Medium (-)	Low (-)
Operation	Ground vibration: Blasting impact to private houses.	Medium (-)	Low (-)
Operation	Perceptible ground vibration	Medium-high (-)	Low (-)
Closure	As there will be no blasting during the closure phase, no impacts on blast and vibration is expected during the closure phase.		
Social			
Operation	Job Retention and household stability	Medium (+)	Medium (+)
Operation	Sustained Local Economic Support	Medium (+)	Medium (+)
Operation	Continued Procurement Opportunities	Medium (+)	Medium (+)
Operation	Community Development Commitments	Medium (+)	Medium (+)

DEVELOPMENT PHASE	POTENTIAL ENVIRONMENTAL IMPACT	Without mitigation	With mitigation
Operation	Employment and economic expectations	Medium-high (-)	Medium (-)
Operation	Limited employment and business opportunities resulting in decline in economic growth	Medium-high (-)	Medium (-)
Operation	Community Health Concerns - Air Quality	Medium (-)	Medium (-)
Operation	Blasting and noise impact	Medium (-)	Medium (-)
Operation	Land use and stability concerns	Medium (-)	Medium (-)
Operation	Economic dependency on mining	Medium (-)	Medium (-)
Operation	Persistent migration and informal settlements	Medium-high (-)	Medium (-)
Closure	Employment Loss and Household Destabilisation	High (-)	Medium-high (-)
Closure	Local Economic Decline	High (-)	Medium-high (-)
Closure	Reduction of Social and Labour Plan (SLP) contributions	Medium (-)	Medium (-)
Closure	Sudden decline in regional social and economic stability due to abrupt withdrawal of mine benefits	Medium (-)	Medium (-)

11.2 Summary of specialist findings and recommendations

11.2.1 Freshwater Assessment

During the site assessment, One HGM type was identified within the study area (including a 500m area around the Block D underground mining area), consisting of two separate unchannelled valley-bottom systems. Along with these wetlands a non-perennial drainage feature was identified and delineated within the study area. Several other artificial features were identified within the study area identified to be a dam and areas that are prone to wetness resulting from stormwater management and surface disturbances.

The wetlands scored overall PES scores within the "D – Largely Modified" class due to the modification of the wetlands through anthropogenic activities. The wetlands scored "Moderate" importance and sensitivity scores. The average ecosystem service score was determined to be "High".

No new surface infrastructure is proposed as part of the current project activities; therefore, the risk of direct disturbance to wetland areas is expected to be minimal and related to the activities that already occur in proximity. However, a buffer zone has provided as a precautionary measure to further safeguard the wetlands ecological integrity. A precautionary buffer of 32 m was assigned to the natural wetlands and drainage features, which is also the NEMA regulated area of a wetland watercourse. It must be noted that existing activities, such as roads, already occur within the 32 m buffer zone and the use of these roads in their current extent is deemed permissible. Furthermore, the buffer zone will not be applicable to the underground mining

area due to the avoidance of direct impact on the wetland surface or its immediate surroundings within the buffer zone.

11.2.2 Groundwater

The groundwater study concluded the following:

- The geology of the region is dominated by the layered rocks of the Bushveld Igneous Complex (BIC). The BIC intruded concordantly into the volcano-sedimentary Pretoria Group strata of the Transvaal Supergroup about 2 060 million years ago. The Magaliesberg formation (upper Pretoria Group) is the floor to the BIC in the region.
- The following aquifers are present in the study area:
    - Weathered Aquifer. The mafic intrusive norite that outcrops over most of the study area is characterized by weathering in the first few meters from surface and is described as a "highly weathered, yellowish white to yellowish brown norite. The unit generally has low to moderate transmissivity but high storativity.
    - Primary Alluvial Aquifer. Along the course of the Hex River and other streams, the weathered aquifer has been partially or totally replaced by alluvial aquifers which were deposited by the river and retained hydraulic connectivity with it.
    - Secondary Fractured Aquifer. A deeper fractured semi-confined rock aquifer is formed by bedding planes, faults and joint planes of the unweathered norites, anorthosites and pyroxenites of the Rustenburg Layered Suite.
- Within the study area the groundwater table generally mimics the topography. There are very small and localised dewatering cones where groundwater enters the underground mine workings.
- The current groundwater inflow into the mines in this region is approximately 3.8 ML/day.
- The waste assessment conducted by SRK Consulting (2023) concluded the following:
    - The Leachable Concentrations in the Kwezi waste rock shows that the only metal that exceed the LCT0 threshold is manganese. It should be noted that Kwezi WRD was leached using acetic acid instead of distilled water.
    - The Total Concentrations in the Kwezi waste rock shows that the only metals that exceed the TCT0 threshold are copper and nickel.
    - The Kwezi waste rock samples are classified as Type 3 waste which corresponds to a Class C disposal facility.
- The geochemical risk assessment (GeoDyn, 2021) indicated that the mineral waste is unlikely to leach metal and metalloid contaminants into the groundwater in a post-closure scenario.
- The geochemical model results for the underground mine voids, indicates that the risk of the development of AMD (Acid Mine Drainage) conditions is negligible. The post-closure underground mine void geochemical system has acid neutralisation capacity, which is far more than the acid production capacity. The quality of the water that will fill the mine void post-closure is therefore expected to be good.
- Any dewatering cone that may develop in the Block D area is expected to fully recover after mining ceases.
- The numerical model was used to simulate the following:
    - Estimated groundwater inflow volumes into the underground workings.
    - Impact on the groundwater levels during the operational and post-closure phase of the mine.
    - Potential contaminant migration from the mine workings.
- The average groundwater inflow volume is estimated at 539 m^3/day, varying between 210 – 960 m^3/day.

Recommendations:

The following measures may be considered to reduce the impacts on the private groundwater users in the region:

- Preventing the groundwater from entering the mine will negate all the resulting impacts, if it can be successfully implemented. The recommended approach is to seal any water intersection that may be encountered during the mining process. It is recommended to drill cover boreholes ahead of the mining face to identify any water-bearing features. If encountered, these should be sealed using chemical grout. The advantages of chemical grouts are that penetration can achieved at relatively low pressures and the depth of penetration can be controlled. The idea is to seal only the area around the mining and not extensively so as not to seal the boreholes.

- Boreholes that are outside the mining block can be drilled deeper if the groundwater level drops and the borehole yield is affected.

- Water supply from an alternative source to affected owners may be considered in a worst-case scenario. The most likely alternative water source is a well field outside the affected area. This will have to be investigated to find the most suitable site.

- It is recommended that SRPM drill three to five monitoring boreholes within the potentially affected area to monitor the groundwater levels.

11.2.3 Noise

To assess the existing noise climate in the area surrounding the proposed Project, ambient noise monitoring was conducted at seven receptor locations surrounding the proposed site. The potential noise impacts of the operation of the proposed Project during normal operation were then assessed.

Baseline monitoring indicated current day-time noise levels exceeded the urban guideline rating level of 60 dB(A) at four of the seven monitoring locations. At night, the average noise level at six the monitoring locations was above the urban guideline rating level of 50dB(A). From the day-time and night-time monitoring survey it is evident that the current noise climate surrounding the proposed Block D underground mine is predominantly related to the industrial activities, mining activities, surrounding roads traffic, residential activities, animals and insects.

The Block D underground mine will be an expansion of the existing mining right area and will make use of the existing underground infrastructure and surface infrastructure, specifically accessed from the K6 Shaft (MR80) and the Bathopele Shaft, both of which are already part of the SRPM Mining Right Area. Importantly, the expansion will not require any new surface infrastructure.

The proposed Block D underground mine will not generate noise as all mining activities will be undertaken underground, therefore the impact is considered to be “low”. It must be noted however that the existing noise levels at the sensitive receptors is already elevated due to surrounding industries, mining activities and indirect activities such as heavy vehicle traffic.

11.2.4 Heritage

During the site survey, no sites, features or objects of cultural significance were identified. This is based on the fact that the desktop assessment, as well as the field survey, produced no visual indicators, i.e. stone tools, historic artefacts, faunal remains, structures or graves on the site.

The impact of the proposed Block D underground mining project has been calculated to be very low due to the following considerations:

- The site has extensively been altered and impacted on by previous farming and industrial activities;
- The mining activities will take place below ground, so there would be no impact on any surface or low buried cultural heritage resources.

Recommendations

Should archaeological sites or graves be exposed during operations, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The Heritage Chance Find Procedure must be implemented.

11.2.5 Blast and vibration

During the blast and vibration assessment, The evaluation of effects yielded by blasting operations was evaluated over an area as wide as 750m from the mining area considered. The range of structures observed are Railway lines, Industrial structures / Buildings, Houses, Public Buildings, Roads, Powerlines / Pylons, Hydrocensus Boreholes, and Heritage sites.

The evaluation mainly considered a distance up to 750m from the surface footprint of the mining area. The distances between structures and the roof elevation of the mining area are a contributing factor to the levels of ground vibration expected and the subsequent possible influences. The ground vibration levels predicted for all points of interest evaluated ranged between 0.1mm/s and 47.6mm/s for structures surrounding the mining area. The predicted ground vibration levels associated with private structures and houses ranged between 0.2mm/s and 7.7mm/s, which is within the recommended ground vibration limits of 25mm/s for general houses of proper construction. These buildings are located such that levels of ground vibration predicted from the charge may be perceptible to unpleasant.

Based on the analysis done, only one structure (Transnet building) at a distance of 36m from the roof of the mining area, shows ground vibration levels predicted above the limit for the said structure (predicted ground vibration of 34.8mm/s, recommended limit for structure of 25mm/s). This was based on multiple (2) panels detonated simultaneous. All other structures are located such that the levels of ground vibration predicted from the charge will be acceptable regarding structure response. By implementing single panel blasting, the ground vibration levels at the Transnet building will be reduced to 19.7m/s, which will fall within the recommended ground vibration limit for this structure (25mm/s).

On a human perception scale, several points of interest were identified where vibration levels, based on the maximum charge, may be perceptible, unpleasant or intolerable. Based on the maximum charge and ground vibration predicted over distance, it was identified that up to a distance of 508m people may experience levels of ground vibration as perceptible, up to 188m as unpleasant and intolerable at 85m.

By implementing the recommended mitigation measures, the expected human perception ground vibration levels will be managed effectively.

Recommendations

The following are recommended:

- Changed blast design for K6 area closest to the Eastend Residential Area.
- Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels.
- Implement a monitoring programme for recording blasting operations.
- Undertaking of photographic survey of all structures up to 190m from the edge of the Block D underground mining area.
- Install clear, visible, and appropriately placed signage in proximity to blasting areas to ensure it is easily noticeable to community members.

11.2.6 Social

The proposed Block D underground expansion project is intended to secure the continued viability of the K6 and Bathopele shafts by retaining 204 employees and sustaining production levels.

During operations, the most significant benefit will be the safeguarding of livelihoods, stabilising local economies, and ensuring the continuation of SLP commitments. However, challenges such as health and safety risks, reliance on mining as the primary source of employment and income, and persistent increase in informal settlements must be carefully managed. The closure phase remains the period of greatest risk, with job losses, reduced household income, economic decline, and the decline in community development contributions likely to destabilise communities, households and businesses. Psychological stress and feelings of abandonment may also arise if closure planning is not handled effectively.

Overall, the project provides short to medium-term stability with limited immediate social disruption. Its long-term social sustainability will depend on proactive measures such as clear communication with surface land users and neighbouring communities, strong health and safety management, and comprehensive closure planning to prepare employees and communities for life beyond mining. The project can only proceed if the mitigation and enhancement measures provided in the Social Impact Assessment can be met, and if continued monitoring of stakeholder issues and commitments are implemented.

11.3 Environmental Impact Statement

This Basic Assessment has provided a comprehensive assessment of the potential impacts associated with the proposed Block D Underground Mining Project, which is an expansion project of the SRPM's existing K6 and Bathopele underground mining operations. No new surface infrastructure is proposed as part of this application, as existing surface infrastructure associated with the K6 and Bathopele operations will be utilised.

A number of potential medium to high impacts have been identified that are associated with the operational and closure phases of the proposed project. These include impacts of ground vibration to structures and perceptible ground vibration, groundwater levels and social impacts associated with the decommissioning and closure. Where impacts were found to be potentially significant, various mitigation measures to manage these impacts and monitoring of these the impacts have been proposed.

From the impact assessment, the following main impacts have been identified:

- **Ground vibration due to blasting that could impact on structures:** The proposed Block D underground mining area and a radius of 750m were evaluated for expected levels of ground vibration when blasting two (2) panels simultaneously with maximum charge mass. The expected ground vibration levels were compared to the recommended limits from the United States Bureau of Mine (USBM) for the various structures identified within the Block D underground mining area and associate radius.

  Only one structure (Transnet building) at a distance of 36m from the roof of the mining area, shows ground vibration levels predicted above the limit for the said structure (predicted ground vibration of 34.8mm/s, recommended limit for structure of 25mm/s). All other structures are located such that the levels of ground vibration predicted from the charge will be acceptable regarding structure response.

  By implementing single panel blasting, the ground vibration levels at the Transnet building will be reduced to 19.7m/s, which will fall within the recommended ground vibration limit for this structure (25mm/s).

- **Perceptible ground vibration:** On a human perception scale, several points of interest were identified where vibration levels, based on the maximum charge, may be perceptible, unpleasant or intolerable. Based on the maximum charge and ground vibration predicted over distance, it was identified that up to a distance of 508m people may experience levels of ground vibration as perceptible, up to 188m as unpleasant and intolerable at 85m.

- **Perceptible ground vibration:** On a human perception scale, several points of interest were identified where vibration levels, based on the maximum charge, may be perceptible, unpleasant or intolerable. Based on the maximum charge and ground vibration predicted over distance, it was identified that up to a distance of 508m people may experience levels of ground vibration as perceptible, up to 188m as unpleasant and intolerable at 85m.

  By implementing the recommended mitigation measures, the expected human perception ground vibration levels will be managed effectively.

  Mitigation measures include the following:

  - Changed blast design for K6 area closest to the Eastend Residential Area.
  - Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in
  - between panels.
  - Implement a monitoring programme for recording blasting operations.
  - Undertaking of photographic survey of all structures up to 190m from the edge of the Block D underground mining area.
  - Install clear, visible, and appropriately placed signage in proximity to blasting areas to ensure it is easily noticeable to community members.

- **Reduction in groundwater levels:** The groundwater level is expected to drop approximately 12 m, directly over the mining area. Water levels at privately owned boreholes are expected to drop between 1 and 4m. The potentially impacted area is localised, and the private boreholes are not expected to be noticeably impacted due to the depth of the boreholes (32m to 50m). Mitigation measures include the following:

- Including three to five additional monitoring boreholes within the potentially affected area to monitor the groundwater levels.
- If a reduction in groundwater supply is confirmed through monitoring activities, Sibanye-Stillwater should replace the groundwater source by drilling new or deeper boreholes as an alternative water supply.

- **Positive social impacts associated with the Block D Underground Operation, which will ensure employment retention and sustained economic support:** the most significant benefit will be the safeguarding of livelihoods, stabilising local economies, and ensuring the continuation of Sibanye-Stillwater's Social and Labour Plan (SLP).

- **Social impacts associated with decommissioning and closure:** The closure phase remains the period of greatest risk, with job losses, reduced household income, economic decline, and the decline in community development contributions likely to destabilise communities, households and businesses. Mitigation measures include the following:

  - Develop retrenchment packages that include financial support, retraining, and job placement services.
  - Partner with government and Non-governmental organizations (NGOs) to create alternative employment pathways.
  - Begin closure planning and engagements with affected employees and Future Forums early to avoid sudden shocks.

Taking into consideration the findings of the impact assessment, the project benefits outweigh the potential negative impacts provided that mitigation measures are applied effectively including the required permits. The employment opportunities afforded at the both the K6 and Bathopele mining operations already contribute towards maintaining and improving employment opportunities within the Rustenburg Local Municipality. Mine revenue will facilitate fund allocation to local economic development through the implementation of projects identified in the Social and Labour Plan.

Should the DMPR grant authorisation for this proposed project, it should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the EMPr and with all regulatory requirements.
- The project specific EMPr should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the Basic Assessment and the EMPr.
- Adhere to all monitoring requirements as detailed in the EMPr.
- All requirements and permits required in terms of the Health and Safety Act (Act No. 85 of 1993) must be applied for.
- Changed blast design for K6 area closest to the Eastend Residential Area
- Programming of the Blast Control Unit (BCU) to ensure single firing of panels with time delay in between panels.
- Implement a monitoring programme for recording blasting operations.
- Undertaking of photographic survey of all structures up 190m from the Block D underground mining area.
- Install clear, visible, and appropriately placed signage in proximity to blasting areas to ensure it is easily noticeable to community members.

- Including three to five additional monitoring boreholes within the potentially affected area to monitor the groundwater levels.

11.4 Period which Environmental Authorisation is required

It is recommended that the period of validity for the Environmental Authorisation be stipulated as the maximum allowance of ten (10) years post Environmental Authorisation.

Undertaking

12. Undertaking

Alta van Dyk Environmental Consultants (Pty) Ltd (AvDE) has been appointed in terms of Regulation 12 of the NEMA EIA Regulations, 2014. The appointment is in line with Regulation 13 of the NEMA EIA Regulations, 2014, as AvDE is has been appointed as an independent Environmental Assessment Practitioner.

In accordance with Appendix 1 of the NEMA EIA Regulations, 2014, as amended, this serves as an affirmation by the Environmental Assessment Practitioner ("EAP") in relation to:

Section 3(1)(r)

An undertaking under oath or affirmation by the EAP in relation to-

(i) The correctness of the information provided in the reports;
(ii) The inclusion of comments and inputs from stakeholders and I&APs:
(iii) The inclusion of inputs and recommendations from the specialist reports where relevant; and
(iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

AvDCG and the EAP managing this project hereby affirm that:

- To the best of our knowledge the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors.

- To the best of our knowledge, all comments and inputs from stakeholders and interested and affected parties have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded verbatim and are mostly captured as issues, and in instances where many stakeholders have similar issues, they are grouped together, with a clear listing of who raised which issue(s).

- Information and responses provided by the EAP to interested and affected parties are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.

_____

Suzanne van Rooy
Signature of Environmental Assessment Practitioner
Alta van Dyk Environmental Consultants (Pty) Ltd
Date 10 July 2026

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Appendices

APPENDIX A: CURRICULUM VITAE OF THE EAPS

APPENDIX B: STAKEHOLDER ENGAGEMENT

APPENDIX B1: LIST OF STAKEHOLDERS

APPENDIX B2: MINUTES OF PRE-APPLICATION MEETINGS

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