mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DISPATCH RIDER MINING PROJECT
Part A

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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: Seriti Power (Pty) Ltd: Middelburg Mine Services
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FILE REFERENCE NUMBER SAMRAD: MP 30/5/1/2/3/2/1(379) EM

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;

(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) determine the—-

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

(ii) degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) identify suitable measures to manage, avoid or mitigate identified impacts; and

(h) identify residual risks that need to be managed and monitored.

DOCUMENT APPROVAL RECORD

Report No.: JW128/22/H236-15-Rev 2

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared	Environmental Assessment Practitioner	Tolmay Hopkins / Daniella Kristensen	21 April 2024	
Reviewed	Project Manager	Gina Martin	23 July 2024	
Revised	Environmental Assessment Practitioner	Daniella Kristensen	19 August 2024	
Reviewed	Project Manager	Gina Martin	28 August 2024	
Approved	Project Director	Jacqui Hex	28 August 2024	

LOCATION: Lat: -25.981494
(Decimal Degrees) Long: 29.404473

RECORD OF REVISIONS AND ISSUES REGISTER

DATE	REVISION	DESCRIPTION	ISSUED TO	ISSUE FORMAT	NO. COPIES
22/07/2024	A	Draft for internal review	Gina Martin	Electronic	N/A
24/07/2024	0	Draft for client review	Shaakira Akhalwaya	Electronic	N/A
26/07/2024	1	Draft for public review and authority submission	DMRE Commenting authorities I&APs	Electronic Hard copy	4
29/08/2024	2	Final report for authority submission	DMRE	Electronic Hard copy	2

SYNOPSIS

Project Background and Motivation

Middelburg Mine Services (MMS) is an operational mine of Seriti Power (Pty) Ltd (hereafter referred to as Seriti), situated between the towns of eMalahleni, Middelburg and Kriel, in the Mpumalanga Province of South Africa.

Seriti is the holder of an amended mining right for coal, granted by the Minister of Mineral Resources and Energy (DMRE), in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) and notarially executed on the 21st of May 2015 under DMRE reference MP30/5/1/2/2/379MR, in respect of its MMS North and South Sections. This mining right comprises of the following areas:

- Middelburg Mines North Section (MMS North) consisting of mining in the Hartbeesfontein, Bankfontein, Goedehoop and Klipfontein sections, as well as the North, Vandyksdrift and South Eskom Processing Plants; and
- Middelburg Mines South Section (MMS South) consisting of the Wolvekrans, Vlaklaagte, Driefontein, Boschmanskrans, Vandyksdrift, Albion and Steenkoolspruit mining sections, as well as the South Export Plant.

MMS is an opencast mine, which supplies coal to Eskom's Duvha Power Station and the export seaborne market. The Dispatch Rider mine plan forms part of the latest LoM and is key to the sustainable production of the MMS complex.

Seriti therefore proposes to mine the No. 1, No. 2 and No. 4 seam coal using underground mining at the Dispatch Rider section, which is located in the south of the Hartbeesfontein section. The expected life of mine (LOM) for this section is approximately eight (8) years.

The proposed project is located within the existing MMS mining right boundary, with the exception of a portion of the area to be mined to the east, which forms part of the Dispatch Rider prospecting right area.

The Dispatch Rider project entails the following:

- Changing the mining method of an existing approved opencast area (pit DW) to underground mining;
- Extending the underground mine to the adjacent property to the east within the Dispatch Rider prospecting right area; and
- Development of infrastructure in support of the Dispatch Rider underground mine.

Legal Requirements

Jones & Wagener (Pty) Ltd Engineering and Environmental Consultants (J&W) has been appointed by Seriti as an independent Environmental Assessment Practitioner (EAP) to undertake an Integrated Regulatory Process (IRP) to obtain the required environmental approvals/authorisations for the proposed underground mining project at Dispatch Rider.

The following authorisations will be required for the proposed Dispatch Rider underground mine project:

- An application in terms of section 102 of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) to amend the mining right to include the Dispatch Rider prospecting area;
- Environmental Authorisation in terms of the National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998) for activities listed in the Environmental Impact Assessment (EIA) Regulations promulgated in December 2014 (as amended) in terms of the NEMA, as amended. A Scoping and Environmental Impact Reporting (S&EIR) process is applicable;
- A Water Use Licence (WUL) for the water uses as defined in Section 21 of the National Water Act, 1998 (NWA) (Act 36 of 1998). The application for and Integrated WUL will be supported by an Integrated Water and Waste Management Plan (IWWMP). Consideration

also has to be given to the requirements of GNR 704, Regulations on the use of water for mining and related activities, aimed at the protection of water resources as published in terms of the NWA, and will be addressed in an Integrated Water Use Licence Application (IWULA). The application process for the WUL will commence at a later stage and will have a separate public participation process (PPP).

The current application is limited to the NEMA application, which is being used in support of the section 102 application in terms of the MPRDA. The section 102 application is being handled by the applicant (Seriti) and has been lodged.

Purpose of this Report

This report is the Final Environmental Impact Assessment report (EIAr) for public review following the acceptance of the Final Scoping Report (FSR) by the DMRE in March 2024. The FSR was submitted to the DMRE on 26 May 2022, but processing was delayed pending alignment with the Section 102 application. Following acceptance of scoping by the DMRE, Seriti submitted a notification of extension to the timeframe for submission of the Consultation EIAr in terms of Regulation 23(1)(B) of the EIA Regulations (2014, as amended). This extension allows for the submission of the Final EIAr on 29 August 2024.

Public Participation Process Undertaken

The Final EIAr and the Environmental Management Programme (EMPr) are being submitted to the DMRE for review and final decision-making on the EA. The reports can be accessed at the following location:

CONTACT	LOCATION	TELEPHONE
Ms Anelle Lotter (public participation officer) Ms Gina Martin (EAP)	www.jaws.co.za under public documents, alternatively phone and request an electronic copy.	011 519 0200 or email: anelle@jaws.co.za gina@jaws.co.za

Stakeholder comments received during the review of the Consultation documents have been considered in the refining and updating of the Final EIAr and EMPr. The Final documents have been made available as above, and notifications of availability of the reports have been sent out. Stakeholders will be notified of the outcome of the DMRE decision regarding the application for an EA, and given the opportunity to appeal, should they wish to do so. This will be done in accordance with the NEMA requirements, and the notification received from the DMRE.

Environmental Impacts

Independent specialists undertook the assessment of the identified potential environmental impacts. It is important to note that not all specialist assessments were updated with the revised 2024 project description, or the findings of the stability assessment third-party review. In the case where specialist assessments were not updated, the EAP has adjusted the ratings where appropriate. The specialist studies undertaken identified various impacts on the biophysical and socio-economic environment, which are anticipated to occur throughout the construction, operation, and decommissioning phases the Dispatch Rider Project. The specialists have made recommendations on mitigation and management measures to be implemented in the event of potential impacts occurring, and these are also incorporated in the EMPr to ensure that they are implemented during the various phases of the proposed Project. The reports are attached under **APPENDIX D**.

The findings of the specialist impact assessments and mitigation measures for all development phases of the proposed Project are outlined in **Table 18-6** to **Table 18-8.** These tables provide a summary of the impact significance rating before and after the implementation of the recommended environmental management measures. The Environmental Management Programme (EMPr) is available as a separate report.

Impact Statement and Way Forward

The proposed Dispatch Rider Project will have an impact on the environment and therefore, mitigation, management and monitoring measures are required.

All significant impacts have been identified and mitigation, management and monitoring measures have been prescribed, as follows:

Many impacts rated as HIGH or MODERATE during the construction and operational phases can be mitigated to MODERATE or LOW if the prescribed mitigation measures are implemented.

A number of positive socio-economic impacts are expected as a result of construction and operational activities including employment opportunities, local procurement, increased business support within the local area, and capacity building.

Following the LOM, the decommissioning and closure of the mine will have a positive impact on soils, land capability and land use, and on visual observers as a result of rehabilitation activities.

Conditions for authorisation as recommended by the EAP in **Section 23**, should be considered as part of the authorisation of the Dispatch Rider Mining Project.

SERITI POWER (PTY) LTD

DISPATCH RIDER MINING PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

REPORT NO.: JW128/22/H236-15-Rev 2

CONTENTS PAGE

APPENDICES

APPENDIX F

DIspatch Rider Closure Cost Report

APPENDIX G

Third Party Review of Rock Engineering Design Aspects

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS USED IN THE REPORT:

ABBREVIATION / ACRONYM	MEANING
AIA	Archaeological Impact Assessment
AIS	Alien and Invasive Species
AMD	Acid Mine Drainage
APM	Archaeology, Palaeontology and Meteorites unit (SAHRA)
AQM	Air Quality Monitoring
BID	Background Information Document
CA	Competent Authority
CBA	Critical Biodiversity Area
CCS	crypto crystalline silica
CO	Carbon Monoxide
CR	Critically Endangered
CRR	Comments and Response Report
CSI	Corporate Social Investments
CSR	Consultation Scoping Report
dBA	Decibels (A-weighted measurements)
DEA	Department of Environmental Affairs (now DFFE)
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resources and Energy
DWF	Dry Weather Flow
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
ECA	Environmental Conservation Act
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment

ABBREVIATION / ACRONYM	MEANING
EIAr	Environmental Impact Assessment report
EHS	Environmental, Health and Safety
EMPr	Environmental Management Programme Report
EN	Endangered
ESA	Ecological Support Areas
ESS	Earth Science Solution
ETS	Ecosystem Threat Status
FEPA	Freshwater Ecosystem Priority Areas
FELs	Front End Loaders
FSR	Final Scoping Report
GDP	Gross Domestic Product
GGP	Gross Geographical Product
GN	Government Notice
GNR	Government Notice Regulation
HGM	Hydrogeomorphic
HIA	Heritage Impact Assessment
HMA	Heavily Modified Areas
HPA	Highveld Airshed Priority Area
IGS	Institute for Groundwater Studies
I&AP	Interested & Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IRP	Integrated Regulatory Process
IS	Importance and Sensitivity
IUCN	International Union for the Conservation of Nature
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Waste Management Plan

ABBREVIATION / ACRONYM	MEANING
J&W	Jones & Wagener (Pty) Ltd Engineering and Environmental Consultants
JMA	Jasper Müller Associates
LC	Least Concern
LDV	Light Duty Vehicle
LED	Local Economic Development
LOM	Life-of-Mine
LSA	Late Stone Age
LT	Least Threatened
MAE	Mean Annual Evaporation
mamsl	Meters Above Mean Sea Level
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MBSP	Mpumalanga Biodiversity Sector Plan
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MMA	Moderately Modified Areas
MMS	Middelburg Mine Services
MPRDA	Mineral and Petroleum Resources Development Act
MRA	Mining Right Area
MSA	Middle Stone Age
MTPA	Mpumalanga Tourism and Parks Agency
MWRP	Middelburg Water Reclamation Plant
NAAQS	National Ambient Air Quality Standards
NDM	Nkangala District Municipality
NEMA	National Environmental Management Act
NEM:BA	National Environmental Management: Biodiversity Act
NEM:WA	National Environmental Management: Waste Act

ABBREVIATION / ACRONYM	MEANING
NEM:PAA	National Environmental Management: Protected Areas Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGO	Non-Governmental Organisation
NHRA	National Heritage Resources Act
NO_2	Nitrogen Dioxide
NP	Not Protected
NT	Near Threatened
NWA	National Water Act
ONA	Other Natural Area
PA	Protected Area
PCD	Pollution Control Dam
PES	Present Ecological State
PIA	Palaeontology Impact Assessment
POI	Point of Interest
PM	Particulate Matter / Project Manager
PP	Poorly Protected
ppm	Parts Per Million
PPP	Public Participation Process
ROM	Run of Mine
RQO	Resource Quality Objectives
RWQO	Resource Water Quality Objectives
S&EIR	Scoping & Environmental Impact Reporting
SAAQIS	South African Atmospheric Quality Information System
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SASS5	South African Scoring System Version 5

ABBREVIATION / ACRONYM	MEANING
SCC	Species of Conservation Concern
SEP	South Export Plant
SLP	Social and Labour Plan
SMME	Small, Medium and Micro Enterprise
SO_2	Sulphur Dioxide
SPI	Specific Pollution sensitivity Index
STLM	Steve Tshwete Local Municipality
SWL	Static Water Levels
TBC	The Biodiversity Company
TDS	Total Dissolved Solids
ToR	Terms of Reference
TSP	Total Suspended Particulate
VU	Vulnerable
WCS	Wetland Consulting Services
WML	Waste Management Licence
WUL	Water Use Licence

DEPARTMENT OF MINERAL RESOURCES AND ENERGY – ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST

DMRE GUIDELINE REQUIREMENT – ENVIRONMENTAL IMPACT ASSESSMENT			REFERENCE IN REPORT
1	Regulation 50 (a) read together with section 39(3)(a) the intention of this description is to determine protection, remedial measures and environmental management objectives. To this end the applicant must specifically in this section:-		Section 10.1
	1.1	Provide a concise description of the environment on site relative to the environment in the surrounding area.	
	1.2	Provide a concise description of each of the existing environmental aspects both on the site applied for and in the surrounding area which may require protection or remediation.	
	1.3	Provide a concise description of the specific land uses, cultural and heritage aspects and infrastructure on the site and neighbouring properties/farms in respect of which the potential exists for the socio-economic conditions of other parties to be affected by the proposed mining operation.	
	1.4	Include an annotated map showing the spatial locality and aerial extent of all environmental, cultural/heritage, infrastructure and land use features identified on site and on the neighbouring properties and farms.	
2	The proposed mining operation – The applicant must specifically in this section -		Section 4
	2.1	Specify the mineral to be mined.	
	2.2	Specify the mining method to be employed at the level of opencast, underground, stoping, stooping, total extraction, bord and pillar, block caving, shrinking, dredging, pumping, monitoring, etc. and provide a concise description of the intended magnitude thereof, in terms of volumes, depth and aerial extent.	
	2.3	Provide a list of all the main mining actions, activities, or processes, such as, but not limited to, access roads, shafts, pits, workshops and stores, processing plant, residue deposition sites, topsoil storage sites, stockpiles, waste dumps, access roads dams, and any other basic mine design features.	
	2.4	Provide a plan showing the location and aerial extent of the aforesaid main mining actions, activities, or processes as required to calculate the financial provision in accordance with the Department's published guideline. (Reg. 51 (b) (v)).	
	2.5	Provide a list any listed activities (in terms of the NEMA EIA regulations) which will be occurring within the proposed project.	
	2.6	Provide an indication of the phases (construction, operational, decommissioning) and estimated time frames in relation to the implementation of these actions, activities or processes and infrastructure.	
3	The potential impacts – The applicant must specifically in this section, and in the relevant phases:-		Section 11 and 18
	3.1	Provide a list of the potential impacts, including acid mine drainage and/ or groundwater contamination where applicable, on environmental aspects separately in respect of each of the aforesaid main mining actions, activities, processes, and activities listed in the NEMA EIA regulations.	
	3.2	Include into the aforesaid list, the potential impacts of the mining operation on any cultural and/ or heritage resources which may be applicable. In cases where such features are not applicable the applicant must still include the item in the list and describe it as not applicable.	
	3.3	Provide a list of all impacts that may potentially emanate from each activity, present on site, which is listed in terms of the NEMA EIA regulations.	
	3.4	Provide a list of all potential cumulative environmental impacts.	
	3.5	State specifically whether or not there is a risk of acid mine drainage or potential groundwater contamination associated with the mineral to be mined, and if such a risk is associated with the mineral to be mined provide a summary of the findings and recommendations of a specialist geo-hydrological report in that regard.	

	DMRE GUIDELINE REQUIREMENT – ENVIRONMENTAL IMPACT ASSESSMENT		REFERENCE IN REPORT
4	The alternative land use or developments that may be affected – The applicant must specifically in this section:-		Section 8
	4.1	Provide a concise description of the alternative land use of the area in which the mine is proposed to operate.	
	4.2	Provide a list and description of all the main features and infrastructure related to the alternative land uses or developments	
	4.3	Provide a plan showing the location and aerial extent of the aforesaid main features of the alternative land use and infrastructure related to the alternative land development.	
5	The potential impacts of the alternative land use or development – The applicant must specifically in this section:-		Section 13
	5.1	Provide a list of the potential impacts of each of the aforesaid main features and infrastructure related to the alternative land use or development and related listed activities.	
	5.2	Describe all potential cumulative impacts of the main features and infrastructure related to the alternative land use or development.	
6	An identification of potential social and cultural impacts. The applicant must specifically in this section:-		Section 11 and 18
	6.1	Provide a list of potential impacts of the proposed mining operation on the socio-economic conditions of other parties' land use activities both on the site and on adjacent and non adjacent properties and farms to the extent that their socio-economic conditions may be directly affected. If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.	
	6.2	Include into the aforesaid list, the potential impacts of the mining operation on any cultural and/ or heritage resources which may be applicable. In cases where such features are not applicable the applicant must still include the item in the list and describe it as not applicable.	
	6.3	In cases where cultural impacts have been identified, describe the cultural aspect that will potentially be affected, and describe the potential impact on such cultural aspect.	
	6.4	In Cases where heritage features have been identified, describe such heritage feature and describe the potential impact on such heritage feature.	
	6.5 6.5.1 6.5.2 6.5.3	Quantify the impact on the socio-economic conditions of directly affected persons, as determined by the findings and recommendations of a specialist report in that regard. State the amount, of the quantified potential impact expressed in terms of the loss in value of property or infrastructural assets that will potentially be impacted upon as a result of the mining activity. State the amount, of the quantified potential impact expressed in terms of the loss in net present value of commercial, economic or business activity which will be impacted upon as a result of the mining activity. State, the sum of the amounts, referred to in paragraphs 6.6.1 and 6.6.2 above.	
7	An assessment and evaluation of potential impacts - The applicant must specifically in this section:-		Section 11 and 18
	7. 7.1.1 7.1.2 7.1.3 7.1.4 7.1.5	Provide a complete list of each potential impact identified in paragraphs 3 and 6 above. The applicant must:- Ensure that the list of impacts listed in paragraph 7.1 above includes (in compliance with the provisions of section 39 (3) (d) (i) of the Act) the list of all potential environmental impacts that may emanate separately from the main mining actions, activities, processes, and activities listed in the NEMA EIA regulations Ensure that the list of impacts listed in paragraph 7.1 above includes the risk of acid mine drainage and groundwater contamination. If the potential for acid mine drainage does not apply, the item must still be listed and then be dealt with as not applicable. Ensure that the list of impacts listed in paragraph 7.1 above includes the list of all the potential environmental impacts on cultural and heritage resources in the area. Ensure that the list of impacts rated includes the list of potential impacts on the socio-economic conditions of other parties who may be directly affected by the proposed mining operation. Ensure that the list of impacts rated includes the list of potential cumulative environmental impacts.	

DMRE GUIDELINE REQUIREMENT – ENVIRONMENTAL IMPACT ASSESSMENT			REFERENCE IN REPORT
		Ensure that the list of impacts rated includes the list of potential cumulative environmental impacts.	
	7.2	Provide a complete concomitant impact rating for each potential impact listed in paragraph 7.1 above in terms of its nature, extent, duration, probability and significance.	
	7.3	Provide a definition of the criteria used for each of the variables used for rating potential impacts. In this regard the applicant must:-	
	7.3.1	Ensure that the potential impacts are rated specifically with the assumption that no mitigation measures are applied.	
	7.4	Provide an indication of the phases (construction, operational, decommissioning) and estimated time frames in relation to the potential impacts rated.	
8	Identify the alternative land uses which will be impacted upon, which identification must;		Section 11 and 18
	8.1	Indicate whether the proposed mining will impede the land use, or whether it will prevent the land use.	
	8.2	Indicate whether the said land uses will be impeded or prevented permanently or temporarily.	
	8.3	Indicate the period for which the land use will be impeded or prevented, in cases where the alternative land use will be impeded temporarily.	
9	Provide, in listed format, the results of a specialist study, which study must be conducted in accordance with generally accepted principles of sustainable development by integrating social, economic and environmental factors into a comparison of the costs and benefits of the alternative land uses with those of the mining operation on an equitable basis.		Section 13
10	Attach the specialist study as an annexure.		APPENDIX D
11	Provide a list of all the significant impacts as identified in the assessment conducted in terms of Regulation 50 (c) and		Section 11 and 18
	11.1	Include into the list, the source of the impact by specifying the relevant action, activity or process from which the potential impact emanates.	
	11.2	Ensure that the impacts relating to post closure management of mine sites, cumulative impacts, and acid mine drainage or ground water contamination are also dealt with.	
12	The identification of interested and affected parties:- the applicant must:-		APPENDIX C
	12.1	List the names of the landowners and other affected persons in respect of the land uses which have been identified on the property and on adjacent and non adjacent farms that may be affected by the proposed mining operation.	
	12.2	List the relevant Local Government, Provincial Government Departments, Land Claims Commissioner and Traditional Authorities that were consulted.	
	12.3	List the relevant Government agencies and institutions responsible for the various aspects of the environment and for infrastructure that were consulted.	
	12.4	List the relevant local communities that were consulted.	
13	The details of the engagement process. The applicant must:-		APPENDIX C and APPENDIX D
	13.1	Confirm that both the Local Government and the Provincial Government have been consulted with regard to any economic development plans or proclaimed nature reserves in the area, and provide detail in that regard.	
	13.2	Confirm that the land claims commissioner has been consulted with regard to any land claims in the area	
	13.3	Confirm that the nature and scope of the mining project and the typical impacts of such a mining operation on the environment have been fully explained to the interested and affected parties, including the affected landowners, SAHRA and the communities concerned and that they have been consulted with regard to how they will be affected.	
	13.4	Confirm which specialists, knowledgeable persons and knowledgeable institutions have been consulted and indicate in what regard.	
14	Details regarding the manner in which the issues raised were addressed. The applicant must:-		APPENDIX C
	14.1	Confirm specifically in this section whether or not the description of the environment under Regulation 50 (a) has been compiled with the participation of the landowner, interested and affected parties, and the communities concerned.	

DMRE GUIDELINE REQUIREMENT – ENVIRONMENTAL IMPACT ASSESSMENT		REFERENCE IN REPORT
	14.2 Confirm specifically in this section whether or not the list of potential impacts under Regulation 50 (a) has been compiled with the participation of the landowner and interested and affected parties,	
	14.3 Confirm specifically in this section whether or not the list of potential impacts related to social and cultural impacts under Regulation 50 (c) has been compiled with the participation of the parties who may be directly affected.	
	14.4 Provide a list, of the issues raised by the interested and affected parties referred to in paragraph 13 above, and indicate where they have been accommodated in this document.	
15	The appropriate mitigatory measures for each significant impact of the proposed mining operation. The applicant must:-	Section 14, 18.13 and 24
	15.1 Report on the adequacy of predictive methods utilised.	
	15.2 Report on the adequacy of underlying assumptions	
	15.3 Report on uncertainties in the information provided.	
16	Description of the arrangements for monitoring and management of environmental impacts. The applicant must:-	Refer to the EMPr
	16.1 Provide a list of identified impacts which will require monitoring programmes.	
	16.2 Specify the functional requirements for the said monitoring programmes	
	16.3 Define the roles and responsibilities for the execution of the monitoring programmes and	
	16.4 Specify the time frames for monitoring and reporting.	
17	Inclusion of technical and supporting information. The applicant must:-	APPENDIX D
	17.1 Attach a specialist report regarding the investigation, assessment and evaluation of cultural and heritage resources, in consultation with regional organs of state e.g. SAHRA, tasked with a cultural and heritage mandate and in cognisance of local knowledge (community and landowner)	
	17.2 Attach a specialist report with regard to the determination and description of the baseline environment	
	17.3 Attach a specialist geo-hydrological report in cases where the mineral commodity to be mined has the potential to generate acid mine drainage or result in the contamination of groundwater	
	17.4 Attach a specialist report on the impact of the proposed mining operation on the socio-economic conditions of directly affected parties.	
	17.5 Attach a specialist study informing the comparative land use assessment referred to in paragraph 9 herein, and the information in paragraph 6.5 herein, which study must be conducted in accordance with generally accepted principles of sustainable development by integrating social, economic and environmental factors into a comparison of the costs and benefits of the alternative land uses with those of the mining operation on an equitable basis	
	17.6 Attach any other specialist reports that may be required.	

NATIONAL ENVIRONMENTAL MANAGEMENT ACT – ENVIRONMENTAL IMPACT ASSESSMENT REPORT CHECKLIST

ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST – APPENDIX 3 OF THE EIA REGULATIONS

INFORMATION REQUIREMENT AS PER APPENDIX 3 OF GOVERNMENT NOTICE REGULATION (GNR) 326 as amended				SECTION IN THIS REPORT
App 3 3 (1) a	Details of			Section 2.2
		i)	the EAP who prepared the report; and	
		ii)	the expertise of the EAP, including a curriculum vitae	
App 3 3 (1) b	Location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:			Section 3
		(i)	the 21 digit Surveyor General code of each cadastral land parcel;	
		(ii)	where available, the physical address and farm name; and	
		(iii)	where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	
App 3 3 (1) c	A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—			Sections 3; 4
		(i)	a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;	
		(ii)	on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	
App 3 3 (1) d	A description of the scope of the proposed activity, including—			Sections 4.1; 4.2
		(i)	all listed and specified activities triggered and being applied for; and	
		(ii)	a description of the associated structures and infrastructure related to the development;	
App 3 3 (1) e	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;			Section 5
App 3 3 (1) 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 development footprint within the approved site as contemplated in the accepted scoping report;			Section 6
App 3 3 (1) g	A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;			Section 8
App 3 3 (1) h	A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:			Sections 8; 9; 10; 11; 12; 13; 14; 15; 16
		(i)	details of the development footprint alternatives considered;	
		(ii)	details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	

INFORMATION REQUIREMENT AS PER APPENDIX 3 OF GOVERNMENT NOTICE REGULATION (GNR) 326 as amended			SECTION IN THIS REPORT
	(iii)	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;	
	(iv)	the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	
	(v)	the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—	
		(aa) can be reversed;	
		(bb) may cause irreplaceable loss of resources; and	
		(cc) can be avoided, managed or mitigated;	
	(vi)	the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	
	(vii)	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;	
	(viii)	the possible mitigation measures that could be applied and level of residual risk;	
	(ix)	if no alternative development footprints for the activity were investigated, the motivation for not considering such; and	
	(x)	a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;	
App 3 3 (1) 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 development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including—		Section 17
	(i)	a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	
	(ii)	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;	
App 3 3 (1) j	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 18
	(i)	cumulative impacts;	
	(ii)	the nature, significance and consequences of the impact and risk;	

INFORMATION REQUIREMENT AS PER APPENDIX 3 OF GOVERNMENT NOTICE REGULATION (GNR) 326 as amended			SECTION IN THIS REPORT
	(iii)	the extent and duration of the impact and risk;	
	(iv)	the probability of the impact and risk occurring;	
	(v)	the degree to which the impact and risk can be reversed;	
	(vi)	the degree to which the impact and risk may cause irreplaceable loss of resources; and	
	(vii)	the degree to which the impact and risk can be mitigated;	
App 3 3 (1) k	Where applicable, a summary of the findings and recommendations of 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 assessment report;		Section 19
App 3 3 (1) l	An environmental impact statement which contains—		Section 20
	(i)	a summary of the key findings of the environmental impact assessment:	
	(ii)	a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and	
	(iii)	a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	
App 3 3 (1) m	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the Environmental Management Programme Report (EMPr) as well as for inclusion as conditions of authorisation;		Section 21
App 3 3 (1) n	The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;		Section 22
App 3 3 (1) o	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 23
App 3 3 (1) p	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;		Section 24
App 3 3 (1) q	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 25
App 3 3 (1) r	Where the proposed activity does not include operational aspects, the period for which the Environmental Authorisation (EA) is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;		Section 7
App 3 3 (1) s	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;	

INFORMATION REQUIREMENT AS PER APPENDIX 3 OF GOVERNMENT NOTICE REGULATION (GNR) 326 as amended			SECTION IN THIS REPORT
	(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 or affected parties;	
App 3 3 (1) t	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;		Section 26
App 3 3 (1) u	An indication of any deviation from the approved scoping report, including the plan of study, including—		Section 27
	(i)	any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and	
	(ii)	a motivation for the deviation;	
App 3 3 (1) v	Any specific information that may be required by the competent authority; and		Section 28
App 3 3 (1) w	Any other matters required in terms of section 24(4)(a) and (b) of the Act.		Section 29

PART A: SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT

1. INTRODUCTION

1.1 Background

Middelburg Mine Services (MMS) is an operational mine of Seriti Power (Pty) Ltd (hereafter referred to as Seriti), situated between the towns of eMalahleni, Middelburg and Kriel, in the Mpumalanga Province of South Africa.

Seriti is the holder of an amended mining right for coal, granted by the Minister of Mineral Resources and Energy (DMRE), in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) and notarially executed on the 21st of May 2015 under DMRE reference MP30/5/1/2/2/379MR, in respect of its MMS North and South Sections. This mining right comprises of the following areas:

- Middelburg Mines North Section (MMS North) consisting of mining in the Hartbeesfontein, Bankfontein, Goedehoop and Klipfontein sections, as well as the North, Vandyksdrift and South Eskom Processing Plants; and
- Middelburg Mines South Section (MMS South) consisting of the Wolvekrans, Vlaklaagte, Driefontein, Boschmanskrans, Vandyksdrift, Albion and Steenkoolspruit mining sections, as well as the South Export Plant.

MMS is an opencast mine, which supplies coal to Eskom's Duvha Power Station and the export seaborne market. The Dispatch Rider mine plan forms part of the latest LoM and is key to the sustainable production of the MMS complex.

Seriti therefore proposes to mine the No. 1, No. 2 and No. 4 seam coal using underground mining at the Dispatch Rider section, which is located in the south of the Hartbeesfontein section. The expected life of mine (LOM) for this section is approximately eight (8) years.

The proposed project is located within the existing MMS mining right boundary, with the exception of a portion of the area to be mined to the east, which forms part of the Dispatch Rider prospecting right area.

The Dispatch Rider project entails the following:

- Changing the mining method of an existing approved opencast area (pit DW) to underground mining;
- Extending the underground mine to the adjacent property to the east within the Dispatch Rider prospecting right area; and
- Development of infrastructure in support of the Dispatch Rider underground mine.

The following infrastructure is required for the Dispatch Rider Project:

- Adit/portal;
- Portal sump for managing the contaminated storm water runoff;
- Vent fans;
- Electrical substation and overhead line (33 kilovolt (kV) unit diverted from existing power line);
- Mine service water reservoir (referred to as mine impacted water tank) connected to current mine affected water supply points, to serve as buffer capacity. Water from the mine impacted water tank will be pumped and distributed to the underground mine.
- Wash bay; and
- Stone dust silo.

No new haul roads will be developed since existing haul roads will be used. The exact position of the infrastructure components and the service roads will be determined during the feasibility phase but will be limited to the area indicated for the proposed infrastructure indicated in **Figure 4-2**.

Jones & Wagener (Pty) Ltd Engineering and Environmental Consultants (J&W) has been appointed by Seriti as an independent Environmental Assessment Practitioner (EAP) to undertake an Integrated Regulatory Process (IRP) to obtain the required environmental approvals/authorisations for the proposed underground mining project at Dispatch Rider.

1.2 Purpose of the report

This report is the Final Environmental Impact Assessment report (EIAr) for public review, following the acceptance of the Final Scoping Report (FSR) by the DMRE in March 2024. The FSR was submitted to the DMRE on 26 May 2022, but processing was delayed, pending alignment with the Section 102 application. Following acceptance of scoping by the DMRE, Seriti submitted a notification of extension to the timeframe for submission of the Consultation EIAr in terms of Regulation 23(1)(B) of the EIA Regulations (2014, as amended). This extension allows for the submission of the Final EIAr on 29 August 2024.

2. CONTACT PERSON AND CORRESPONDENCE ADDRESS

2.1 Details of the applicant

Table 2-1: Applicant details

PROJECT APPLICANT	Seriti Power (Pty) Ltd				
TRADING NAME (IF ANY)	Seriti Power (Pty) Ltd				
COMPANY REGISTRATION	1963/000537/07				
CONTACT PERSON	Shaakira Akhalwaya				
DESIGNATION	Chief Environmental Officer				
POSTAL ADDRESS	PO Box 1, Witbank, 1039				
EMAIL:	Shaakira.Akhalwaya@Seritiza.com	Tel:	013 689 4028	Fax:	-

2.2 Details of the EAP who prepared the report

Table 2-2: Details of the Environmental Assessment Practitioners

NAME	ORGANISATION	HIGHEST QUALIFICATIONS	EXPERIENCE	PROFESSIONAL REGISTRATIONS
Ms Jacqui Hex (Project Director)	Jones & Wagener	MSc Environmental Management	17+ years	Pr. Sci. Nat EAPASA Registered EAP
Ms Tolmay Hopkins (EAP) Ms Gina Martin (EAP and Project Manager)	Jones & Wagener	MSc (Agric) Microbiology BSc (Hons) Geography	20+ years 10+ years	Pr. Sci. Nat EAPASA Registered EAP
Ms Daniella Kristensen	Jones & Wagener	MSc Geography	2+ years	EAPASA Candidate EAP
Ms Anelle Lötter (Public Participation Practitioner)	Jones & Wagener	National Diploma in Journalism	20+ years	Member of the International Association of Public Participation (IAP2)

2.3 Expertise of the EAP

2.3.1 The qualifications of the EAP

Refer to **Table 2-2** and **APPENDIX A.**

2.3.2 Summary of the EAP's experience

Refer to **Table 2-2** and **APPENDIX A.**

3. DESCRIPTION OF THE PROPERTY

The list of properties on which the development will take place is summarised in **Table 3-1**.

Table 3-1: Property details

FARM NAME:	Hartbeestfontein 339 JS, Driefontein 338 JS, Boschmanskrans 22 IS,
APPLICATION AREA (HA)	Approximately 700 ha [1]
MAGISTERIAL DISTRICT:	Steve Tshwete Local Municipality (STLM) within Nkangala District Municipality (NDM)
DISTANCE AND DIRECTION FROM NEAREST TOWN	~20 km South of Middelburg, ~20 km South-East of eMalahleni
21 DIGIT SURVEYOR GENERAL CODE FOR EACH FARM PORTION	Hartbeestfontein 339 JS: Remaining Extent: T0JS00000000033900000 – Ingwe Surface Holdings (Pty) Ltd (60%) / Tavistock Collieries (Pty) Ltd (40%) Ptn 2: T0JS00000000033900002 – M.H. Allen Driefontein 338 JS: Remaining Extent: T0JS00000000033800000 – Ingwe Surface Holdings Ltd[2]

[1] This area includes the underground mining extent and the proposed infrastructure development
[2] Please note that Windeed indicates that this portion no longer exists.

	Ptn 10: T0JS00000000033800010 – Ingwe Surface Holdings Ltd Boschmanskrans 22 IS: Ptn 3: T0IS00000000002200003 – Ingwe Surface Holdings Ltd Ptn 1: T0IS00000000002200001 – Ingwe Surface Holdings Ltd

Further details on properties and property ownership are provided in **Section 3.2**.

3.1 Locality map

MMS is located approximately 20 km south of Middelburg within the Nkangala District Municipality (NDM). A locality map is provided in **Figure 3-1** indicating the project area within the MMS Mining Right.

3.2 Property and property ownership

Detail of the properties affected by the proposed development is provided in **Table 3-2**, and illustrated in **Figure 3-2.**

Table 3-2: Details of properties affected by the proposed development

FARM NAME	PORTION	PROPERTY OWNER	TITLE DEED NUMBER
Boschmanskrans 22 IS:	Ptn 1	Ingwe Surface Holdings Ltd	T76573/1999
	Ptn 3	Ingwe Surface Holdings Ltd	T76573/1999
Driefontein 338 JS	Remaining Extent[3] Ptn 10	Ingwe Surface Holdings Ltd Ingwe Surface Holdings Ltd	T76579/1999 T76580/1999
Hartbeestfontein 339 JS	Ptn 2	M.H. Allen	T120766/1996
	Remaining Extent	Ingwe Surface Holdings (Pty) Ltd (60%) / Tavistock Collieries (Pty) Ltd (40%)	T76564/1999 T89166/1992

[3] Please note that Windeed indicates that this portion no longer exists.

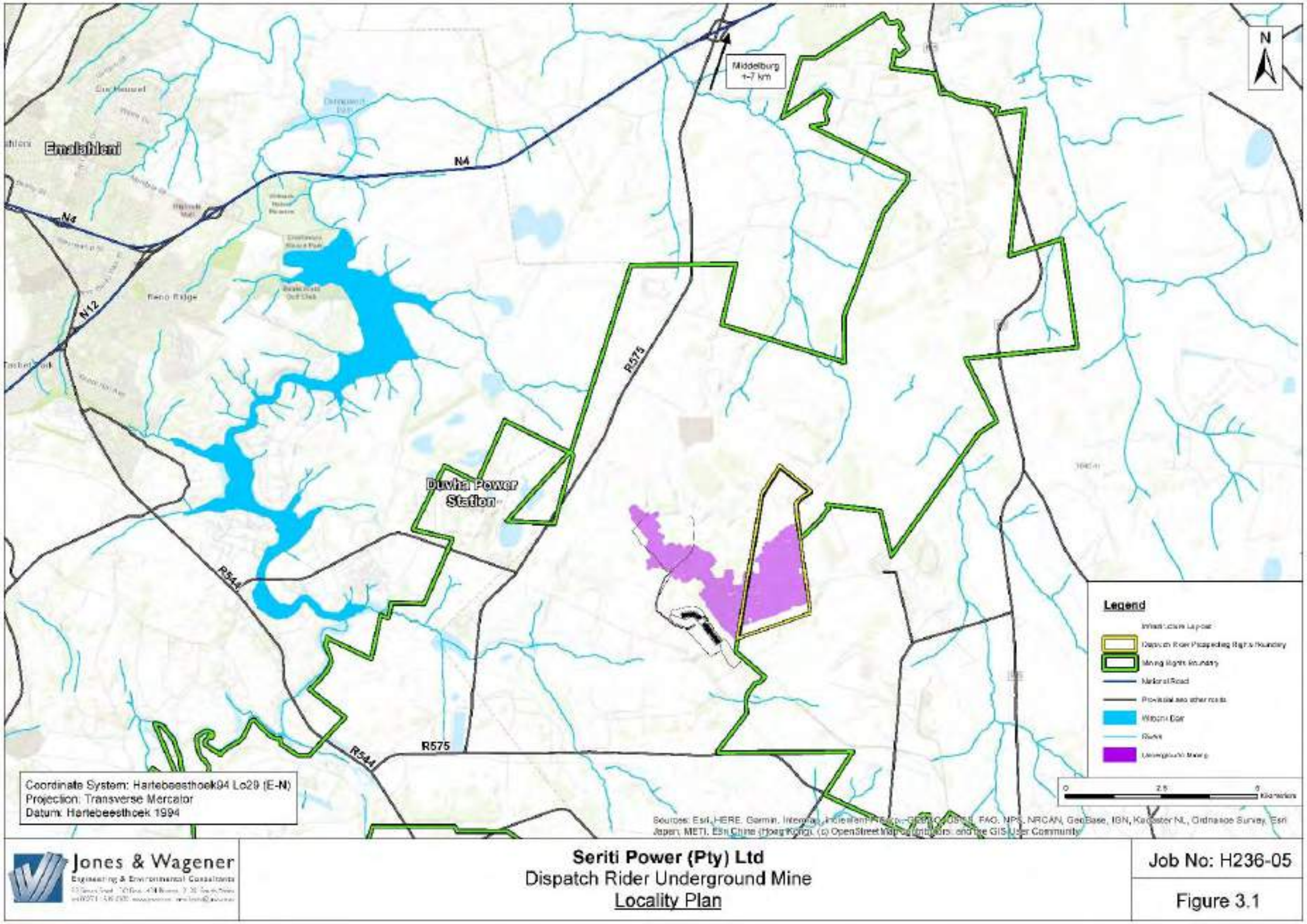


Figure 3-1: Locality map.

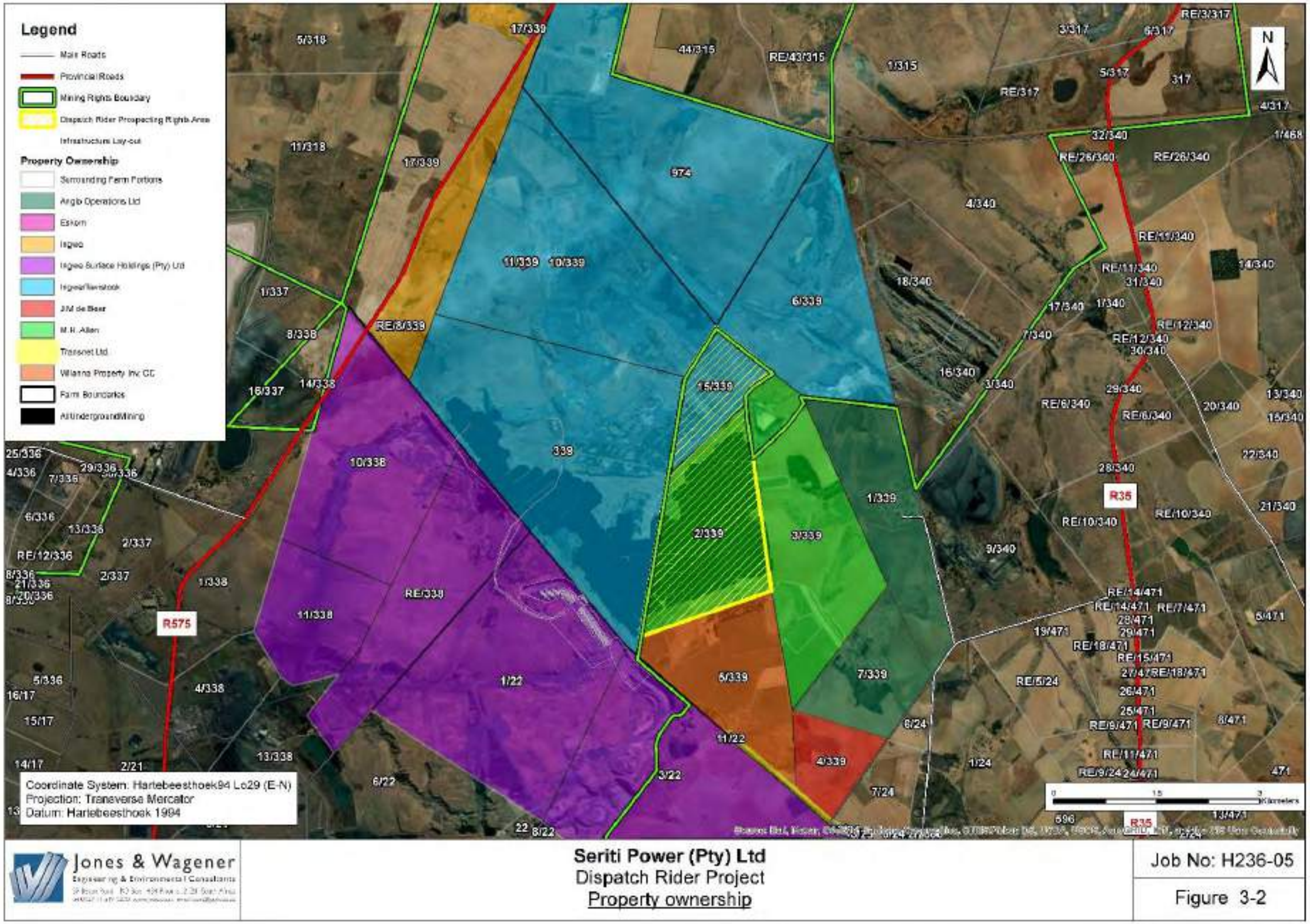


Figure 3-2: Map showing property ownership of project area and surrounding areas.

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

4.1 Listed and specified activities

List of activities to be undertaken as part of the proposed project provided in **Table 4-1** below. It is important to note that the project description for the Dispatch Rider Project has been revised and included the removal of some of the proposed infrastructure. Please refer to **Section 4.2.2** for the revised project description.

Where listed activities have been removed that were previously in the application form, these have been crossed out below.

Table 4-1: Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
(All activities including activities not listed) (E.g. excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and Boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	ha or m^2	Mark with an X where applicable or affected	GNR 544, GNR 545 or GNR 546 / NOT LISTED
~~Development of dirty water pipelines with an internal diameter of 450 mm diameter in excess of 1 000 m in length:~~ • ~~Pipeline between one of the mine voids and the mine service water reservoir (length to be confirmed pending a decision on which void will be used, but could exceed 1 000 m);~~ • ~~Pipeline between portal sump and mine impacted water steel tank could be in excess of 1 km, depending on final position;~~ • ~~Pipelines between the active workface underground and the underground sumps.~~	~~To be confirmed once position of reservoir is determined and will likely be along existing roads.~~ ~~To be confirmed once position of tank is determined but will be within the demarcated infrastructure area.~~	No longer applicable	~~GNR 327 of 2017: Activity 10~~
~~A fuel and lube bay will be developed at the workshop for the storage of 50 000 ℓ diesel, 30 000 ℓ hydraulic oil and 10 000 ℓ engine oil.~~ ~~This will be located within an Ecological Support Area (ESA1) identified by the Mpumalanga Biodiversity Sector Plan (MBSP).~~ ~~It should, however, be noted that this ESA1 is based on a 100m buffer zone around a Private Nature Reserve proclaimed in 1956 (therefore regarded as a Protected Area in terms of National Environmental Management: Protected Areas Act (NEM:PAA), but which has not been managed as a Protected Area.~~	~~To be confirmed once infrastructure layout has been confirmed, but will be within the demarcated infrastructure area~~	No longer applicable	~~GNR 327 of 2017: Activity 14~~ ~~GNR 324 of 2017: Activity 10~~
Development and operation of the ROM coal transfer area	To be confirmed once infrastructure layout has	X	

NAME OF ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
	been confirmed, but will be within the demarcated infrastructure area		GNR 325 of 2017: Activity 6
Development and operation of sumps and a dirty water storage tank/PCD, which may require a Section 21(g) WUL.	To be confirmed once infrastructure layout is confirmed but will be located within the demarcated infrastructure area.		
Dust suppression with mine impacted water, which will require a Section 21(g) WUL			
Clearing of vegetation on rehabilitated opencast mining area for the construction of infrastructure at the proposed infrastructure area	To be confirmed during Feasibility Phase. Will be located within the demarcated infrastructure area.		Not listed
Transport of coal along haul roads to existing processing plants.			Not listed
Development of a substation and 33 kV powerline that links to the existing powerline to the north			Not listed
Underground mining, including: • Changing the mining methods of the approved pit DW from opencast to underground bord and pillar • Expansion of the area to be mined, including an expansion of the area to the east (i.e., the Dispatch Rider prospecting right area). An application for the amendment of the MMS mining right area in terms of section 102 of the MPRDA has been submitted to the DMRE.	~700 ha	X	GNR 325 of 2017: Activity 17
Dewatering of underground mine workings to ensure the safe continuation of mining.	N/A		Not listed

4.2 Description of the activities to be undertaken

4.2.1 Historical activities and activities already authorised

The Dispatch Rider project area is located within the MMS mining right boundary and the Dispatch Rider prospecting right boundary.

The area is characterised by several aspects related to mining and agricultural land use.

Within the southern portion of the Hartbeesfontein section of the MMS mining right boundary, the following infrastructure has been developed (refer to **Figure 4-1**).

- Middlings plant, located further north within the Hartbeesfontein section;
- Washed coal is transported from the plant to the rapid loadout rail terminal, located to the north of the proposed Dispatch Rider infrastructure area by means of a 7 km overland conveyor. The coal is then railed from the siding to Richards Bay;
- A number of haul and service roads;
- Duvha-Hendrina pipeline (the raw water supply to the mine);

- South Eskom and Export plants are located to the south-west of the Dispatch Rider project area;
- A number of remaining voids from partially rehabilitated mining areas. Access to the Dispatch Rider underground mine will be via the existing highwall at the N7 void;
- A number of Pollution Control Dams (PCDs) to the south of the Dispatch Rider project area;
- 132 kV and smaller powerlines;
- Railway line.

The authorised opencast areas are also indicated in **Figure 4-1**. Environmental Authorisation was issued on 28 November 2019, which included the proposed expansion of the opencast mining areas within MMS North as indicated.

Pit DW was authorised in the 2006 EMPr approval to be opencast mined. Mining in this area has, however, not commenced and this pit forms part of the proposed Dispatch Rider underground mine.

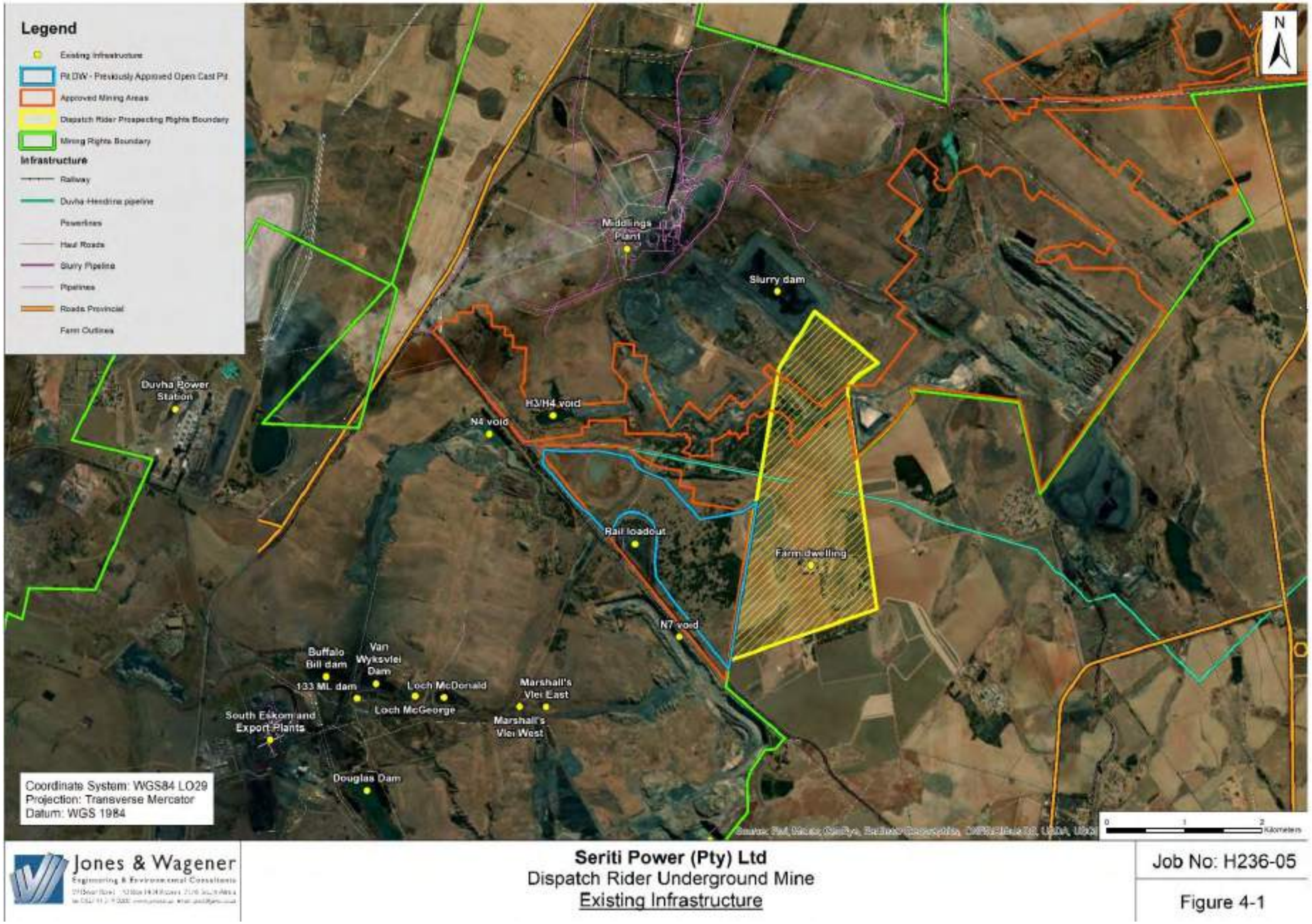


Figure 4-1: Existing infrastructure and authorised activities

4.2.2 Project Description (proposed activities)

A description of the infrastructure required in support of the Dispatch Rider underground mining is provided below and an infrastructure layout plan is provided in **Figure 4-2**. It is important to note that the project description for the Dispatch Rider Project has been revised, and some of the proposed infrastructure has been removed.

4.2.2.1 Proposed new infrastructure

Access to underground

Access to the No. 2 seam coal will be via an adit to be established at an existing highwall (N7 void) at the portal area. Areas of the highwall area will be backfilled through the normal opencast rehabilitation procedure, to create a portal area where infrastructure will be established for the underground mine.

Ventilation will be self-contained units and at this stage, it is assumed that emergency exit points are not needed.

Infrastructure area

The utility support area will consist of a water reservoir (referred to as the mine impacted water tank). A PCD may be required but does not form part of this authorisation application. If it is determined that a PCD is required, following the outcome of the integrated water balance inclusive of the Dispatch Rider Project (currently being undertaken by Seriti), it will need to be applied for separately.

A 33 kV electrical unit will be connected to existing powerline infrastructure.

The mine impacted water tank will be connected to current mine affected water supply points, to serve as buffer capacity. Water from the mine impacted water tank will be pumped and distributed to the underground mine.

Pipelines

Existing pipeline routes will be used as far as it is practical, to connect the mine impacted water tank to the existing water infrastructure. If new linkages to these existing pipelines are needed and exceed the specifications listed in the EIA Regulations (2014 as amended), a separate application for EA may be required.

Coal transfer area

The coal from the underground production sections will be conveyed on underground conveyors to the mine entrance in the existing pit void. From here the Run-of-Mine (ROM) coal will be loaded onto trucks with front end loaders (FELs) and transported to the processing plant. If the raw coal is of acceptable quality and no beneficiation is required, it will be transported to the existing South Eskom Plant which feeds directly to the Duvha Power Station. If, however, the coal does not meet the required quality, it will be trucked to the existing South Export Plant (SEP) or another dedicated plant where the coal will be beneficiated and then transported by trucks to the South Eskom Plant feeding Duvha Power Station or the existing loadout area for export if required.

Management of mine impacted water

Seriti has indicated that water from the workings will be pumped to underground transfer dams on the respective seams and then pumped to the main underground dam which will typically be situated on the No. 2 seam elevation. Water will then be pumped to the mine impacted water tank, fitted with booster pumps to ensure the correct water pressure is maintained in the underground workings. The portal sump will collect water runoff from portal drains. Water from the portal sump will be recycled to the mine impacted water tank. Any excess water will be fed into the existing MMS water reticulation system which is connected to the existing water treatment plant.

New roads

No new haul roads will be developed since existing haul roads will be used. The exact position of the infrastructure components and the service roads will be determined during the feasibility phase but will be limited to the area indicated in **Figure 4-2**.

Access control and security fencing

The existing access control areas will be utilised for the Dispatch Rider project. The mining right area (MRA) is fenced, and the proposed infrastructure will be located within this area.

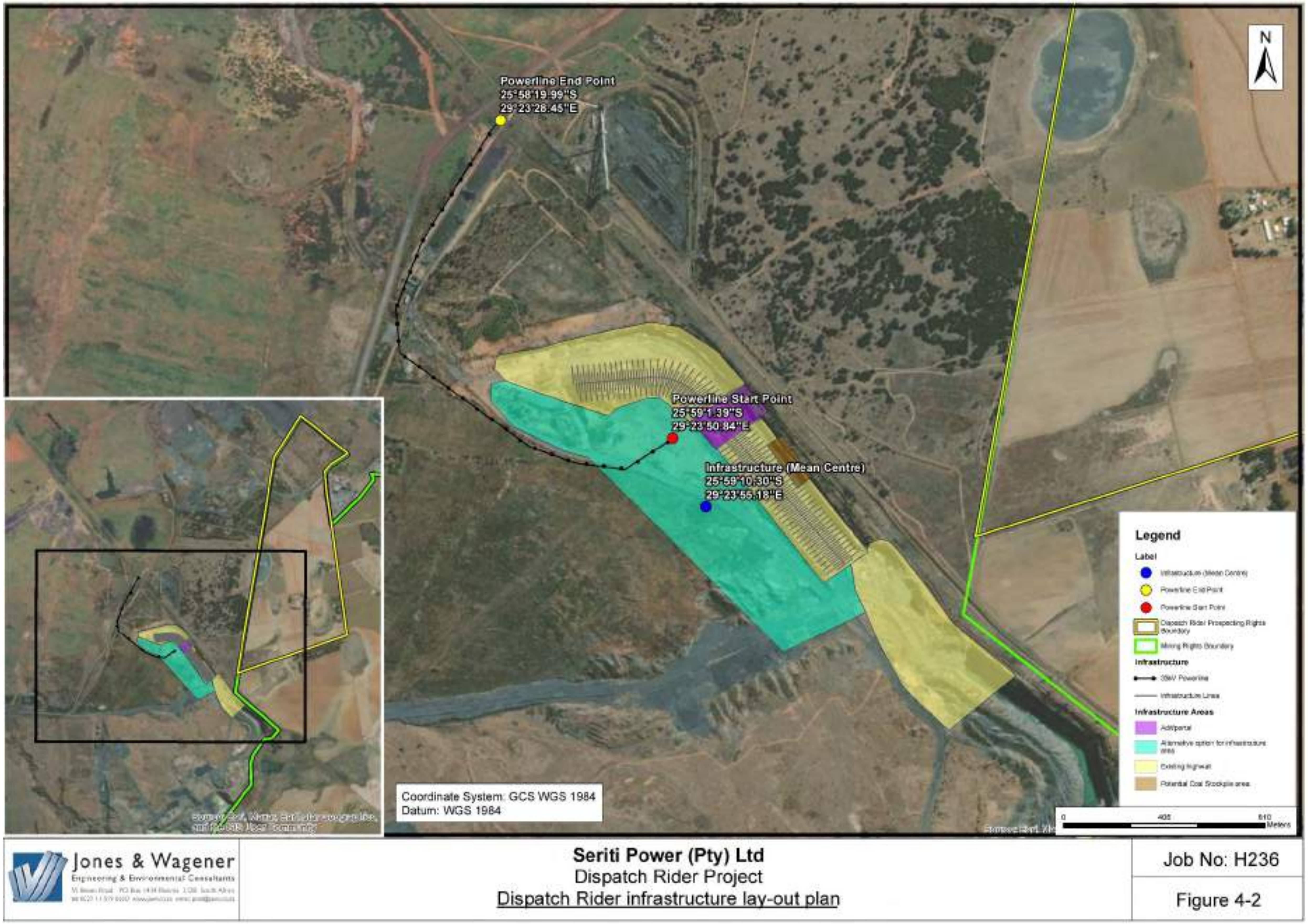


Figure 4-2: Dispatch Rider infrastructure layout plan

4.2.2.2 Underground mining

Seriti proposes to mine the No. 1, No. 2 and No. 4 seam coal at the Dispatch Rider section (which is located in the south of the Hartbeesfontein section) using underground mining.

The extent of the underground mining is shown in **Figure 4-3**. Mining will be done using continuous miners. No man and material shafts will be sunk for the project and the adjacent high wall of an old opencast pit will be used to gain access to the underground.

The No. 1, No. 2 and No. 4L seams will be mined using underground bord and pillar mining at a rate of approximately 2.0 -4.0 Mtpa. Extraction of the minor seams (2A and 4U) in this manner were determined not to be feasible, due to various factors such as the seam and parting thickness, as well as the discontinuity of the seams.

Underground bord and pillar mining was selected as the preferred mining method due to the low operational cost per ton of saleable product, as well as the reduced risk to wetlands. This results in a change in the approved mining method for Pit DW (refer to **Figure 4-1**) from opencast to underground mining.

The pre-feasibility underground mining design is based on a mining depth below 40 m (depth to floor from surface). The No. 4L seam ranges from below 30 m to 70 m in the southeast, the No. 2 seam ranges from below 30 m to 100 m, and the No. 1 seam ranges from below 30 m to 100 m in the south east.

The depth of mining below surface is important due to the potential risk of subsidence considering the wetlands in the area. The depth of mining of the three seams in relation to the wetlands are shown in **Figure 4-4** and can be summarised as follows:

- Most of the No. 4L seam panels are 40 m – 50 m below surface. The deepest point of the design is 62 m in the southern portion of the project area. Due to the depth below surface cut-off of 40 m, most of the wetlands will not be undermined, except for the area indicated in **Figure 4-4 (a)**. Within this area, the depth is greater than 40 m for the designed panels;
- The No. 2 seam mining design has depth to surface ranges of > 40 m to 91 m in the south. The panels that underlie the wetland areas have depths below surface in excess of 40 m as shown in **Figure 4-4 (b)**;
- The depth below surface for the No. 1 seam panels ranges from 70 m to 92 m as shown in **Figure 4-4 (c)**. The No. 1 seam panels are all greater than 60 m beneath surface.

The No. 1 seam varies in thickness from less than 1.0 m to 5.2 m and increases in thickness towards the south-eastern area. It is the deepest of the seams and is present mainly in the south and south-eastern portion of the Dispatch Rider area.

The No. 2 seam is widely spread across the project area and varies in thickness from around 1.0 m to 7.6 m.

The No. 4L seam is also widely spread throughout the Dispatch Rider project area and varies in thickness from less than 0.5 m to a little over 4.0 m.

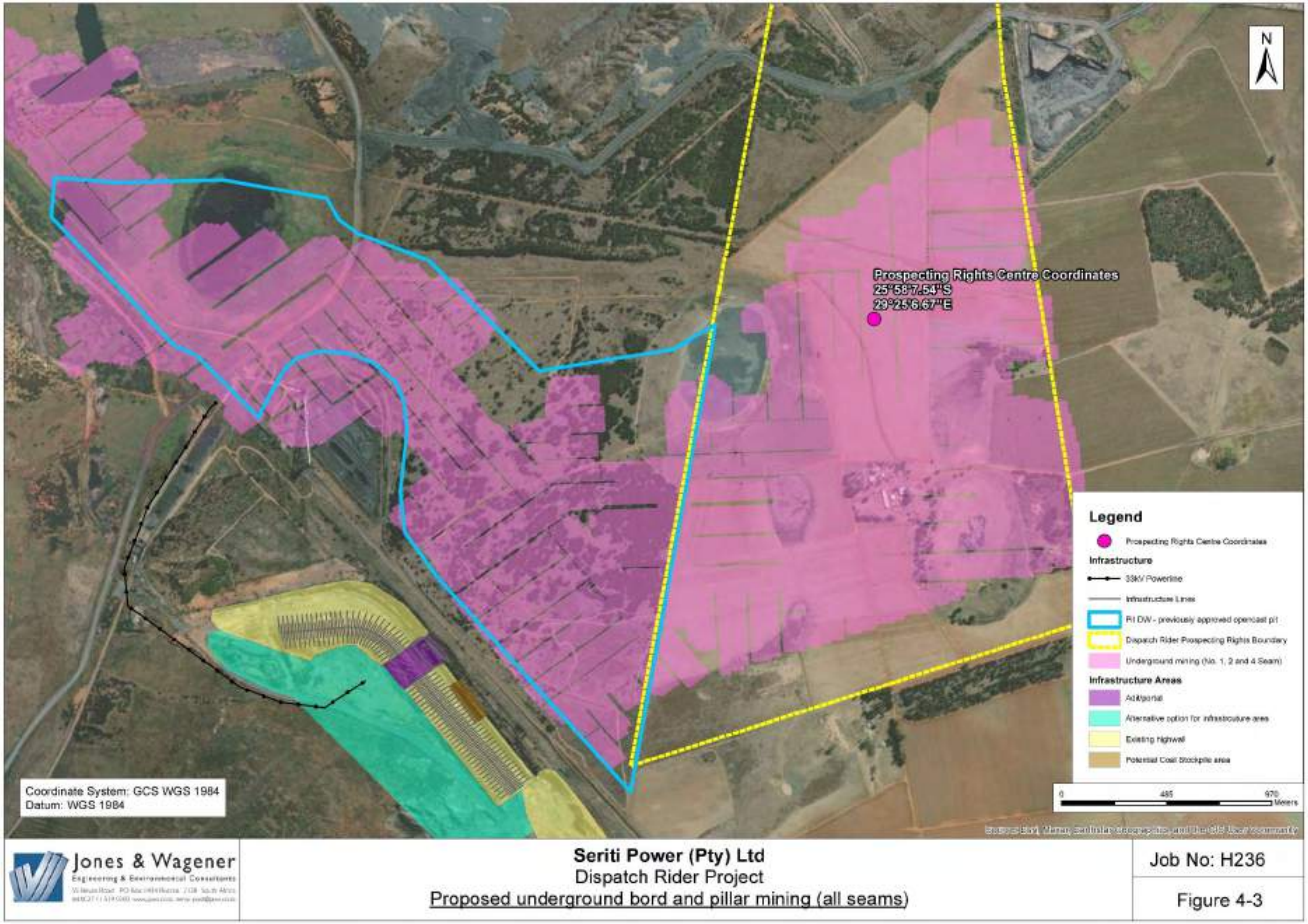
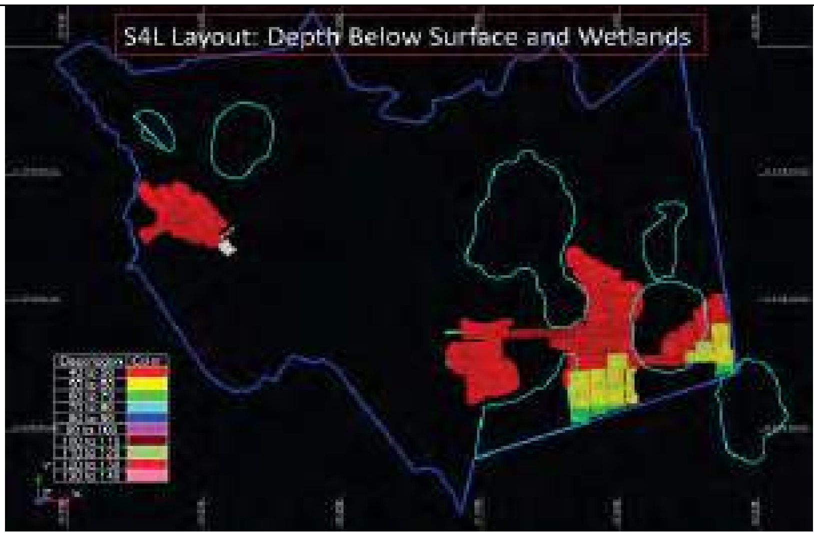
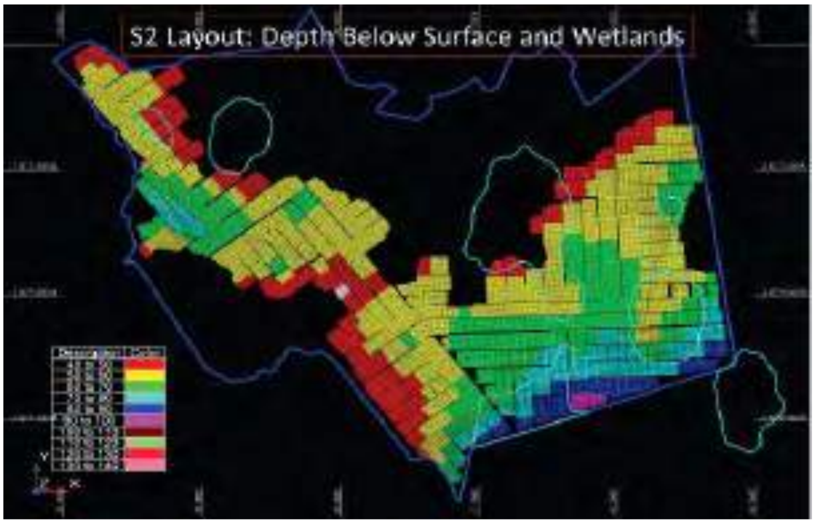


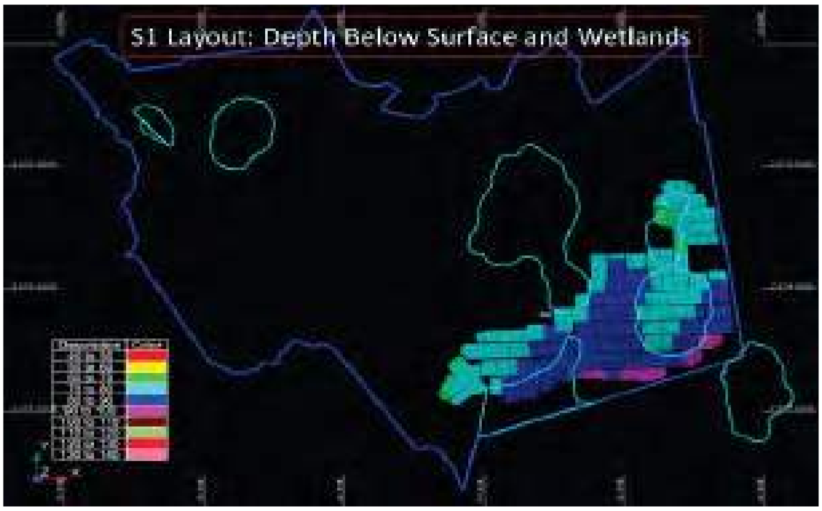
Figure 4-3: Proposed underground bord and pillar mining (all seams)



(a) No. 4L seam



(b) No. 2 seam



(c) No. 1 seam

Figure 4-4: Proposed depth of undermining in relation to wetlands (SAEC, 2019)

4.2.3 Project phases

The project phases associated with the proposed Dispatch Rider underground mining project, are described below.

4.2.3.1 Planning Phase

During the planning phase, the proposed project options are conceptualised. This includes undertaking preliminary/conceptual and detail designs of the proposed infrastructure development and underground mining, environmental screening, specialist environmental baseline investigations and the application for the required EA.

To date, a pre-feasibility investigation has been undertaken by Seriti for the Dispatch Rider project. The outcome of this investigation informs this current application for EA.

4.2.3.2 Construction Phase

Once the relevant authorisations have been received, construction activities will commence. This involves the establishment of the facilities and infrastructure as specified in **Figure 4-2**. Vegetation will be cleared from the development footprint where present. Activities to be undertaken that may impact the baseline environment include general construction activities such as civil works, movement of materials and equipment, and servicing of construction vehicles and equipment.

The backfilling of the highwall areas which will not form part of the adit (as indicated in **Figure 4-3**) will take place through the normal opencast rehabilitation procedure, to create a portal area where infrastructure will be established for the underground mine.

Rehabilitation of any surrounding areas impacted by the construction of infrastructure components must occur immediately after construction thereof has ceased.

4.2.3.3 Operational Phase

The infrastructure will be utilised during this phase when mining commences. Coal will be extracted and transported to the coal transfer area. Mine-affected water will be collected and managed as described above.

The No. 4L, No. 2 and No. 1 coal seams will be mined using continuous miners. This will be bord and pillar mining with all geotechnical considerations to be adhered to in order to ensure surface protection (as per the findings of stability assessment, discussed in more detail in **Section 10**).

The operational phase ends when the last reserves have been extracted.

4.2.3.4 Decommissioning Phase

This is the period directly after cessation of operational activities. Once mining activities have ceased, all operation-related equipment that has no beneficial re-use potential will be removed. This phase also includes the reclamation, rehabilitation and/or restoration of any final remaining areas (e.g., backfilling of final voids, landform shaping, topsoiling and seeding).

4.2.3.5 Closure Phase

The point in time when all decommissioning and rehabilitation activities have ceased, monitoring has been completed and the mine applies for a closure certificate.

5. POLICY AND LEGISLATIVE CONTEXT

The following authorisations are required for the proposed Dispatch Rider underground mine project:

- An application in terms of section 102 of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) to amend the mining right to include the Dispatch Rider prospecting area;
- Environmental Authorisation in terms of the National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998) for activities listed in the Environmental Impact Assessment (EIA) Regulations promulgated in December 2014 (as amended) in terms of the NEMA, as amended. A Scoping and Environmental Impact Reporting (S&EIR) process is applicable;
- A Water Use Licence (WUL) for the water uses as defined in Section 21 of the National Water Act, 1998 (NWA) (Act 36 of 1998). The application for and Integrated WUL will be supported by an Integrated Water and Waste Management Plan (IWWMP). Consideration also has to be given to the requirements of GNR 704, Regulations on the use of water for mining and related activities, aimed at the protection of water resources as published in terms of the NWA, and will be addressed in an Integrated Water Use Licence Application (IWULA). The application process for the WUL will commence at a later stage and will have a separate public participation process (PPP).

The current application is limited to the NEMA application, which will be used in support of the section 102 application in terms of the MPRDA. The section 102 application is being handled by the applicant (Seriti) and has been lodged.

A Phase 1 Archaeological Impact Assessment in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999) has also been undertaken.

Details on the legislation applicable to the proposed infrastructure development, as well as policies and guidelines used, are summarised in **Table 5-1**.

Table 5-1: Applicable legislation

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
LEGISLATION		
National Environmental Management Act, 1998 (Act 107 of 1998)	Entire report	The EIAr is compiled in accordance with the NEMA as well as the Regulations thereunder.
Government Notice Regulation (GNR) 324, 325 and 327 of 2017, as amended: Environmental Impact Assessment Regulations 2014	Section 4.1	The listed and triggered activities that are included in the application are listed in Section 4.1
GN 891 dated 2014: Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010	Section 6	The need and desirability of the project is described in Section 6
GN 960 dated 5 July 2019: Notice of the Requirement to Submit a Report Generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of NEMA and Regulation 18(1)(b)(v) of the EIA Regulations 2014, as amended	APPENDIX E	A report was generated by the DFFE Screening Tool.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
GN 320 dated 20 March 2020: Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Section 24(5)(a) and (h) and 44 of NEMA, when applying for Environmental Authorisation.	APPENDIX D	Specialist assessments to be conducted were identified in the Screening Report.
The National Heritage Resources Act, 1999 (Act 25 of 1999)	Section 18.12	A heritage impact assessment was conducted of the project area and was submitted to the South African Heritage Resources Agency (SAHRA)
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEM:BA)	Section 18.2	A Biodiversity and Aquatic Ecology impact assessment was conducted in the project area.
National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEM:PAA)	Section 10.1.1.10	A Biodiversity baseline assessment was done to identify protected areas in the project area,
National Water Act, 1998 (Act 36 of 1998)	Sections 18.7, 18.1 & 18.6	Surface water quality, wetland and groundwater impact assessments were conducted in the project area. The IWULA process will be undertaken at a later stage.
GNR 704 dated June 1999 in terms of the NWA: Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources	Sections 18.7 & 18.6	Surface water quality and groundwater impact assessments were conducted in the project area.
GN466 dated 22 April 2016: Classes and Resource Quality Objectives of Water Resources for the Olifants Catchment	Section 18.7	Surface water quality impact assessments were conducted in the project area.
GN932 dated 7 September 2018: Reserve Determination of water resources for the Olifants and Letaba catchments.	Sections 10.1.1.5 and 18.7	The Resource Quality Objectives (RQOs) for the catchment must be maintained and the contaminated water and decant management will comply to these objectives.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) and amendments	N/A	No waste management activities were identified, thus a WML will not be applied for.
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEM:AQA) and amendments	Section 18.10	An Air Quality Impact Assessment was conducted.
GN 486 dated 29 June 2012: National Ambient Air Quality Standard for Particulate Matter with Aerodynamic Diameter less than 2.5 Micron Metres (PM2.5)		
GNR 827 dated 1 November 2013: National Dust Control Regulations		
GNR 533 dated 11 July 2014: Regulations Regarding Air Dispersion Modelling		
GN 144 dated 2 March 2012: Highveld Priority Area Air Quality Management Plan		
GNR 283 dated 2 April 2015: National Atmospheric Emission Reporting Regulation		
GN 275 dated 3 April 2017: National Greenhouse Gas Emission Reporting Regulations		

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
GNR 1147 dated 20 November 2015: Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations.	Section 26 and	The closure costing for the project has been calculated in terms of the MPRDA Quantum of Closure and is included in the EIAr.
GN 1314 dated 26 October 2016: Amendments to the Financial Provision Regulations, 2016	APPENDIX F	As part of the transitional arrangements to the new GNR 1147 regulations, existing mining rights holders are exempted from the requirements of the regulations. The deadline to comply has been extended indefinitely.
GNR 452 dated 20 April 2018: Amendment to the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations		
GNR 371 dated 22 April 2021: Amendments to the Financial Provision Regulations, 2015, as amended.		
MPRDA Regulations 53 and 54; and Guideline Document for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine (2005)		
GUIDELINES/POLICIES/STANDARDS/PLANS/TOOLS		
Guideline: National Freshwater Ecosystem Priority Areas (NFEPA)	Section 10.1.1.6	The position of the proposed activities in relation to NFEPA system was assessed.
Mpumalanga Biodiversity Sector Plan (MBSP)		The position of the proposed activities in relation to the priorities set in the MBSP was assessed.
National Biodiversity Assessment (2018)	Section 18.2	The biodiversity impact assessment was conducted according to these guidelines.
Mining and Biodiversity Guidelines (2013)		
DWA Best Practice Guidelines, dated 2007	IWWMP	The Guidelines will be used to update the existing IWWMP to be submitted as part of the IWULA.
SANS 10103:2008 The measurement and rating of environmental noise with respect to annoyance and to speech communication	Section 18.8	A Noise impact assessment was conducted in the project area.
IFC General EHS Guidelines on Environmental Noise Management		
STLM Integrated Development Plan: 2019-2020	Section 6	The project was developed in line with the Local IDP.
STLM Local Economic Development Strategy: 2016-2021	Section 6	The project was developed in line with the Local Economic Development Strategy.

6. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

MMS is an existing operational mine which employs 985 (as at end June 2024) people and supplies coal to Eskom's Duvha Power Station and the export seaborne market. The Dispatch Rider mine plan forms part of the latest LoM and is key to the sustainable production of the MMS complex.

In 2007, opencast mining of pit DW at MMS North was approved in the amended EMPr. For the current application, Seriti proposes to mine the No. 1, No. 2 and No. 4 seam coal using underground mining at the Dispatch Rider section, which is located in the south of the Hartbeesfontein section. The expected LOM of the underground mine is approximately 8 years.

The mine lay-out and the required infrastructure to support the underground mining has been optimised through a pre-feasibility investigation.

The following are of relevance when considering the impact of the proposed development on ecological integrity and the use of natural resources:

- A portion of the proposed Dispatch Rider underground mine (pit DW) was approved for opencast mining in 2007. The current Dispatch Rider project will result in the change of the mining method in this area from opencast to underground mining. This will reduce the surface disturbance significantly, specifically with regard to the pan systems located in the project area. The mine lay-out has been optimised through a pre-feasibility investigation, which considered opencast mining, underground mining, as well as a combination of the two mining methods;
- Existing infrastructure will be used as far as possible to support the underground mining. This includes *inter alia* existing haul roads and an existing high wall for underground access;
- Water requirements for the Dispatch Rider project will be sourced from the mine's existing allocation and sources, or from the re-use of mine impacted water from existing mine voids. No additional provision is therefore required;
- The location for the proposed underground mining project is largely within a brownfield site, indicating that disturbance has already taken place in the area. Nevertheless, surface disturbance will be limited to the infrastructure development footprint, which will be located on existing and rehabilitated mining areas or along existing infrastructure corridors;
- In terms of the Mpumalanga Biodiversity Sector Plan (MBSP), most of the Dispatch Rider project is categorised as Protected Areas[4] (PAs) and ecological support areas (ESAs). It should, however, be noted that this ESA is based on a 100 m buffer zone around a Private Nature Reserve proclaimed in 1956 (therefore regarded as a PA in terms of NEM:PAA), but which has not been managed as a PA (refer to **Appendix D. 2** for the legal opinion on this matter). Since underground mining is proposed, surface disturbance will be limited to the infrastructure footprint, which will be located on areas already disturbed by mining activities. No additional surface disturbance is expected;
- Both the Niekerkspruit and the Spookspruit flow through the mine's property (to the north of the Dispatch Rider project area) and have been diverted around the existing mine workings. These systems have already been impacted as result of mining and agricultural activities in the area;
- Five (5) pans are located within the surface area of the proposed Dispatch Rider underground mining area. Only one pan (P3) within the study area has been highlighted as a Freshwater Ecosystem Priority Area (FEPA). The proposed mine plan aims to prevent surface subsidence as far as possible within, or within 100 m of, any of the watercourses, by mining at a depth of greater than 40 m. While the risk of subsidence cannot be completely eliminated (moderate probability), a robust framework has been proposed to manage and significantly reduce the risk to an acceptable level (Seriti, 2023; Saxum Mining, 2024). The environmental risks associated with mining underneath wetland areas have been assessed as low, provided that mining follows the revised and optimized designs. The strategy of

[4] "Protected area" means those protected areas contemplated in section 9 of the NEM:PAA and the core area of a biosphere reserve and shall include their buffers;
"Buffer area" means, unless specifically defined, an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere;

avoiding high-risk areas (11.7%) and implementing robust support systems further mitigates potential impacts.

- Furthermore, a dirty water management system will be implemented to prevent impacts to these systems;
- The development of the proposed underground mining area and associated infrastructure is unlikely to significantly alter the ecological integrity of the area from its current state, provided that appropriate mitigation measures are implemented.

From a socio-economic perspective, the following considerations are of relevance:

- The proposed development is within the existing MRA and prospecting right areas, with no direct impact on communities, or their dependency on ecosystem services. The closest receptor is the farmer to the east, within the prospecting right area;
- The proposed underground mining project and associated infrastructure development at Dispatch Rider will add another eight years to the LoM of MMS North. Although it is unlikely that new work opportunities will be available for locals, a temporary increase in work opportunities (although limited) may be anticipated during the construction phase of the project, which could contribute to the local and regional economy. It is therefore not expected that there will be any significant change to employment opportunities;
- The mine's current Environmental Awareness Programme and Health and Safety Programme will continue to ensure that the workers are informed of the risks and dangers associated with their work and the measures that need to be taken to ensure that they are adequately protected;
- Mining is the most prominent employment sector in the STLM, within which the mine is located, with a contribution of 23% to the employment. STLM experienced population growth rates higher than their economic growth rates, which has significant negative implications from a Gross Domestic Product (GDP) per capita and an infrastructure-, service delivery-, and job creation point of view. Should the Dispatch Rider project not continue, the coal reserves will not be accessed, and coal will have to be sourced from elsewhere to fulfil Seriti's contractual agreements with Eskom. This will result in job losses for the current employees of the mine and will have implications for the local economy;
- Continued operation of MMS North will ensure coal supply for Eskom which will contribute to the country's GDP and development goals; and
- The proposed Dispatch Rider infrastructure area is within an existing mining area and therefore the impact on visual character, sense of place, noise levels will be limited.

The proposed Dispatch Rider project is therefore in support of mining that has been approved in 2007 in order to extend the LOM of MMS North and sustain the existing workforce and contractual obligations. It is not expected to significantly alter the ecological integrity of the area since it will be in a brownfield area already impacted by mining and agricultural activities, utilising underground mining methods. The mining methods and mining design aim to avoid surface subsidence.

7. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The expected LOM of the Dispatch Rider underground mine is approximately eight (8) years. Due to the potential variability in the implementation of the project due to aspects such as coal price (which impacts on available capital for the implementation of the project) as well as potential changes to the mine plan, it is recommended that the EA be issued for a period of at least 15 years.

8. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT INCLUDING A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT

8.1 Details of all development footprint alternatives considered

8.1.1 The property on which or location where it is proposed to undertake the activity

MMS is an existing opencast mining operation. The aim of the Dispatch Rider project is to achieve optimisation of the available coal reserves to ensure that the mine meets its contractual obligations.

The proposed mining development is therefore dictated by the locality of the available coal reserves which exist along the southern border of MMS North. The prospecting right acquired for Portion 2 of Hartbeestfontein 339 JS further dictates the location of the proposed development.

Alternative locations are therefore not feasible or practicable and were therefore not considered.

8.1.2 The type of activity to be undertaken

MMS is an existing opencast mining operation, and the proposed Dispatch Rider project aims to optimise the coal reserves to ensure that the mine meets its contractual obligations. A large portion of the Dispatch Rider Project falls within the approved EMPr area and the current mining right boundary, and the pit designated as Pit DW has been authorised for opencast mining. The technology (i.e. mining methodology) alternatives considered are discussed in detail in **Section 8.1.4** and the motivation provided for the preferred alternative, i.e. underground mining.

Alternative activity types were not considered as feasible or practicable.

8.1.3 The design or layout of the activity

The layout and design of the proposed infrastructure development is limited in terms of its necessity to be in close proximity to the proposed underground mining.

Two alternatives have been considered during the development of the project.

8.1.3.1 Site layout 1

Access to the No.2 and No.4 coal seams through a proposed new high wall to be created as a result of additional opencast mine operations that will be carried out prior to developing the infrastructure required for the underground mining operations. The position of the current high wall will move by approximately 60 m.

The Dispatch Rider infrastructure will include two inclined conveyors that will be used to transfer coal from the underground mining operations to the stockpile areas on the surface. Other infrastructure will include haul roads, an access road, brake test ramp, underground machine parking area, machine loading area, evaporation terrace, raw water tanks and related platform. Provision is also made for storm water management measures. Refer to **Figure 8-1**.

8.1.3.2 Site layout 2 (preferred layout)

The existing high wall of an old opencast pit will be used to gain access to the underground without changes to the position of the highwall. Access to the No. 2 seam coal will be via a ramp and portal, accessing the reserves at 40 m below surface. There is no need to change the position of the highwall.

An infrastructure area will be developed next to the existing highwall to accommodate the infrastructure listed in **Section 4.2** (**Figure 8-1**), although no specific infrastructure placements and designs are available at this stage. The position and design of the infrastructure will be determined during the Feasibility Assessment.

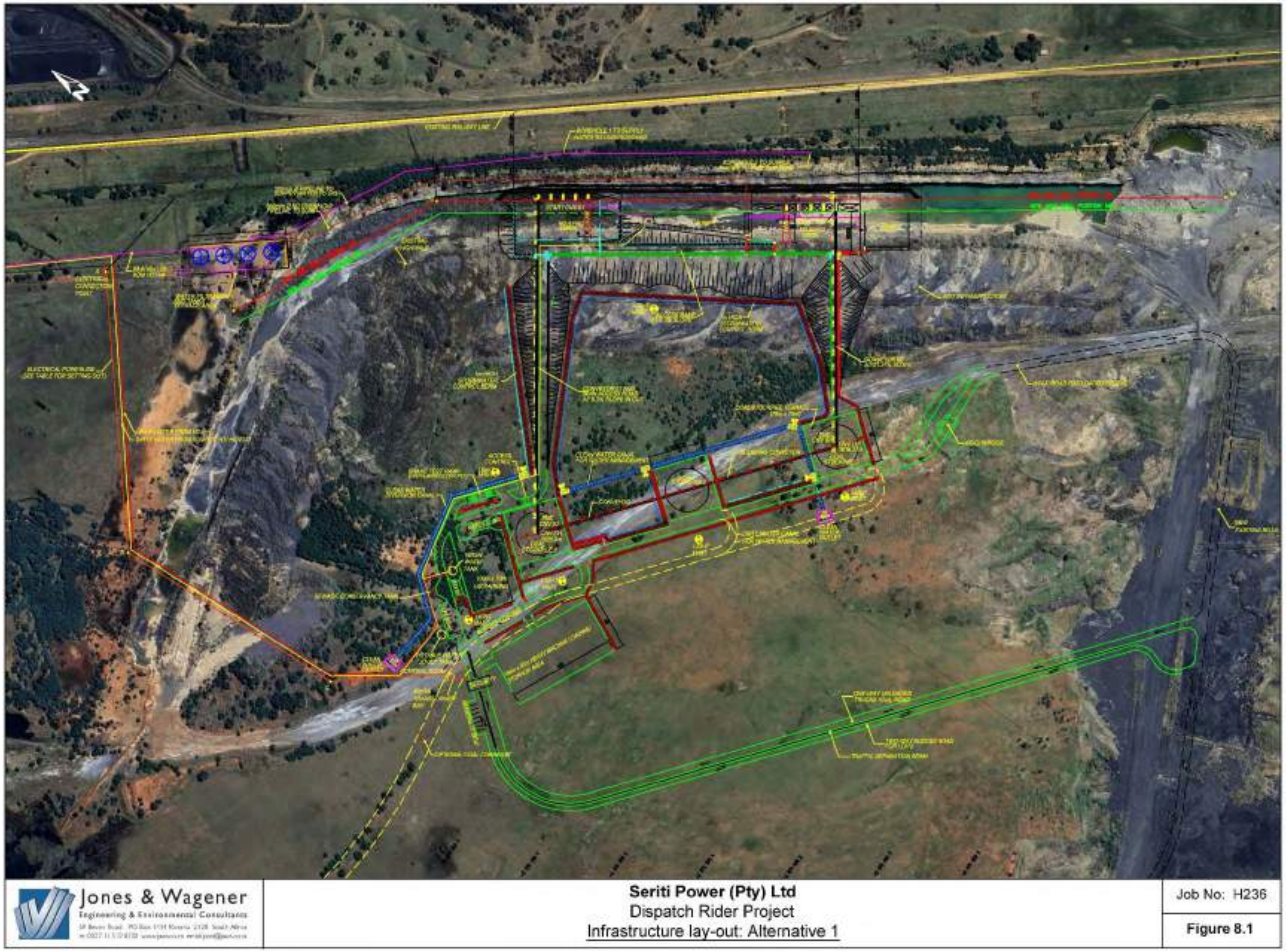


Figure 8-1: Infrastructure layout: Alternative 1

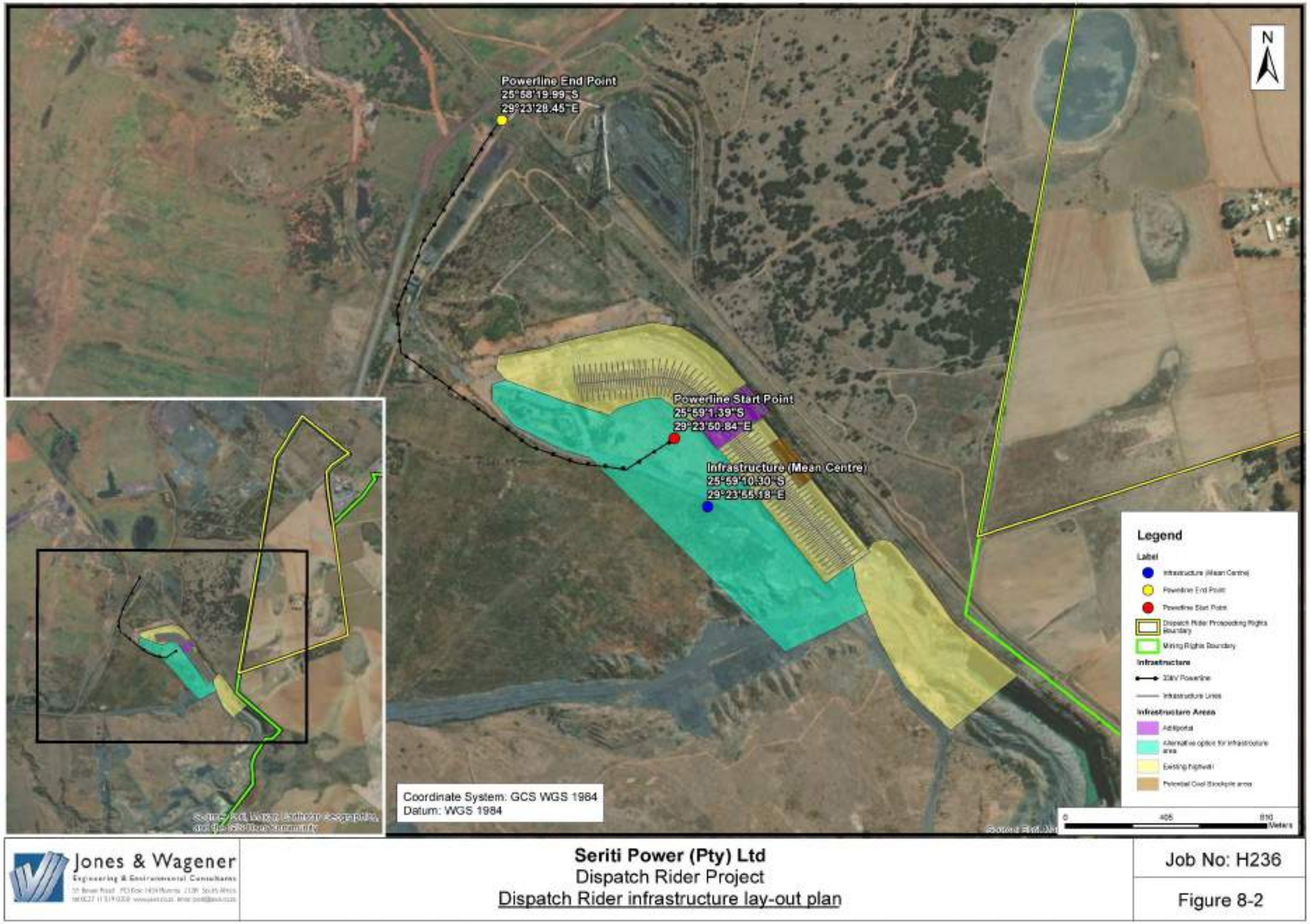


Figure 8-2: Infrastructure layout: Alternative 2 (preferred layout)

8.1.4 The technology to be used in the activity

Although pit DW has been approved for opencast mining, various mining methods were evaluated in the Pre-Feasibility Study, namely:

- Underground mining only;
- Opencast mining only; and
- Hybrid option, which is a combination of underground and open pit mining.

These three methods are discussed in more detail below.

8.1.4.1 Underground mining

The No. 4L seam, No. 2 seam and No. 1 seam are to be mined using continuous miners to a depth greater than 40 m below the surface, consisting of one (1) mining section, five (5) mining sections, and three (3) mining sections respectively. Thus, a total of nine (9) mining sections will be established for underground mining. A maximum of six (6) underground sections will be mined at any one time. From these sections, the ROM coal is to be transported from the continuous miner using shuttle cars to a feeder breaker. The feeder breaker will feed onto a branch conveyor which will feed onto a trunk conveyor to transport the coal from the underground operations to the surface.

The coal from the underground production sections will be conveyed on underground conveyors to the mine entrance in the existing pit void. From here the ROM coal will be loaded onto trucks with front end loaders (FELs) and transported to the processing plant. If the raw coal is of acceptable quality and no beneficiation is required, it will be transported to the existing South Eskom Plant which feeds directly to the Duvha Power Station. If, however, the coal does not meet the required quality, it will be trucked to the existing South Export Plant (SEP) or another dedicated plant where the coal will be beneficiated and then transported by trucks to the South Eskom Plant feeding Duvha Power Station or the existing loadout area for export if required.

8.1.4.2 Opencast mining

Opencast pit mining utilises the truck and shovel method. The No. 1, 2, 2A, 4L and 5 seams will be mined through four (4) open pits. Coal of acceptable raw quality will be transported directly to the South Eskom Plant to supply Duvha Power Station and the export seaborne market. Coal that requires washing will be fed directly to the North Middlings Plant for washing. Waste rock from the box cut is to be sent to the waste rock dumps and the topsoil and softs will be transported to the designated dumps.

8.1.4.3 Hybrid mining

The hybrid mining method is identical to the underground ROM ore handling process with the addition of three mini opencast pit operations.

8.1.4.4 Preferred option

It is, however, deemed more feasible to pursue underground mining instead of opencast mining in this area due to the following:

- Significant existing infrastructure is located in the area, including the railway loop for export and the stockpile area;
- The main Hendrina pipeline limits access to the resource via opencast mining;
- Further investigations have shown that the area has a very high strip ratio; and

- Five pan systems are located within the area, which will be protected as far as possible as the depth of mining is greater than 40 m. While the risk of subsidence cannot be completely eliminated (moderate probability), a robust framework has been proposed to manage and significantly reduce the risk to an acceptable level (Seriti, 2023; Saxum Mining, 2024). The environmental risks associated with mining through wetland areas have been assessed as low, provided that mining follows the revised and optimized designs. The strategy of avoiding high-risk areas (11.7%) and implementing robust support systems further mitigates potential impacts.

8.1.5 The operational aspects of the activity

The operational alternatives directly relate to the mining method (discussed in **Section 8.1.2**) and the lay-out alternatives (discussed in **Section 8.1.3**).

8.1.6 The option of not implementing the activity

The option of not implementing the activity will result in the mine's contractual obligations to Eskom not being met, with the resultant penalties. Inadequate coal supply to the Duvha power station will have consequences for reliable electricity supply in South Africa, which is already constrained. This could also have implications for the employees of the mine and for the local economy.

9. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

9.1 Public participation process followed

Public participation is essential and a legislated requirement for the environmental authorisation process for which Seriti is applying. The principles that demand communication with society at large are best embodied in the principles of the NEMA (Act 107 of 1998, Chapter 1). In addition, section 24(5), Regulation 54-57 of GNR 326 (as amended) under the NEMA, guides the public participation process that is required for an EIA process.

The public participation for the proposed Dispatch Rider Mining Project was undertaken in accordance with the stipulated requirements of the NEMA, Act 107 of 1998, as amended.

9.1.1 Objectives of public participation in an environmental authorisation process

The objectives of public participation in the EA process are to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner. The key objective of public participation is to ensure transparency throughout the process and to promote informed decision making.

The objectives per EIA phase are discussed below.

9.1.1.1 During Scoping

- Assist the I&APs with identifying issues of concern and providing suggestions for enhanced benefits and alternatives;
- Provide I&APs with an opportunity to raise issues of concern and suggest project alternatives; and

- Verify that their issues have been considered and to help define the scope of the technical studies to be undertaken during the Impact Assessment Phase.

9.1.1.2 During Impact Assessment

- Verify that their issues have been considered either by the Specialist Studies, or elsewhere; and
- Comment on the findings of the EIA including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

9.1.2 Public participation process

The public participation process entails the below. Refer to **APPENDIX C** for more details on the public participation process, including copies of the BID, site notices and advertisements.

9.1.2.1 Announcement of the project and notification of availability of Scoping Report for public review

The existing stakeholder database used by the mine was reviewed and updated and will be maintained throughout the project. The identification of stakeholders and community representatives is important and has been done in collaboration with Seriti, the local municipality and other organisations in and around the study area. All comments and contributions from stakeholders have been recorded and kept for the duration of the project and have been submitted together with the final reports to the DMRE.

Stakeholders who were captured on the database for the project included the following:

- The owners or persons in control of the land where the proposed mining is to be undertaken (if different than applicant);
- The occupiers of the property where the development is to be undertaken;
- The owners and occupiers of land adjacent to the mining area;
- Provincial and local government (relevant local and district municipalities);
- Organs of state, other than the authorising authority, such as the Department of Water and Sanitation (DWS), Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA) or Department of Roads, having jurisdiction in respect of any aspect of the proposed project;
- Relevant residents' associations, rates payers' organisations, community-based organisations and NGOs;
- Environmental and water bodies, forums, groups and associations; and
- Private sector (business, industries) in the vicinity.

The project and the availability of the Consultation Scoping Report (CSR) was announced to the public by means of the following (**APPENDIX C**):

- Advertisement in the Witbank News and Middelburg Observer newspapers on 25 March 2022;
- Distribution of a Background Information Document (BID) to Interested and Affected Parties (I&APs) on the database from 22 March 2022;
- Placement of site notices on and around the site;
- Telephonic notification to key stakeholders and landowners;

- Notification to landowners; and
- Loading of notification documents on the J&W website.

The I&APs comments on the CSR were captured in a Comments and Response Report (CRR) – refer to **Table 9-1.**

9.1.2.2 Notification of availability of Final Scoping Report

The FSR was made available to the public. This was done by means of notifying all the I&APs registered on the stakeholder database of the availability of the FSR on the J&W website. This was done via e-mail notification on 30 May 2022.

9.1.2.3 Notification of acceptance of Scoping Report and availability of the Consultation Environmental Impact Assessment report (EIAr) and Environmental Management Programme (EMPr)

The project and the availability of the Consultation EIAr and EMPr was announced to the public by means of the following (**APPENDIX C**):

- Advertisement in the Witbank News and Middelburg Observer newspapers on 25 July 2024;
- Notification to landowners; and
- Loading of notification documents on the J&W website.

The Consultation EIAr and EMPr were available for public review from 26 July 2024 to 27 August 2024. The reports were available at the following locations.

	LOCATION	CONTACT
Printed copy:	eMalahleni Library, 28 Hofmeyer St, eMalahleni	Tel: (013) 699 1057
	Gerard Sekoto Public Library, Wanderers Avenue, Middelburg	Tel: (013) 249 7314
Electronic copy:	www.jaws.co.za/public-documents-new/	-

An IWULA process will be conducted at a later stage and will be supported by a separate PPP.

9.1.2.4 Notification of availability of Final EIAr / EMPr

Stakeholder comments on the Consultation EIAr and EMPr have been integrated into the Final reports (including an updated CRR) which have been made available on the J&W website and submitted to the DMRE. Notifications of the availability of the reports has been sent out.

Comments received to date on the Project have been included in the CRR (**Table 9-1**).

9.1.2.5 Announcement of authority's decision

Once a decision is reached by the DMRE, I&APs will be notified of the decision and the appeal process to be followed.

9.2 Summary of comments raised by I&APs

The list of I&APs consulted to date is provided in **APPENDIX C**. Any comments or responses received from I&APs have been included in **Table 9-1**.

Table 9-1: Summary of comments and responses

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
AFFECTED PARTIES					
Landowner/s					
M.H. Allen (GM Farming)	X	03/05/2022	I have indicated on maps (provided to Seriti and the project team) the position of the water boreholes as these supply water for household use, cattle and farming operations. Due to precision farming applicated and high expense the arable fields must not be affected in any way.	Thank you for the information provided on the boreholes. This has been taken into consideration in the geohydrological assessment conducted as part of the EIA phase.	Closed
Municipality					
Steve Tshwete Local Municipality – Ms Pearl Masombuka, Environmental Officer	X	19/04/2022	Kindly share a copy of the scoping report as I am unable to download the report using the link. You are also welcome to submit a hard copy to the municipal offices.	On 20 April 2022, the report was sent to Ms Masombuka via "WeTransfer".: *A copy of the Consultation Scoping Report has been sent to you by WeTransfer – you should have received an e-mail in this regard. Kindly note that the link is only available for one week. Please let us know if you are not able to download the report from this platform.* *A hard copy of the report, as well as an electronic copy on a USB stick was delivered to your offices on 25 March 2022. A person named "Liesbet" signed for it (refer to attached signed delivery note). Maybe you can also obtain the report from her?* On 25 April, a follow up email was sent to Ms Masombuka with a reminder that the report is only available on the platform until 27 April 2022, after which the link will expire. .	Closed

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
eMalahleni Local Municipality	X	28/03/2022	The office of the Emalahleni Municipal Manager requested to be registered as an I&AP. The information sent to the office of the Municipal Manager was also sent by the office to other divisions of the municipality.	The Emalahleni Municipal Manager was registered as an I&AP.	Closed
Organs of state (Responsible for infrastructure that may be affected by Roads Department, Eskom, Telkom, DWS etc)					
Eskom – Mr Herry Ludere	X	31/03/2022	Kindly assist with coordinates of the area.	On 3 April 2022, the following information was emailed to Mr Ludere: The centre co-ordinates for the portal where access will be to the underground workings at the existing highwall: 25°58'56.76"S 29°24'1.12"E A kmz file showing the project area was also provided, indicating the infrastructure area, as well as the proposed underground mining.	Closed
Other Competent Authorities affected					
Department of Water and Sanitation	X	08/06/2020	FINAL SCOPING REPORT FOR ENVIRONMENTAL AUTHORISATION APPLICATION FOR THE PROPOSED DISPATCH RIDER UNDERGROUND MINE AT THE SERITI POWER (PTY) LTD: MIDDELBURG MINE SERVICES NORTH SECTION IN STEVE TSHWETHE LOCAL MUNICIPALITY, MPUMALANGA PROVINCE (REPORT NUMBER: JW390/20/H236- 05 - REV 3, MAY 2022)	Please refer to the more recent comments and responses provided in the section below.	Closed

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
			Reference is made to the above-mentioned application submitted to the Department on 30 May 2022. The above-mentioned application has been assessed by the Department and the comments are as follows: 1. The applicant has listed proposed activities on page 8, Table 4-1. In light of the above, the applicant shall conduct a preliminary legal assessment to identify all the water use activities associated with the proposed development project that will require authorisation by the DWS and shall note that in terms of section 22(1) of the National Water Act, 1998 (Act No. 36 of 1998), "A person may only use water- (a) without a licence- I. If that water use is permissible under Schedule 1; II. If that water use is permissible as a continuation of an existing lawful use, Or III. If that water use is permissible in terms of general authorisation issued under section 39; (b) if the water use is authorised by a licence under this Act; or		

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			(c) if the responsible authority has dispensed with a licence requirement under subsection (3)". 2. Therefore, any other water use related activities as outlined in section 21 of the National Water Act, 1998 (Act No. 36 of 1998) associated with the proposed development project that are not permissible as indicated on paragraph 1 above shall have to be authorised by the DWS prior to such water use activities taking place. Furthermore, the applicant is advised to refer to Regulation 267 - Regulations Regarding the Procedural Requirements for Water Use Licence Applications and Appeals for guidance on the requirements for water use authorisation application. 3. Page 8, Table 4-1 it is mentioned that a fuel and lube will be developed at the workshop bay for the storage of 50 000 ℓ diesel, 30 000 ℓ hydraulic oil and 10 000 ℓ engine oil. Considering the above, the applicant shall ensure that the fluids are stored properly in a concrete or cement lined surface with berms wall to avoid any seepage into the		

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			groundwater resource and also ensure that the design of the storage area is such that any leakage or spillage can be contained. 4. Page 12, Infrastructure: it is mentioned that offices, security, and storage facilities will be constructed on site, as well as change houses. Furthermore, it is mentioned that wastewater generated at the change house will be disposed in a septic tank and waste will be removed on a regular basis by a competent external contractor Considering the above, the applicant shall ensure that: 4.1 No activities shall take place within 500m of a wetland or 1:100-year floodline, whichever is greater. If these activities are within these regulated areas, the applicant must apply for a water use licence in terms of section 21 (c) and (i) of the National Water, 1998 (Act No. 36 of 1998); 4.2 Reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities; and		

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			4.3 The applicant shall ensure that the general and hazardous waste generated on site is separated and disposed of at the permitted waste disposal site in such a manner as not to cause any nuisance conditions or secondary pollution. 5. Page 19, it is mentioned that the application for a water use licence will follow at a later stage and a separate public participation process. The applicant shall ensure that the public participation process shall take place in accordance with section 41(4) of the National Water Act, 1998 (Act No. 36 of 1998) will be conducted. 6. The applicant shall ensure that no stock piling of any material shall take place within 100 m from the watercourse owing to high sedimentation. 7. Stormwater Management: Stormwater management plan must be implemented to prevent pollution on run-off. The applicant must ensure that stormwater is diverted away from all the working areas and the stormwater leaving the construction areas		

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			must not be contaminated by any substance, whether that substance is a solid, liquid, vapour or any combination thereof. The soil must be stabilised in order to prevent the resulting wash downs into any water resource and where possible rehabilitation of the disturbed areas must be done concurrently with the construction activity. 8. The Applicant is referred to Section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998), and to report any pollution incidents originating from the proposed project to the Regional Office of the Department of Water and Sanitation within 24 hours. 9. The applicant is advised not to commence with any water uses activities before obtaining a Water Use Authorisation. Commencement with water uses activities without the authorisation is the contravention of section 19, 12, 22 and 53 of the National Water Act, 1998 (Act No. 36 of 1998). Should you have further queries, please do not hesitate to contact Ms BN Mnguni on Cell Number: xxx, e-mail: address mxxx@dws.gov.za.		

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
Department of Water and Sanitation	X	19/04/2022	1. The applicant shall conduct a preliminary legal assessment to identify all the water use activities associated with the proposed development project that will require authorisation by the DWS and shall note that in terms of section 22 (1) of the National Water Act, 1998 (Act No. 36 of 1998), "A person may only use water – a) Without a licence – If that water use is permissible under Schedule 1 If that water use is permissible as a continuation of an existing lawful use, or If that water use is permissible in terms of general authorisation issued under section 39; b) if the water use is authorised by a licence under this Act; or c) if the responsible authority has dispensed with a licence requirement under subsection (3)". 2. Therefore, any other water use related activities as outlined in section 21 of the National Water Act, 1998 associated with the proposed development project that are not permissible as indicated in paragraph 1 above shall have to be authorised by the DWS prior to such water use activities taking place. Furthermore, the applicant is advised to refer to Regulation 267 – Regulations Regarding the Procedural Requirements for	1. An application for a WUL will be conducted at a later stage and this will include a detailed assessment of the potential water uses. 2. Noted. An application for a WUL will be submitted in terms of the NWA and Regulations at a later stage.	Closed

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
			Water Use Licence Applications and Appeals for guidance on the requirements for water use authorisation application. ~~3. Page 2, it is mentioned that the fuel bay for the storage of 50 000 litres diesel, 30 000 litres hydraulic oil and 10 000 litres engine oil. Considering the above, the applicant shall ensure that the fluids are stored properly in a concrete or cement lined surface with berm wall to avoid any seepage into the groundwater resources and also ensure that the design of the storage area is such that any leakage or spillage can be contained.~~ ~~4. Page 12, it is mentioned that offices, security and storage facilities will be constructed on site, as well as change houses. No activities shall take place within 500m of a wetland or 1:100-year floodline, whichever is greater. If these activities are within these regulated areas, the applicant must apply for a water use licence in terms of section 21 (c) and (1) of the National Water Act.~~ ~~5. Page 12, it is mentioned that wastewater generated at the change house will be disposed in a septic tank and waste will be removed on a regular basis by a competent external contractor. Considering the above, the applicant shall ensure that no sanitary~~	3. This infrastructure has been removed from the project. 4. This infrastructure has been removed from the project. 5. This infrastructure has been removed from the project.	

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			~~system is located within a horizontal distance of 100 meters from any water course. Therefore, reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.~~ 6. Page 30, it is mentioned that the IWULA process will only be done at a later stage and will be supported by a public participation process. The public participation process shall take place in accordance with section 41 (4) of the National water Act. 7. The applicant shall ensure that no stock piling of any material shall take place within 100 meters form the watercourse owing to high sedimentation. 8. Waste: The applicant shall ensure that the general and hazardous waste generated on site is separated and disposed of at the permitted waste disposal site in such a manner as not to cause any nuisance conditions or secondary pollution. 9. Stormwater management: A stormwater management plan must be implemented to prevent pollution of run-off. The applicant must ensure that stormwater is diverted	6. Noted. 7. The infrastructure mentioned will be developed on an area which was disturbed previously due to opencast mining 8. Noted. Refer to Section 18.13 for mitigation measures. 9. This has been addressed in the surface water specialist report (Appendix D. 6)	

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			away from all the working areas and the stormwater leaving the construction areas must not be contaminated by any substance, whether that substance is a solid, liquid, vapour or any combination thereof. The soil must be stabilised in order to prevent the resulting wash downs into any water resources and where possible rehabilitation of the disturbed areas must be done concurrently with the construction activity. 10. The Application is referred to Section 19 (1) of the National Water Act and to report any pollution incidents originating from the proposed project to the Regional Office of the Department of Water and Sanitation within 24 hours. 11. The applicant is advised not to commence with any water uses activities before obtaining a Water Use Authorisation. Commencement with water uses activities without the authorisation is the contravention of section 19, 12, 22 and 53 of the National Water Act.	10. Noted 11. Noted	
South African Heritage Resources Agency (SAHRA) – Ms Natasha Higgitt / Nokukhanya Khumalo	X	22/03/2022 and 06/06/2022	1. Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: http://sahra.org.za/sahris/. We do not	An updated and application specific HIA has been conducted in compliance with section 38(3) of the NHRA as required by section 38(8) of the NHRA. This report will be uploaded to the SAHRIS Portal and is available in Appendix D. 11.	Closed

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions. 2. Please create an application on SAHRIS and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 24(4)b(iii) of NEMA and section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA. 3. Once all documents including all appendices are uploaded to the case application, please ensure that the status of the case is changed from DRAFT to SUBMITTED. Please ensure that all documents produced as part of the EA process are submitted as part of the application.		
SAHRA – Ms Natasha Higgitt	X	13/06/2022	1. The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit requests that an updated and application specific HIA be conducted for the proposed development and newly proposed activities that complies with section 38(3) of the NHRA as required by section 38(8) of the NHRA. 2. The archaeological component of the HIA must be conducted by a qualified archaeologist and must comply with the	1. An updated and application specific HIA has been conducted in compliance with section 38(3) of the NHRA as required by section 38(8) of the NHRA. This report will be uploaded to the SAHRIS Portal and is available in Appendix D. 11. 2. The archaeological component of the HIA has been conducted by a qualified archaeologist and complies with the SAHRA 2007 Minimum	Closed

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status (Consensus / dispute, not / finalised, etc.)
			SAHRA 2007 Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports (see www.asapa.co.za or www.aphp.org.za for a list of qualified archaeologists). 3. Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed. Further comments will be issued upon receipt of the above requested report and the draft EIA inclusive of appendices.	Standards: Archaeological and Palaeontological Components of Impact Assessment Reports. Please refer to Appendix D. 11. 3. Heritage resources that were identified have been assessed. This assessment is available in the HIA (Appendix D. 11.).	
SAHRA – Ms Natasha Higgitt	X	25/07/2024	Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: http://sahra.org.za/sahris/. We do not accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions. Please create an application on SAHRIS for each EA application and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 24(4)b(iii) of NEMA and section 38(8) of the National Heritage Resources	On 5 August 2024 an email was sent to Ms Higgitt – stating: Please note that we have uploaded the EIR and EMPr on the SAHRIS website for your review (case number: 17023). We have also made the payment for review of these documents. Please find attached the proof of payment. Unfortunately, the SAHRIS case number was not used as the reference number, please accept my apologies for this error. I have also uploaded this proof to the SAHRIS website as requested in the below email. Ms Higgitt responded on 6 August 2024 as follows: Thank you for the update. I have uploaded this email to the case for record purposes.	Closed

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
			Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA. If a case already exists on SAHRIS regarding the development, please upload the documents to that case using the "Make an additional submission to an existing case" in the application selector wizard https://sahris.org.za/form/application-selector. Please ensure that all documents produced as part of the EA process are submitted as part of the application.		
Mpumalanga Tourism and Parks Agency (MTPA) – Ms Phumla Nkosi	X	23/03/2022	Please send a hardcopy of the below mentioned document to the MTPA once it is available.	Document was delivered on 28 March 2022 for which the MTPA has signed. The signed receipt was emailed to Ms Nkosi on 28 March 2022 for her attention.	Closed
Mpumalanga Tourism and Parks Agency (MTPA) – Mr JJ Eksteen, Manager Scientific Services		25/04/2022	1. The MTPA has no objections to the proposed underground mine. a. According to the MBSP based terrestrial assessment, the proposed underground mine will be in *Other natural areas* and *moderately to heavily modified areas*. A section of the mine will also be in the Heyns Private Nature Reserve. The MTPA has clarified in the past that this protected area as not managed as a protected area and was mined before the new NEM: PAA legislation were promulgated. Therefore, the MTPA has no objections. b. According to the MBSP based freshwater assessment, the proposed underground	Noted. The EIAr is available for public review.	Closed

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Consultation Status
List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.					(Consensus / dispute, not / finalised, etc.)
			mine will occur in CBA Wetland and ESA Wetland clusters. The prefeasibility studies have shown that some of these wetlands are degraded to a certain extend but they still provide a range of ecosystem services from their ecological infrastructure. 2. The MTPA is in support of the proposed specialist assessments that will be undertaken as part of the EIA process. The MTPA looks forward to receiving the draft EIA report for comment once it is available.		
Mpumalanga Tourism and Parks Agency (MTPA) – Celia de Waal		26/07/2024	Kindly send us, the MTPA, a hard copy of the CEIR and EMPr to the following physical address, for our scientists to comment on	Document was delivered on 31 July 2024 for which the MTPA has signed. The signed receipt was emailed to Ms De Waal on 1 August 2024 for her attention.	Closed
INTERESTED PARTIES					
Mpumalanga Landbou/Agriculture Union – Mr Robert Davel		24/03/2022	Mpumalanga Agriculture is the provincial affiliate of Agri SA in Mpumalanga. At our side we host 30 Farmers Associations across the province. Our interest is regarding the protection of high arable agricultural land as well as water. These are both scarce and extremely essential natural resources for the sake of sustainable food production. Also requested to be registered as an I&AP.	Mr Davel as the representative of Mpumalanga Agriculture was registered as an I&AP. A Soils, Land Use and Land Capability Study and a profession opinion on Agricultural Theme Potential was conducted and are attached as Appendix D. 4.	Closed
Mpumalanga AgriSA		22/03/2022	Please send all information of this nature to Agri SA's head of natural resources – xxxx@agrisa.co.za	The information as was provided was included into the database and the information was emailed to the suggested recipient on 22 March 2022	Closed

10. ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE DEVELOPMENT FOOTPRINT ALTERNATIVES

This section provides a general description of the environment in which the project is located. The purpose of this section is to provide a perspective of the local environment within which the proposed Dispatch Rider Mining Project is located, with a view to identify sensitive issues/areas, which have been considered when conducting the impact assessment.

Existing baseline information and specialist studies, as well as studies undertaken specifically for this project, have been used to describe the current environment, are listed below:

10.1 Baseline Environment

This section has been compiled using specialist assessments. It is important to note that not all specialist assessments were updated with the revised project description (as per **Section 4.2.2**). As a result, figures and information extracted from these specialist reports may contain additional infrastructure that has since been removed following the project description revision.

10.1.1 Type of environment affected by the proposed activity

10.1.1.1 Topography and drainage

The project area is characterised by flat to slightly undulating topography of the Highveld. The topography surrounding the mine is shown in **Figure 10-1** below. The extended area surrounding elevations range from approximately 1 250 - 1 700 metres above mean sea level (mamsl), with the site located at approximately 1 550 - 1 600 mamsl (Prism, 2019a).

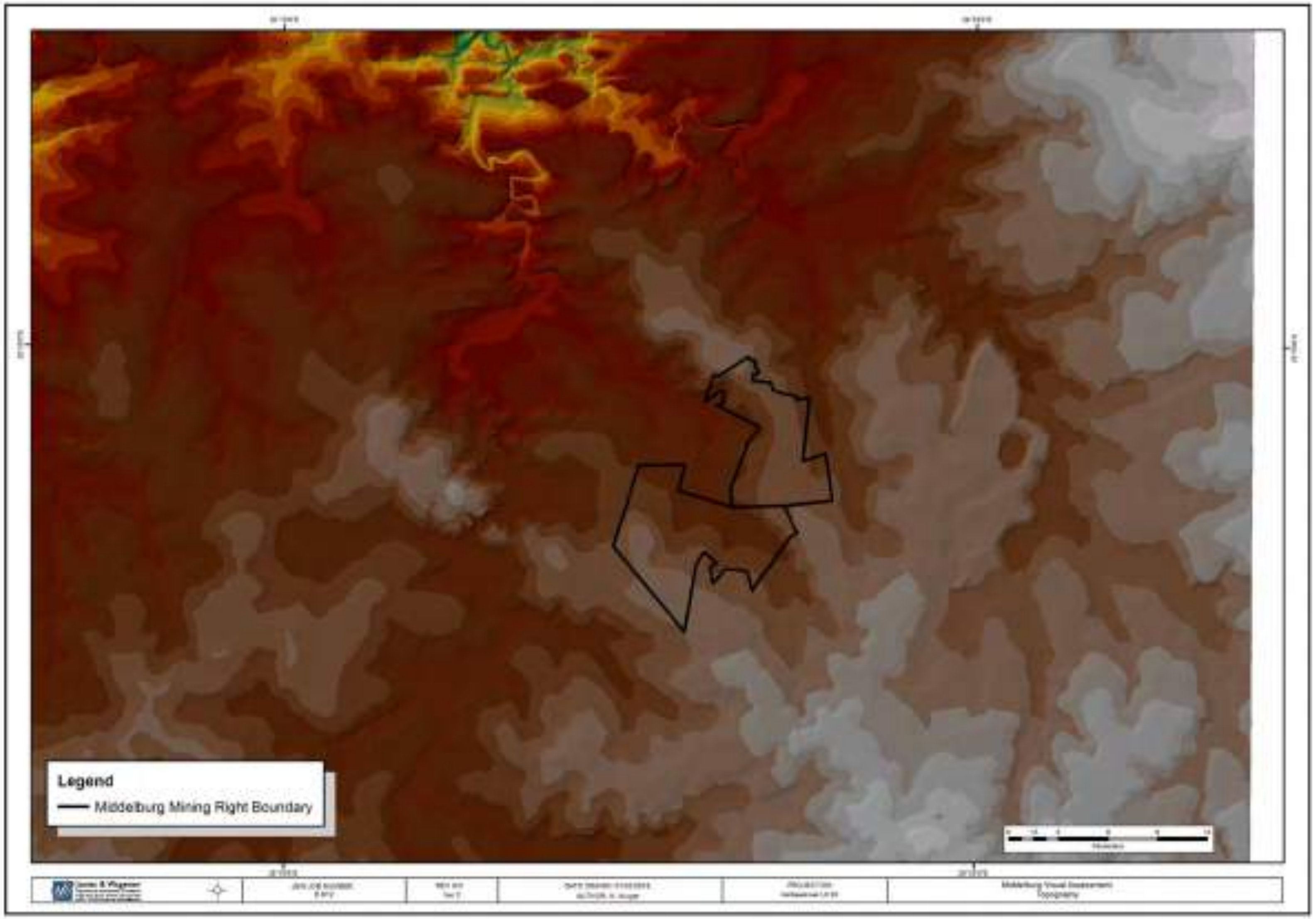


Figure 10-1: Topography of the MMS mining right area (J&W, 2016)

10.1.1.2 Climate

Temperature

MMS North is located in the Highveld climatic region, where the climate is characterised by warm summers and cold winters.

The study area is characterised by an average daily maximum temperature of approximately 24˚C. Winters are cold with incidences of sharp frost. Average minimum temperatures are approximately 7˚C, with the average number of days per year when the minimum temperature drops below 0˚C is 66 at Middelburg.

Precipitation and evaporation

Most of the precipitation is experienced during the summer months, occurring from November to March, predominantly as showers and thunderstorms. Mean annual precipitation (MAP) is approximately around 600 - 700 mm, with 85% of the annual rainfall occurring between October and March (J&W; 2016).

Mean annual evaporation (MAE) in the region is approximately 1 600 mm (J&W, 2016).

Wind

Significant topographical features, such as hills and mountains that usually have a bearing on the wind flow patterns and dispersal of pollutants are absent, therefore enabling pollutants to follow the predominant wind directions in the wider area.

Wind roses for Middelburg and eMalahleni between January 2018 and January 2019 are provided in **Figure 10-2** and **Figure 10-3** respectively. The dominant wind direction in Middelburg, during the period under investigation, is north-northwest with a frequency of occurrence around 16%. South easterly winds are the next dominant with a frequency of just under 14%. Calm conditions (wind speeds <1 m/s) occur just over 12% of the time (Prism, 2022). In contrast, the dominant wind direct in eMalahleni is from the east and occurs just over 16% of the time. The next most frequent wind direction is from the north and occurs around 12% of the time. Calm conditions occur much less frequently (about 1.18% of the time).

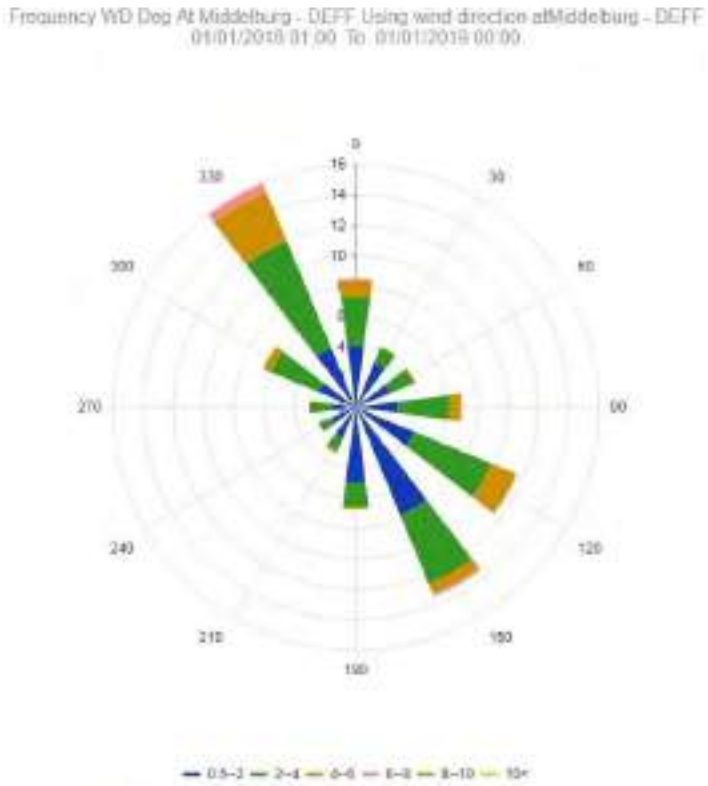


Figure 10-2: Wind Rose for Middelburg between January 2018 and January 2019 (Prism, 2022)

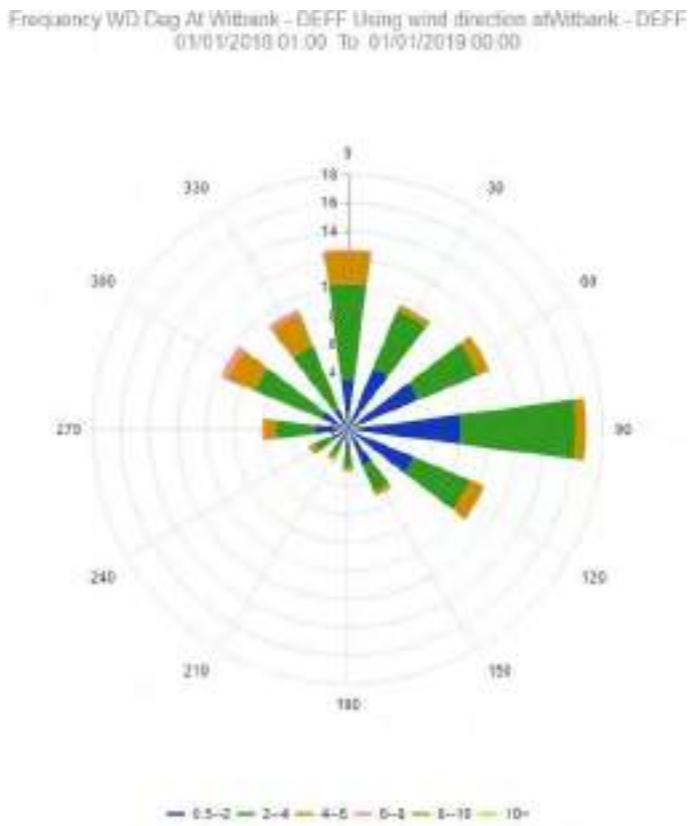


Figure 10-3: Wind Rose for eMalahleni between January 2018 and January 2019 (Prism, 2022)

10.1.1.3 Geology

The geology that hosts the coal resource being targeted is typical of the South African coal fields that occur on the eastern Highveld. The coal planned for mining is associated with the sediments of the Vryheid Formation of the Ecca Group and are of lower Permian age.

The Vryheid Formation consists of alternating sandstones and shales ranging between coarse and gritty sandstones to shales with all the intermediate variations between the two extremes.

These sediments were deposited on an undulated pre–Karoo floor which had a significant influence on the nature, distribution and thickness of many of the sedimentary formations, including the coal seams. Five coal seams underlie the weathered Karoo rocks in these mining areas namely the No. 1 to No. 5 seams of which the most prominent is the No. 2 coal seam which has widely been mined. Interburden consist mainly of sandstones and mudstones with carbonaceous shale closer to the coal seams (J&W, 2024a).

10.1.1.4 Soils, land use and land capability

The baseline soil, land use and land capability assessment were undertaken by Earth Science Solution (ESS) in 2016. This study was done as part of an application for an EA for the MMS North (then referred to as Wolvekrans North) to amend the authorised mining areas. An update was provided in the form of a professional opinion by ESS in 2022, in which the Agricultural Potential Theme was assessed.

Soils

The soils encountered can be broadly categorised into four major groupings, with a number of dominant and sub dominant forms that characterise the area of concern. The major soil forms are closely associated with the lithologies from which the soils are derived (in-situ formation) as well as the topography and general geomorphology of the site, with the effects of slope and attitude of the land forms and the pedogenetic processes affecting the soil formation and ultimately the soil forms mapped.

In summary, the *deeper red and red brown* sandy clay loams returned fine grained apedel to single grained textures, pale brown to red/brown friable topsoils that exhibit a plough pan on areas that have been or are presently cultivated, and strong colouration in the subsoil horizon (strong reds and red/browns). The clays vary from as low as 12% in the "A" horizon (average = 15%) to as high as 35% in the "B" horizon.

The water holding capabilities are considered moderate to high (80 mm/m to 140 mm/m) with good soil water retention, but generally are also adequately drained (moderate permeability) and available for plant utilisation/uptake. It is noted that the underlying "C" horizon is generally quite restrictive and forms an inhibiting layer to soil water, the metal staining and occurrence of ferricrete nodules a testament to water retention at or near this interface.

These soils are considered of the better agricultural resource in the study area and have been cultivated to cereal crops in almost all cases mapped. These soils classified as deep Hutton (Hu) forms for the most part with Clovelly and Griffin form soils where the red apedal form interfaces with the yellow and yellow brown apedal Clovelly form.

Aligned with and generally, contiguous to the Hutton (Hu) forms described above are a range of *brown and yellow brown* sandy loams and sandy clay loams that classify as Clovelly (Cv) form. The Clovelly are often slightly shallower in rooting depth on the "B", but have a deeper saprolitic horizon in the form of the underlying "C". The colours, although paler are considered strong, a factor that is associated with the generally fine grained texture and moderately low infiltration rates that are found on soils derived from fine grained sediments (shales, siltstones and sandstones of the Karoo Formation). The flat to slightly undulating topography has resulted in the in-situ formation of many of the soils, and a moderately predictable pedogenisis for the site.

The *hydromorphic form* soils mapped are of variable depth, texture and structure, comprising deep sandy loams with strong brown and yellow brown colour on a distinctive ferruginous gravel and/or thin soft plinthic layer (less than 5 cm on average) (grey with yellow red flecking), to shallow and highly leached wet and saturated forms.

The ferruginous gravels are generally not competent enough (hard) to classify as hard plinthite, albeit that relic hard pan ferricrete horizons were mapped in close proximity to the major pan structure.

These features are associated with the retention of soil water within the vadose zone (lack of preferred horizontal flow due to clay retention and the barrier effect of the horizontal bedding of the underlying lithologies) has resulted in the formation of an inhibiting layer (hard rock and lateritic horizons) within some of the soil profile, and the development of degrees of wetness just above the weathering rock layer/saprolite. This inhibiting layer or barrier to water movement enhances the horizontal versus vertical flow within the profile, a factor that is considered important to the ecology and biodiversity of an area and the mechanism around which the development of hydromorphic soil occurs. At its extreme the inhibiting layer comprises varying degrees of iron silicate or laterite formation, a feature referred to as hard pan ferricrete or hard plinthite in soil terms. These soils comprise for the most part Katspruit, Westleigh and Avalon form soils.

The result of water retention in the soil over time is noted where signs of wetness at or close to the soil rock interface occur. This is generally reflected in metal staining on leached surfaces (red and yellow flecking on grey chroma colours). The degree of wetness and position of the wet based soils in the land form have contributed to the classification of these soils.

These *transitional* form soils are often associated with a narrow hard sandstone outcrop on the shallower forms that occur in the lower midslope/lower slopes just outside of the streams and river environs.

These soils classify on the one extreme as shallow Avalon forms where significant leaching has occurred (W2 and W3), and as Pinedene form on the other extreme where the strong colours and degree of wetness is deeper and less obvious (W1). Wetness in the case of the Pinedene and deep Avalon form is sometimes noted in the “A” horizon associated with brown and strong yellow brown colours.

Isolated occurrences of Longlands (pale grey clay poor “E” on strong mottles of yellow and red “B”) and Katspruit form (dark grey with strong red and yellow mottles - > 40% clay) were noted where lower slope seeps (Longlands) and Pan structures occur (Katspruit) respectively. The Longlands mapped are associated with active springs and/or seepage points and are saturated for at least two thirds of the year (W3).

The occurrence of ferricrete horizons within the soil profile classify as “relic” land forms for the most part, albeit that areas of more recent laterite development were mapped in association with the pan structures.

As a generalised statement, the relic land forms are commonly associated with mid and lower hillside seeps, springs and “sponge zones”, all of which are associated with possible wetland development.

These layers occasionally outcrop at surface as ouklip or hardpan ferricrete and are also associated with many of the pan structures found within the sedimentary profile and landscape of the coalfields in this region.

These features are important to the ecological and biodiversity cycle and are regarded as sensitive to highly sensitive features.

The “transition zone” soils contribute to the wetland catchment systems and act as the sponge zones/stores and feeders of soil water that contribute to the base flow of the streams and rivers.

These areas also need to be evaluated as part of the sites of moderate to high sensitivity.

When considering the sensitivity of a wet based soil, the depth to the inhibiting layer and the amount of redox reaction present (noted in the degree of mottling and more importantly the greyness of the matrix soil) within the profile dictates the degree of wetness in terms of the “wetland delineation classification” and will have an influence on the ecological sensitivity of the site.

The grouping of the soils into dominant and sub dominant groupings is an attempt to simplify the results into meaningful units that can be used by the mining engineers and rehabilitation contractors. The dominant soil groups are indicated in **Figure 10-4.**

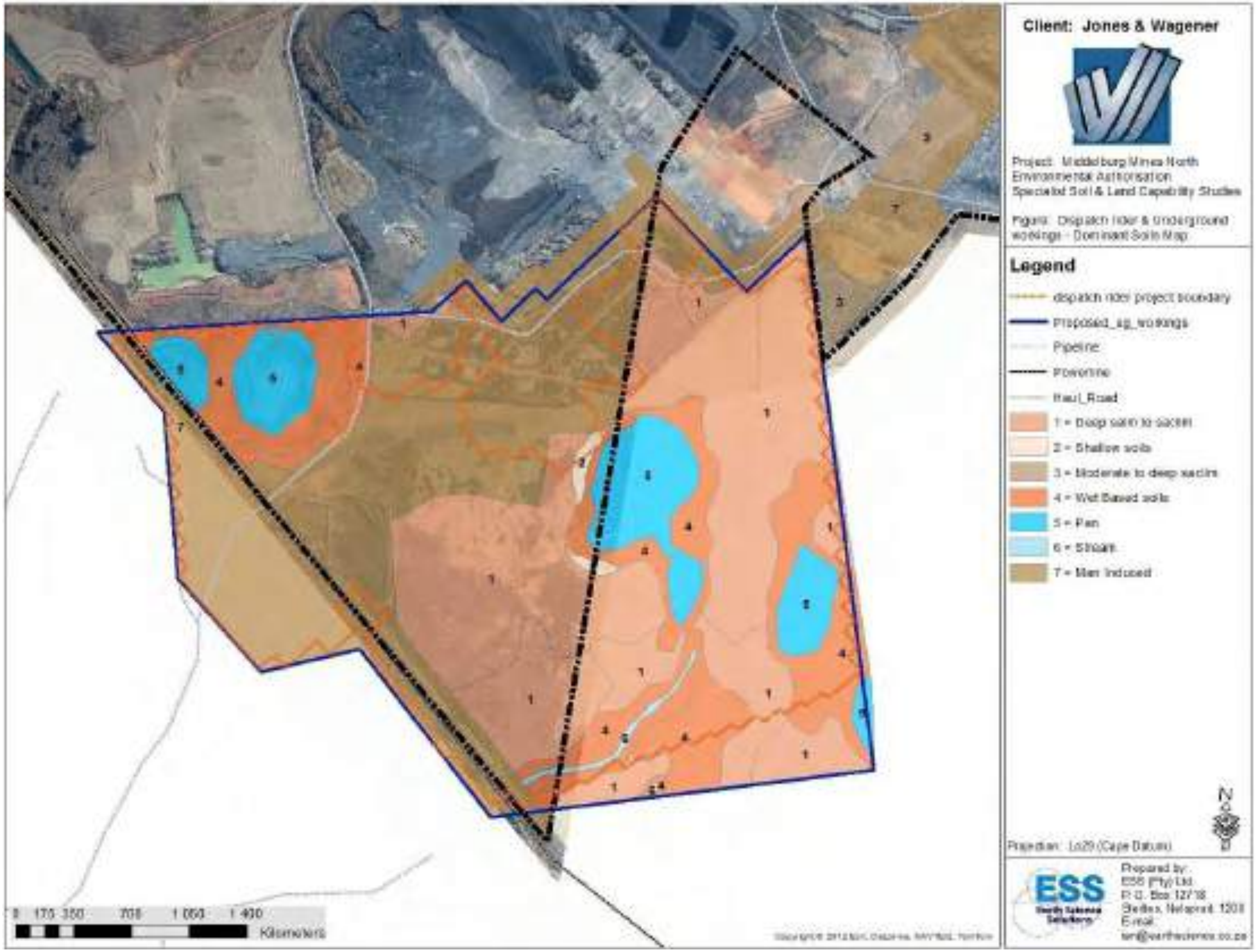


Figure 10-4: Dominant Soils Map (ESS, 2016)

Land capability

The land capability of the proposed underground mining area is shown in **Figure 10-5**.

Arable Land

There are significant areas of arable land potential soils associated with the project area, with contiguous areas of moderate to deep sandy loams and sandy clay loams that rate as having an arable status (>750 mm) in terms of depth and soil structure. Fertility and rainfall contribute to the lower-than-average yields recorded on ambient soil in much of the project area. These variables reflect the natural conditions, and do not include any man induced additives such as fertilisers or water (no irrigation).

Grazing Land

The classification of grazing land is generally confined to the shallower (less than 700 mm) and transitional zone soils that are well drained. These soils are generally darker in colour and are not always free draining to a depth of 750 mm but are capable of sustaining palatable plant species on a sustainable basis, especially since only the subsoil's (at a depth of >500 mm) are periodically wetted. Significant portions of the study area classify as low intensity grazing land or wilderness status.

Wilderness / Conservation Land

The shallow rocky areas and soils with a structure stronger than strong blocky are characteristically poorly rooted and support at best very low intensity grazing, or more realistically are of a wilderness character and rating.

Wetland (areas with wetland status soils)

Wetland zones are dominated by hydromorphic soils (wet based) that often show signs of some structure and have vegetation that is associated with seasonal or permanent wetting of the soil profile.

Wetland soils are generally characterised by dark grey to black (organic carbon) in the topsoil horizons and are often high in transported clays and show variegated signs of mottling on gleyed backgrounds (pale grey colours) in the subsoils.

A significant proportion of the study area was classified as having wet based soils at variable depths, with shallow hydromorphic soils occurring within the proposed footprint of disturbance. These zones are considered highly sensitive and vulnerable due to their ability to hold water through the summers and into the dry winter seasons.

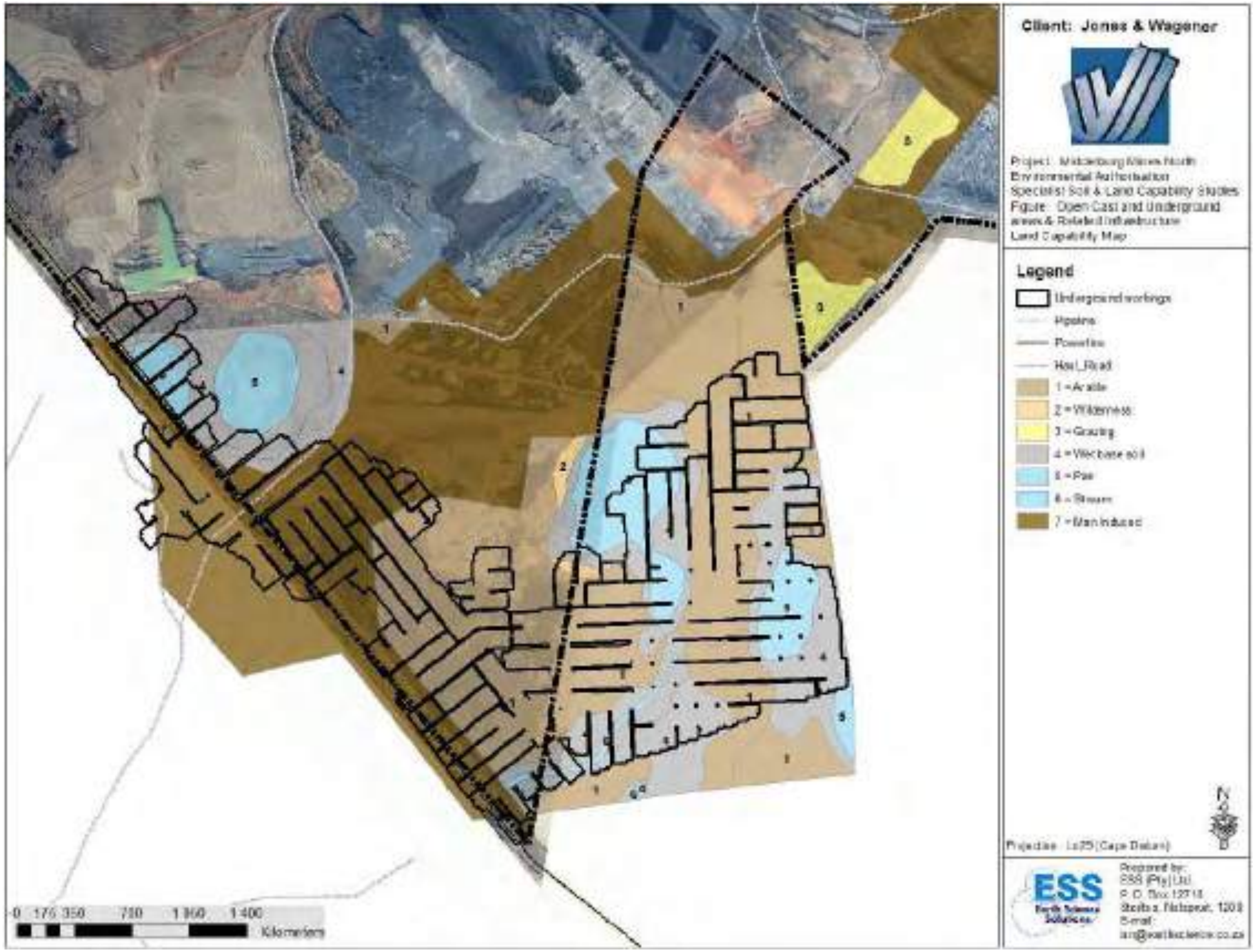


Figure 10-5: Land Capability Map (ESS, 2022)

Land use

The land use of the proposed underground mining area is shown in **Figure 10-6**. In general, the land use of the study area is altered, with a significant portion of the study area having been changed from its original grassland biome to commercial farmlands (cereal crops and staple food products) and more recently to mining.

The lower lying areas associated with the wetlands and wet based soils are for the most part unchanged, albeit that cultivation and utilisation of areas within this zone for livestock grazing and crop production are noted as altered and of a brownfields nature.

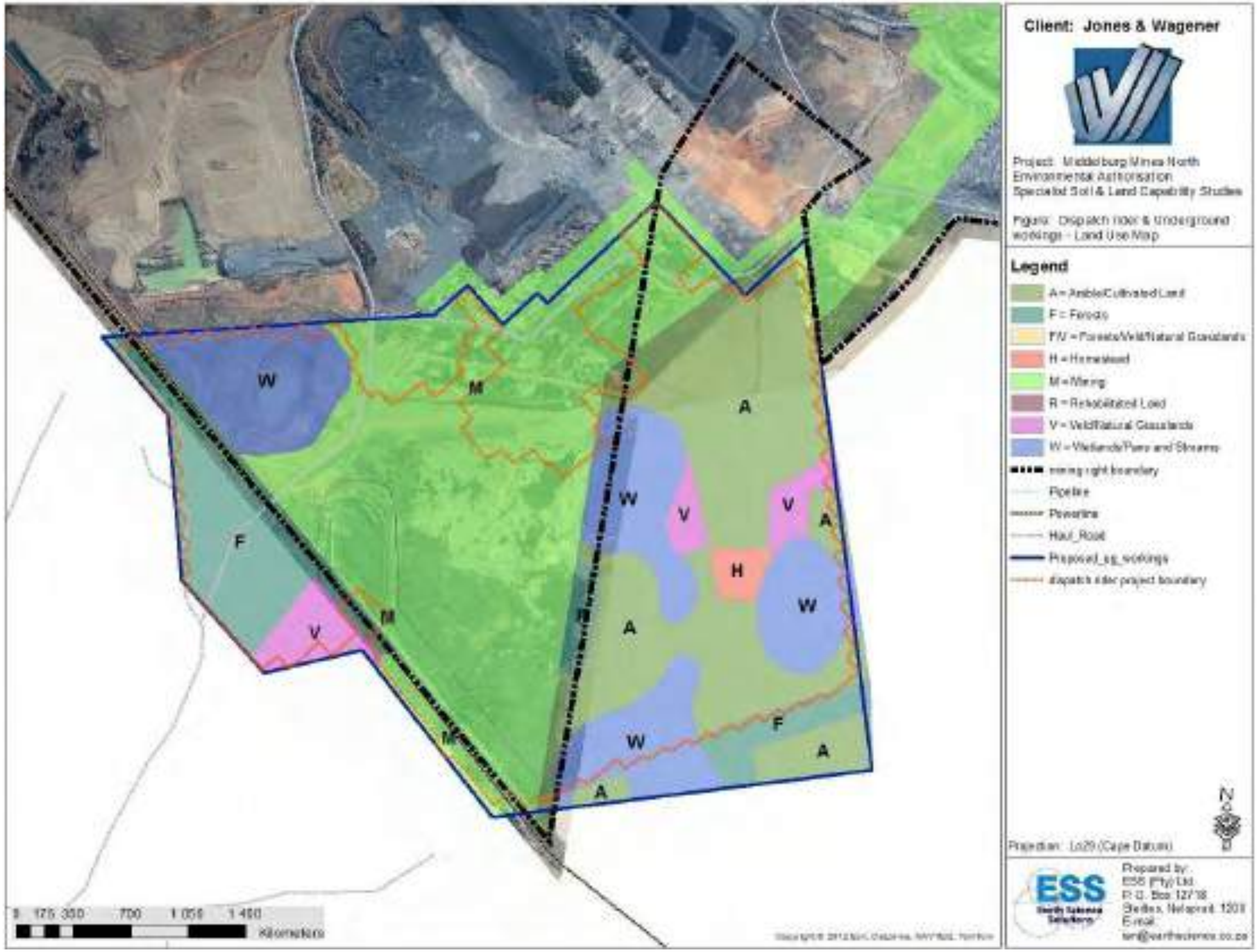


Figure 10-6: Land Use (ESS, 2016)

10.1.1.5 Surface water

A baseline surface water study was undertaken by J&W in 2019 and updated in 2022 and 2024 (J&W, 2024b) to characterise the surface water regime at the site and the catchments in which it resides in terms of surface water quality and quantity.

The surface water quality baseline was updated using monitoring data supplied by Seriti for the area for the period October 2016 to December 2021.

In addition, as part of the baseline assessment carried out by J&W for Wolvekrans Colliery North Life Expansion project compiled in 2015/2016, a floodline determination was conducted for the site, along the Vaalbankspruit and along the Spookspruit diversion. This included the floodline hydrology and the determination of the 1:50 and 1:100 year Floodlines.

MMS North is situated within the catchment area of the Klein-Olifants and Olifants Rivers. These catchments make up part of the Loskop Dam catchment. The Dispatch Rider project area falls within quaternary sub-catchment B11G and B11H of the Olifants River Water Management Area. The proximity of the project area in relation to these quaternary catchments is indicted on **Figure 10-7**.

Both the Niekerkspruit (to the north of the Dispatch Rider project area) and the Spookspruit (to the east and north of the Dispatch Rider project area) flow through the MMS North property and have been diverted around the mine workings (refer to **Figure 10-8**). The runoff from the Hartbeesfontein and Goedehoop sections of the colliery eventually drains to the Loskop Dam.

The Boesmanskranspruit historically traversed the Boschmanskrans section (to the south of the Dispatch Rider project area within MMS South), but the natural drainage system was diverted when the first opencast operations commenced in the area. The Boesmankransspruit, originally consisted of a south to north draining stream, and an east west draining stream, which joined the south to north draining stream. The combined stream flowed into a northern direction into the Douglas Dam.

The upper reaches of these tributaries currently flow into a clean water system around the Boschmanskrans section mine workings, and into the Boesmankransspruit, which flows via the Douglas Dam into the Witbank Dam.

From the Loskop Dam, the Olifants River flows through the central parts of the Mpumalanga Province and the Kruger National Park, into Mozambique. It joins the Limpopo River and discharges to the Indian Ocean on the east African coastline.

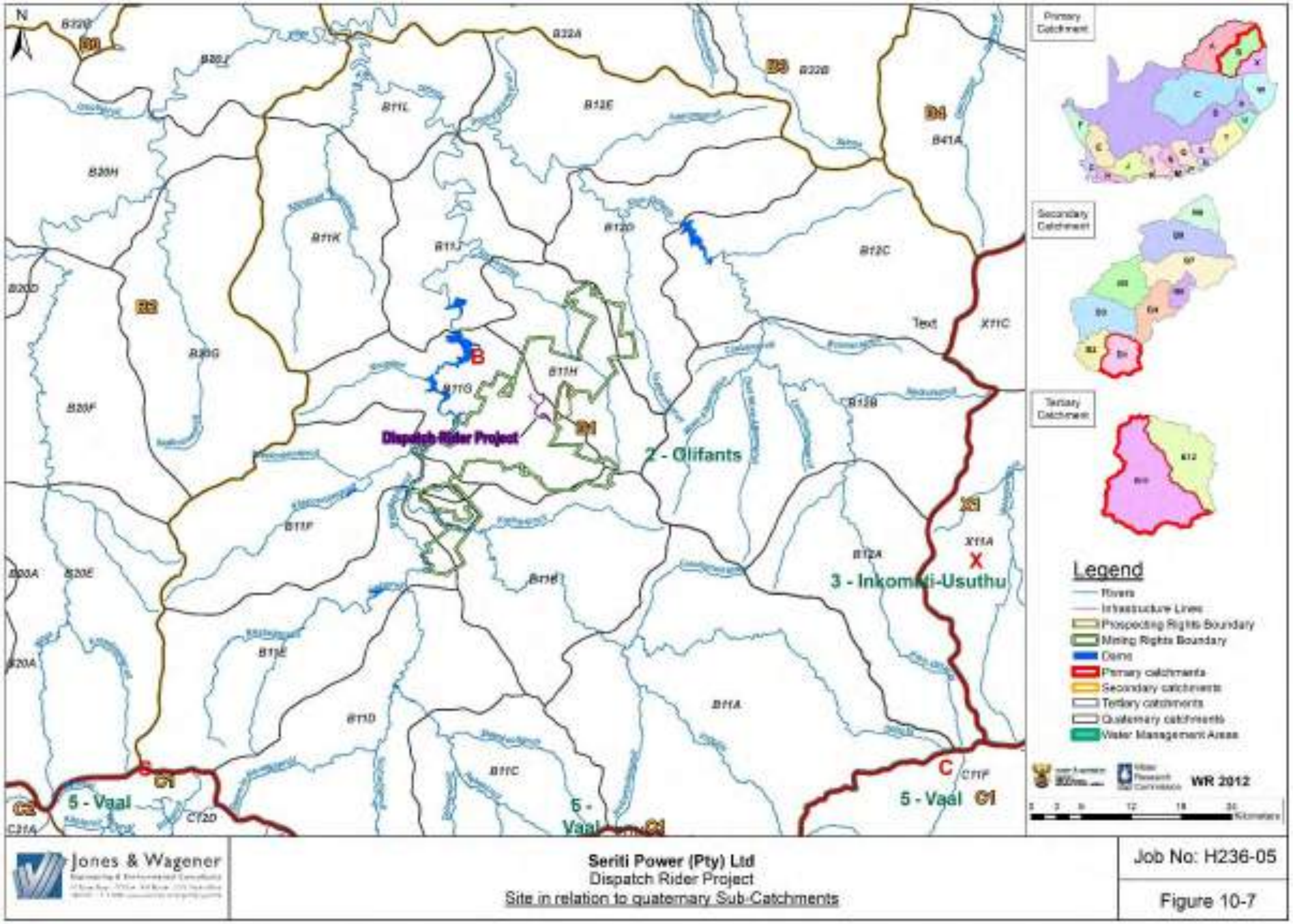


Figure 10-7: Site in relation to quaternary sub-catchments (J&W, 2024b)

Mean annual runoff

The Mean Annual Runoff (MAR) for the catchment areas of MMS North that were defined as part of the MAR study as taken from the 2002 EMPR is summarised in **Table 10-1**.

Table 10-1: Mean Annual Runoff (MAR) for catchment areas at MMS North (J&W, 2024b)

NODE LOCATION	DESCRIPTION	MAR ($X10^6M^3$)
A	Sub catchment immediately upstream of the mine.	3.1
BN	Sub catchment upstream of the receiving water body and immediately downstream of the mine.	7.1

Surface water use

The main surface water users in the area include Loskop Dam and various farmers. The main farming activities include dairy farms and grazing, as well as crops for market garden produce.

Surface water users in the vicinity of the mine include the following:

- Farmers in the area using water for agricultural purposes. The main farming activities include dairy farms and grazing, as well as crops for market produce;
- The eMalahleni Local Municipality, as the major surface water user from the Witbank Dam. The foremost use of the water will therefore be drinking water and industrial supply;
- Recreational water users at the Witbank Dam;
- Eskom (i.e., Duvha Power Station) also abstracts water from the Witbank Dam for industrial purposes;
- Other coal mines such as Shanduka Coal, BlackWattle, Optimum Eikeboom section, the Pienaarsdam resort, as well as the STLM.

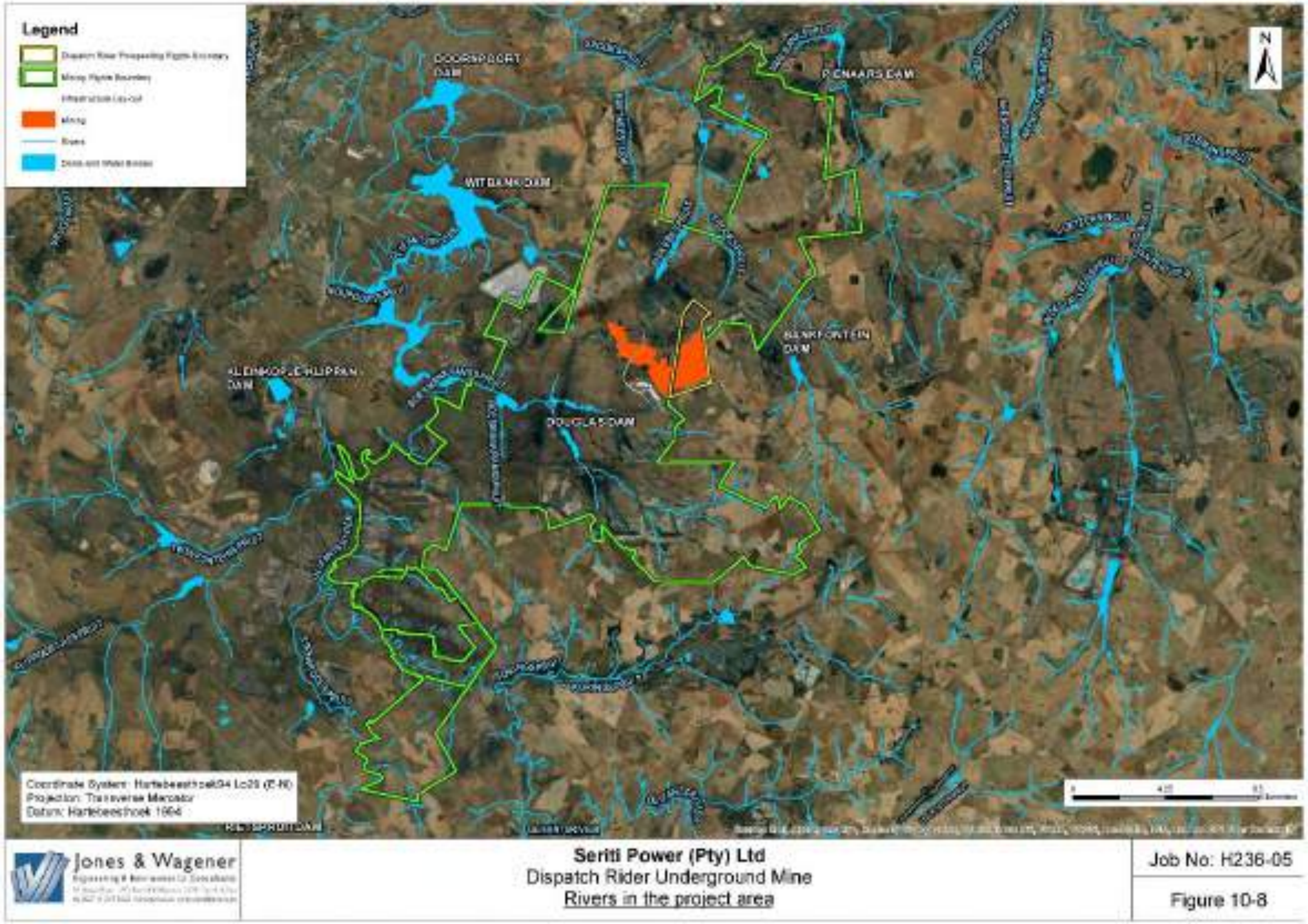


Figure 10-8: Rivers in the project area (J&W, 2024b)

Dry Weather Flow

The dry weather flow (DWF) for MMS North was extracted from the 2002 EMPR using the total of the monthly average rainfall figures of the four dry months of the year, namely May, June, July and August. This was found to equate to 46.4 mm.

The expected DWF for the various catchments is presented in **Table 10-2** and the catchments considered can be seen in **Figure 10-9**.

Table 10-2: Computed dry weather flows of the affected rivers at MMS North (J&W, 2024b)

LOCATION	DESCRIPTION	DRY WEATHER FLOW ($X10^6M^3$ PER MONTH)
A	Sub catchment immediately upstream of the mine.	0.19
BN	Sub catchment upstream of the receiving water body and immediately downstream of the mine.	0.45

Flood Peaks and Volumes

Flood peaks for MMS North were calculated for the 2002 EMPR using the Rational Method and unit Hydrograph techniques as shown in **Table 10-3**.

Flood peaks and volumes for different recurrence interval floods were determined at various points on the mine, as indicated in **Figure 10-9**. Flood peaks for various recurrence intervals were computed using the Rational Method and the Unit Hydrograph Method.

As part of the floodline determination in 2015, flood peaks were computed along the Spookspruit diversion, as well as along an unnamed tributary of the Vaalbankspruit. Catchment areas and slopes were determined from the contour plan provided by the client, as well as the 1:50 000 series topographical maps.

There are a multitude of methods available for the determination of peak flows, with the applicability of each method depending largely on catchment area, but also the region in which the peak flow is being determined.

The peak flows calculated using each method were evaluated for each node and a representative value adopted. The 1:50, 1:100, 1:200 year and Regional Maximum Flood (RMF) for each node, together with catchment areas, are presented in **Table 10-4**.

Table 10-3: Peak flows (m^3/s) for various recurrence intervals (J&W, 2024b)

CATCHMENT	RECURRENCE INTERVAL	FLOOD PEAKS (M^3/S)
A	20 year	122
	50 year	192
	100 year	270
	RMF	511
BN	20 year	195

CATCHMENT	RECURRENCE INTERVAL	FLOOD PEAKS (M^3/S)
	50 year	307
	100 year	432
	RMF	767

Table 10-4: Peak flows (m^3/s) for various recurrence intervals (J&W, 2024b)

CATCHMENT	AREA (KM^2)	RECURRENCE INTERVAL	FLOOD PEAKS (M^3/S)
A2	94.10	10	300
		20	409
		50	596
		100	799
		RMF	562
A8	5.40	10	27
		20	41
		50	60
		100	77
		RMF	190

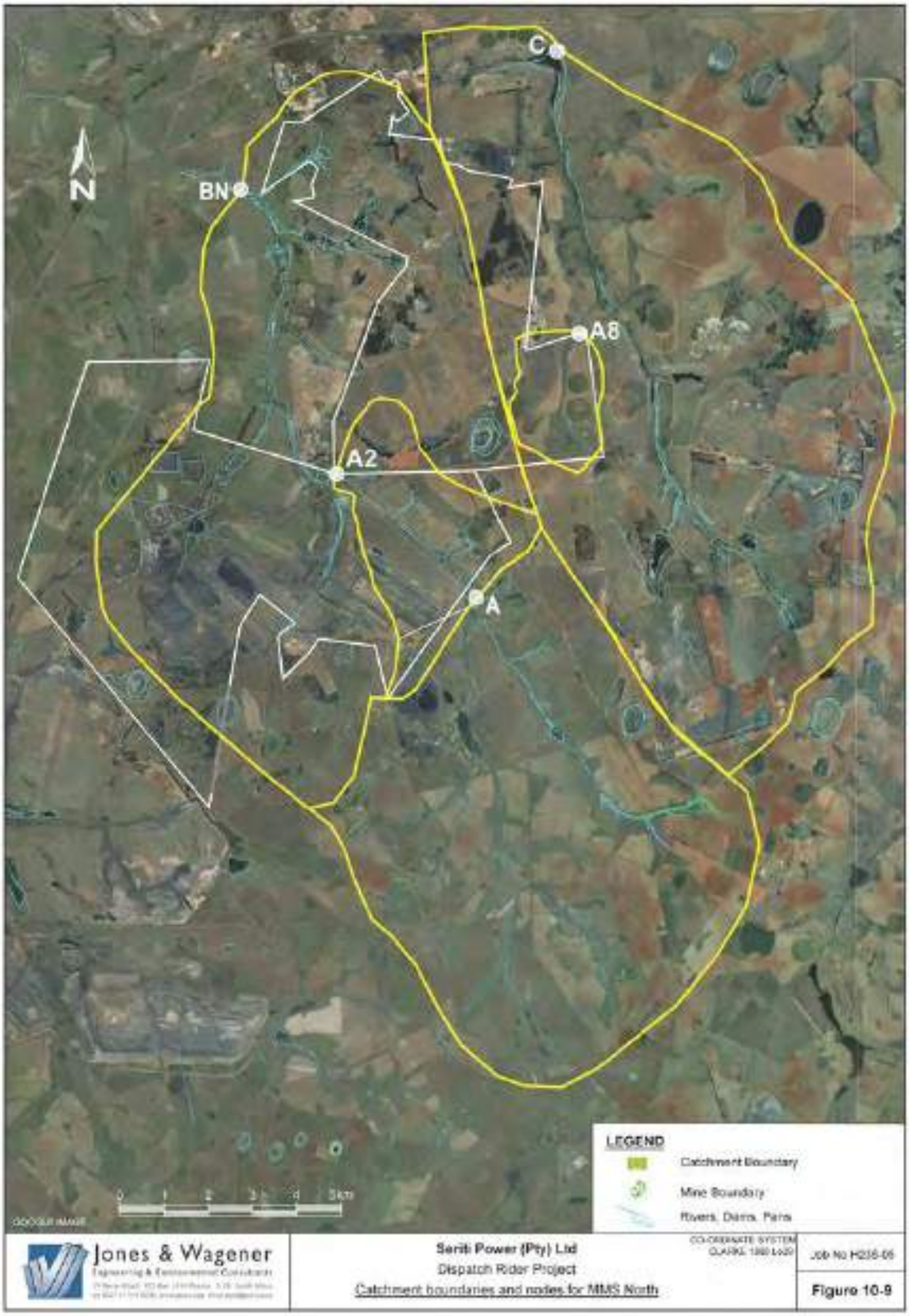


Figure 10-9: Catchment boundaries and nodes for MMS North (J&W, 2024b)

Floodlines

Floodlines for MMS North were determined in 2015 based on the calculated flood peaks at each node, as indicated in **Figure 10-10**. The floodline model was developed using the River and Flood Analysis Module of AutoCAD Civil 3D Ultimate, in which a steady flow, backwater analysis was performed. The River and Flood Analysis Module is a module in the AutoCAD Civil 3D Ultimate software package that provides a CAD interface to the HEC-RAS River Modelling System. HEC-RAS was developed by the Unites States Army Corps of Engineers and is considered industry standard software for floodline analysis in many countries, including the United States, the United Kingdom, Europe, Australia and South Africa.

An electronic digital terrain model, in the form of a LiDAR survey with contours at 0.5 mm intervals was provided by Seriti and utilised in the model.

When determining floodlines, the streams were defined by inputting a number of cross sections along the length of the watercourse. The cross sections are determined from the contour data. Cross sections were measured at approximately 20 m intervals on average, as well as at significant features which may act as controls, such as bridges or culverts.

The 1:50 and 1:100 year floodlines were determined for the Spookspruit diversion and an unnamed tributary of the Vaalbankspruit as part of the study done in 2015. These floodlines are indicated in **Figure 10-10**. This figure also includes floodlines carried out during previous studies.

It is noted that the proposed infrastructure development will not encroach on any of the floodlines delineated.

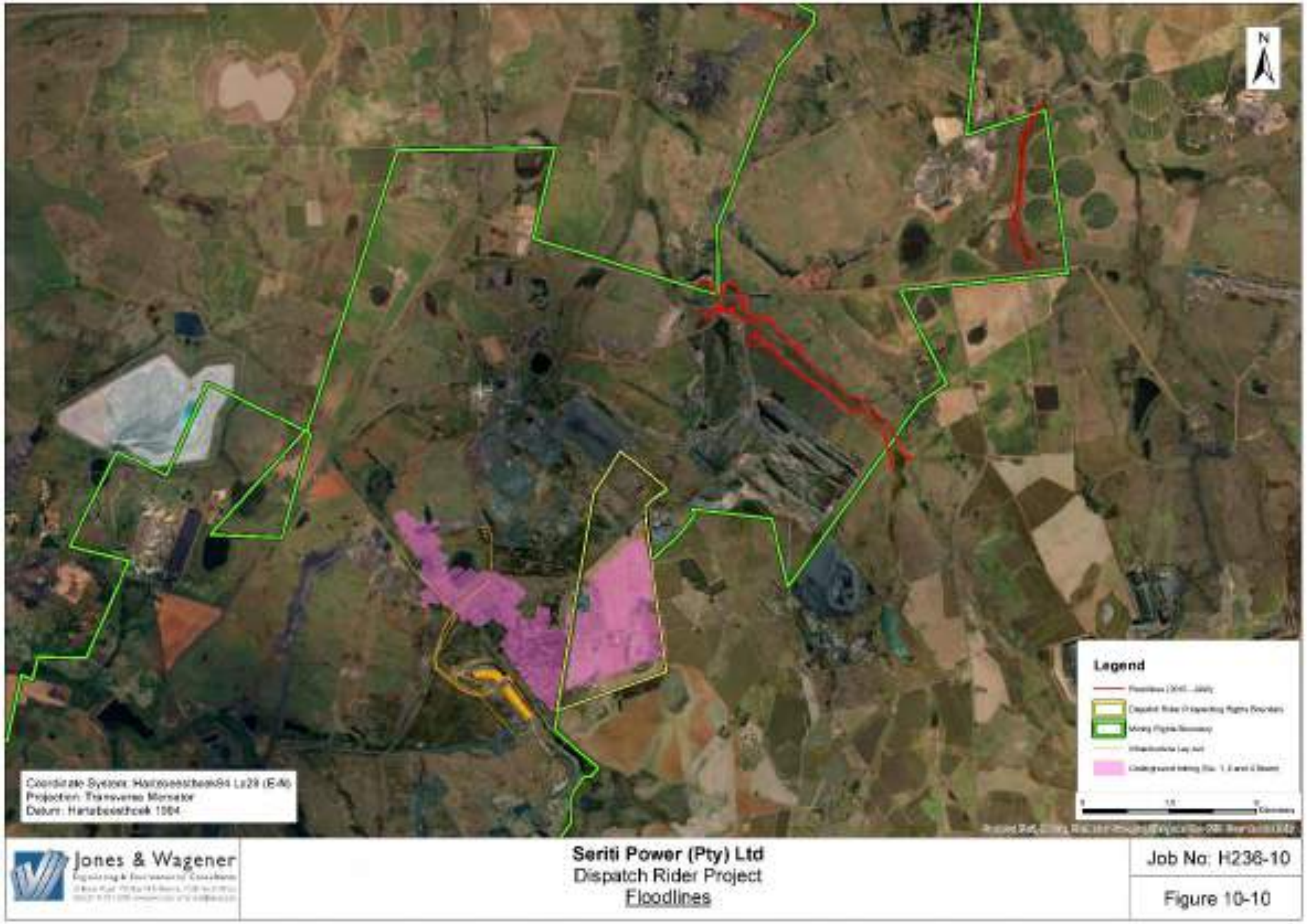


Figure 10-10: Floodlines for MMS North (J&W, 2024b)

Surface water quality

MMS is an existing mine and has a monitoring programme in place and therefore the available surface water quality data was used. Water quality data, for several locations around the site, extending from August 2012 to May 2015 and October 2016 to December 2021 was received from Seriti. Water quality data from the 2015/2016 study was included in the assessment as well.

The surface water monitoring locations are illustrated in **Figure 10-11** and the coordinates of these points, as received from Seriti are given in **Table 10-5**.

Table 10-5: List of surface water monitoring locations (J&W, 2024b)

SAMPLING LOCATION	DESCRIPTION	COORDINATES	
D20	Tinys eyes in game camp	S25°55.379'	E29°23.226'
D20b	Small dam in game camp	S25°55.731'	E29°23.507'
2179 - S50	Niekerkspuit upstream	S25°55.576'	E29°24.389'
2180 - S51	Niekerkspruit instream	S25°55.364'	E29°24.523'
2181 - S52	Niekerkspruit Exit	S25°55.006'	E29°25.016'
S55	Spookspruit Entrance (SPK1)	S25°56.655'	E29°27.978'
S54	Spookspruit Bankfontein Exit (SPK3)	S25°55.345'	E29°26.181'
S53	Spookspruit Exit (SPK4)	S25°55.185'	E29°25.679'
S63	Spookspruit Middelburg Road	S25°51.533'	E29°23.831'
Spk. spruit Joins Olifants	Spookspruit. Joins Olifants	S25°48.633'	E29°19.471'
Olifants before Spk Spruit	Olifants before Spookspruit	S25°48.693'	E29°19.464'
Downstream of Niekerkspruit	Downstream of Niekerkspruit	S25°54'26.84	E029°25'17.51
S107 Douglas Dam Inlet	South of Dispatch Rider study area	S26°0'45.9	E029°25'17.51

The summarised baseline water quality results, for the data provided by Seriti for the periods August 2012 to May 2015 and October 2016 to December 2021 are shown in **Table 10-6** and **Table 10-7** respectively. The average, maximum and minimum concentrations are presented, together with the coefficient of variation. It is important to note that the 2016 Resource Quality Objectives (RQO) do not provide limits for all constituents and therefore the South African National Standards (SANS) standards for drinking water quality (SANS 241) were used in such cases. However, there are certain constituents for which no limitations are specified.

For the abovementioned tables, values in highlighted in red indicate where the RQO for the Olifants River catchments **or** the SANS 241 guidelines are exceeded.

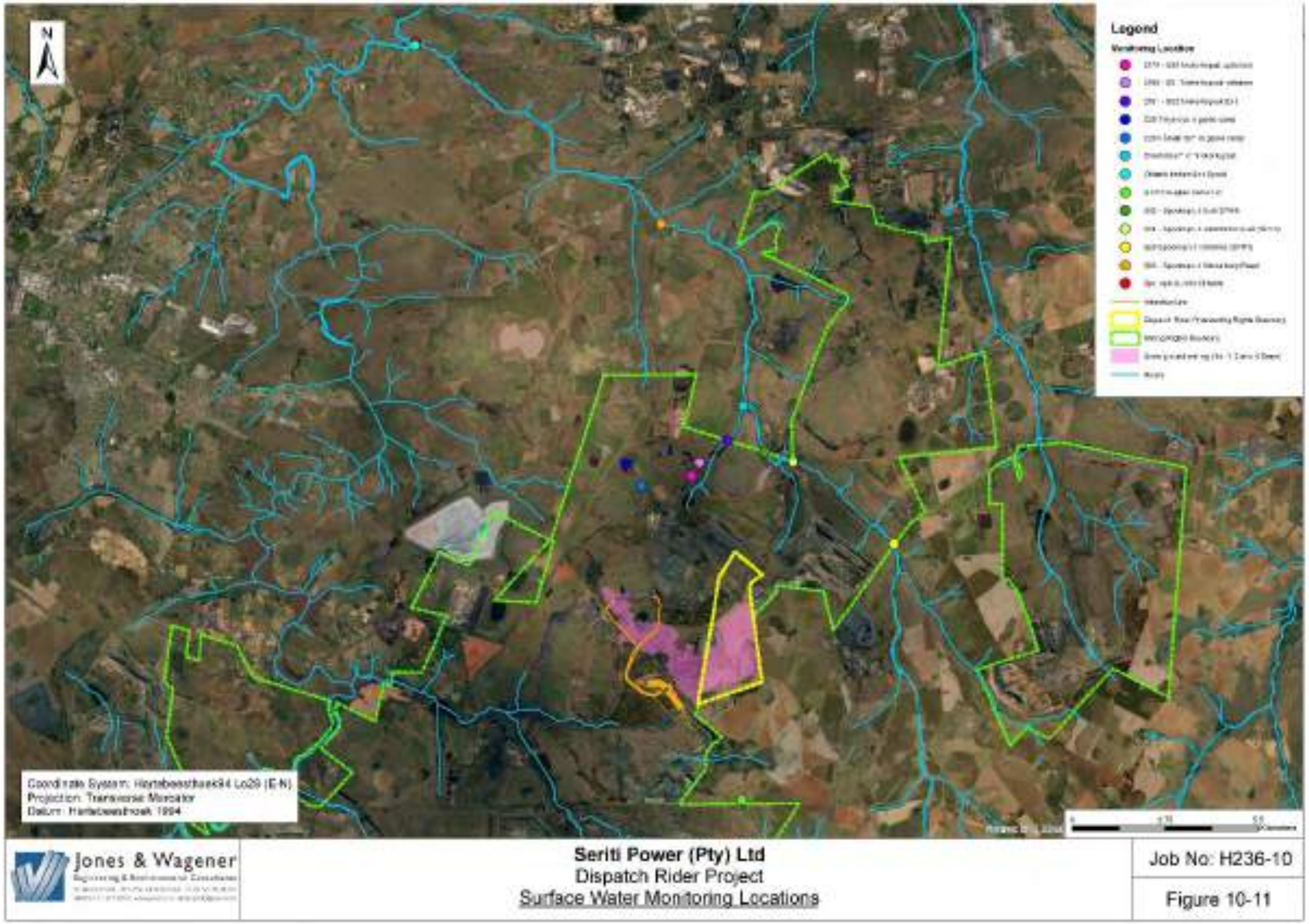


Figure 10-11: Surface water monitoring locations (J&W, 2024b)

Table 10-6: Water quality monitoring results (August 2012 to May 2015) (J&W, 2024b)

Mine	Sample Location	Number of Data Points		TALK (Total Alkalinity)	EC (Electrical Conductivity)	pH	TDS (Total Dissolved Solids)	SUSP_SOLID (Suspended Solids)	Ca (Calcium)	Cl (Chloride)	Mg (Magnesium)	N_NO3 (Nitrate)	K (Potassium)	Na (Sodium)	SO_4 (Sulphate)	Al (Aluminium)	Fe (Iron)	Mn (Manganese)
	SANS 241 (2015) Drinking Water Standard				170	5 -9.7	1200			300		11		200	500		2	0.4
	RQO Olifants River IUA1 RU 11 (2016)				111							4			500			
D20 Tings eye in Game Camp	S25°55.379'	33	Average	34	20	7	132	10	8	24	5	0	5	24	29	0	0	0
	E29°23.226'		Maximum	49	28	10	196	71	13	35	10	1	23	36	49	0	1	0
			Minimum	19	15	0	96	1	5	16	0	0	3	5	16	0	0	0
			Coeff of Variation%	0	0	0	0	2	0	0	0	1	1	0	0	1	1	1
D20B Small Dam in Game Camp	S25°55.731'	18	Average	19	19	7	137	15	12	19	6	0	8	16	54	0	1	1
	E29°23.507'		Maximum	32	64	9	420	47	48	28	13	0	19	26	249	1	4	10
			Minimum	6	12	4	88	3	8	11	2	0	0	10	24	0	0	0
			Coeff of Variation%	0	1	0	1	1	1	0	0	0	0	0	1	2	1	3
S53 spookspruit Exit	S25°55.185'	32	Average	62	304	7	3064	27	290	11	372	0	15	44	2165	0	1	5
	E29°25.679'		Maximum	216	522	8	6298	63	566	25	888	1	32	83	4353	0	10	16
			Minimum	8	122	4	456	7	103	2	77	0	8	26	612	0	0	0
			Coeff of Variation%	1	0	0	0	1	0	0	1	1	0	0	0	1	3	1
S54 Spookspruit Exit	S25°55.330'	33	Average	140	229	7	2307	26	280	12	212	0	12	45	1470	2	0	4
	E29°26.200'		Maximum	318	398	8	4578	78	604	39	483	1	25	84	3041	32	2	17
			Minimum	8	48	4	380	1	45	2	33	0	6	10	212	0	0	0
			Coeff of Variation%	1	0	0	0	1	0	1	1	1	0	0	1	4	1	1
S55 Spookspruit entrance	S25°56.638'	33	Average	43	131	5	1211	18	134	20	90	0	10	38	766	10	1	8
	E29°27.972'		Maximum	77	424	7	4666	34	422	69	631	1	31	100	3244	38	3	54
			Minimum	7	17	3	124	6	11	9	8	0	4	10	44	0	0	0
			Coeff of Variation%	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
S63 Spookspruit Mms road	S25°51.436'	33	Average	40	236	6	2397	20	243	11	240	0	14	42	1613	4	1	17
	E29°23.777'		Maximum	491	413	7	4516	141	403	26	535	0	28	61	3187	28	9	67
			Minimum	5	67	4	532	3	50	7	50	0	1	20	321	0	0	0
			Coeff of Variation%	3	0	0	0	1	0	0	0	0	0	0	0	2	3	1
Spookspruit Joins Olifants	S25°48'749	63	Average	88	119	7	1068	49	113	28	99	2	11	46	631	0	0	1
	E29°19'348		Maximum	257	358	8	3638	518	432	57	408	8	23	83	2394	4	2	17
			Minimum	8	14	7	220	1	16	9	16	0	5	18	79	0	0	0
			Coeff of Variation%	1	1	0	1	2	1	1	1	1	0	0	1	3	1	2
Olifants Before Spookspruit	S25°48'749	65	Average	66	144	7	1328	23	138	24	126	2	11	45	811	0	0	3
	E29°19'557		Maximum	135	406	8	4392	180	466	54	421	10	31	164	2869	0	1	30
			Minimum	6	30	6	218	1	21	7	14	0	4	18	75	0	0	0
			Coeff of Variation%	1	1	0	1	1	1	1	1	1	1	0	1	1	1	2

Table 10-7: Water quality monitoring results (October 2016 to December 2021) (J&W, 2024b)

Sample Location		pH Value at 25°C	Conductivity in mS/m	Total Dissolved Solids	Suspended Solids	Iron as Fe	Total Alkalinity as $CaCO_3$	Calcium as Ca	Chloride as Cl	Magnesium as Mg	Nitrate & Nitrite as N	Potassium as K	Sodium as Na	Sulphate as SO_4	Aluminium as Al	Manganese as Mn
SANS 241 (2015) Drinking Water Standard		**5.0-9.7**	**170**	**1200**		**2**			**300**		**11**		**200**	**500**		**0.4**
RQO Olifants River IUA1 RU 11 (2016)			**111**								**4**			**500**		
D20b Small dam in game camp	Average	6.67	24.66	155.74	12.97	0.43	22.60	12.93	17.06	7.53	0.59	7.59	15.23	68.72	0.38	1.77
S25°55.731' E29°23.507'	Maximum	7.73	85.20	554.00	133.00	4.27	42.00	53.50	47.60	24.10	2.32	26.40	38.40	381.00	6.79	15.50
	Minimum	3.43	12.30	74.00	0.80	0.03	5.00	5.50	7.40	3.48	0.00	2.92	8.73	14.90	0.01	0.01
	Coeff of Variation%	0.17	0.61	0.62	1.77	1.68	0.44	0.75	0.47	0.58	1.66	0.57	0.34	1.02	3.15	2.23
D20 Tinys eys in game camp	Average	7.62	20.78	128.58	7.24	0.29	40.02	6.98	24.53	4.90	0.19	3.94	25.53	23.59	0.03	0.01
S25°55.379' E29°23.226'	Maximum	9.52	31.80	214.00	34.40	1.17	52.00	11.60	42.10	8.48	0.32	7.18	41.30	57.80	0.11	0.04
	Minimum	6.67	16.50	90.00	0.40	0.03	29.00	4.58	7.32	3.29	0.10	2.40	14.40	12.40	0.01	0.01
	Coeff of Variation%	0.06	0.18	0.21	1.20	0.86	0.14	0.25	0.22	0.26	0.42	0.24	0.21	0.45	0.83	0.58
2179 - S50 Niekerkspuit upstream	Average	6.63	151.67	1304.93	905.24	0.37	26.52	150.95	12.02	117.53	3.09	6.51	36.93	844.69	0.04	0.39
S25°55.576' E29°24.389'	Maximum	7.78	270.00	2672.00	21120.00	9.46	51.00	288.00	17.10	249.00	6.42	10.90	60.00	1717.00	0.07	8.81
	Minimum	5.89	76.30	126.00	0.80	0.01	15.00	70.50	9.50	57.20	0.34	4.00	25.60	385.00	0.01	0.03
	Coeff of Variation%	0.06	0.28	0.37	3.36	3.88	0.28	0.33	0.14	0.36	0.42	0.22	0.22	0.35	0.47	3.28
2180 - S51 Niekerkspruit instream	Average	6.67	171.52	1542.37	630.66	0.25	23.33	175.98	11.97	138.69	1.68	9.80	38.57	1001.56	0.06	2.78
S25°55.364' E29°24.523'	Maximum	7.72	288.00	2846.00	7608.00	4.58	42.00	351.00	67.60	283.00	3.54	39.40	60.80	1955.00	0.49	27.50
	Minimum	3.84	112.00	852.00	3.60	0.01	8.00	97.80	5.68	74.80	0.10	4.86	27.10	560.00	0.01	0.01
	Coeff of Variation%	0.09	0.21	0.24	2.24	2.76	0.29	0.24	0.64	0.26	0.65	0.55	0.19	0.26	1.25	1.61
2181 - S52 Niekerkspruit Exit	Average	6.24	58.57	416.61	4.23	0.22	9.10	31.54	11.46	31.39	0.48	15.31	28.39	261.38	0.17	0.81
S25°55.006' E29°25.016'	Maximum	7.39	149.00	1100.00	16.80	4.02	47.00	103.00	20.50	132.00	1.47	24.10	50.80	764.00	4.64	9.79
	Minimum	3.81	12.30	80.00	0.20	0.01	5.00	5.80	2.01	3.39	0.06	2.41	7.40	46.30	0.01	0.01
	Coeff of Variation%	0.11	0.54	0.63	1.08	2.79	0.85	0.71	0.33	0.98	0.45	0.36	0.33	0.69	3.94	1.98
S55 Spookspruit Entrance (SPK1)	Average	6.47	140.69	1235.87	19.23	0.30	45.92	127.84	27.16	102.42	0.79	13.17	66.29	781.94	2.42	1.94
S25°56.655' E29°27.978'	Maximum	7.83	511.00	5026.00	79.60	2.18	147.00	403.00	95.10	486.00	3.61	98.60	339.00	3295.00	41.70	11.70
	Minimum	3.26	13.10	80.00	0.80	0.01	5.00	4.85	6.61	2.63	0.10	3.27	13.80	13.10	0.01	0.01
	Coeff of Variation%	0.18	0.79	0.96	1.04	1.63	0.76	0.84	0.62	1.09	1.03	1.12	1.02	1.00	3.15	1.48
S54 - Spookspruit Bankfontein Exit (SPK3)	Average	7.19	246.55	2380.60	326.76	0.26	150.23	290.17	14.19	212.33	0.30	12.48	59.10	1507.79	1.34	1.38
S25°55.345' E29°26.181'	Maximum	8.14	504.00	5428.00	4443.00	4.36	282.00	487.00	38.60	639.00	0.66	31.60	171.00	3781.00	22.00	7.72
	Minimum	3.47	88.60	714.00	1.20	0.01	17.00	92.20	6.73	50.80	0.10	6.04	18.00	444.00	0.01	0.01
	Coeff of Variation%	0.14	0.33	0.41	2.45	2.97	0.42	0.37	0.45	0.52	0.45	0.37	0.36	0.43	3.11	1.29
S53 - Spookspruit Exit (SPK4)	Average	7.28	270.98	2760.27	42.20	0.17	79.78	231.17	14.20	318.00	0.26	20.17	50.94	1819.28	0.05	1.86
S25°55.185' E29°25.679'	Maximum	8.04	574.00	6808.00	592.00	1.60	218.00	485.00	24.60	889.00	0.90	38.10	84.00	4609.00	0.20	11.10
	Minimum	5.63	33.30	238.00	2.00	0.01	13.00	19.10	3.54	7.14	0.10	2.70	25.50	112.00	0.01	0.01
	Coeff of Variation%	0.06	0.44	0.54	2.34	1.88	0.56	0.49	0.33	0.62	0.84	0.39	0.25	0.56	0.75	1.25
S63 - Spookspruit Middelburg Road	Average	7.03	144.09	1223.87	3.98	0.69	27.76	118.40	11.66	117.20	0.31	16.68	39.96	796.09	0.58	0.98
S25°51.533' E29°23.831'	Maximum	8.25	339.00	3084.00	27.20	27.70	166.00	309.00	19.90	265.00	0.95	25.10	62.70	2124.00	30.60	43.40
	Minimum	2.91	36.80	244.00	0.40	0.01	5.00	45.50	3.61	9.70	0.10	2.04	20.40	41.60	0.01	0.01
	Coeff of Variation %	0.10	0.33	0.40	1.29	5.98	0.94	0.36	0.29	0.47	0.86	0.29	0.19	0.43	7.02	5.90
Spk. spruit Joins Olifants	Average	7.49	94.67	796.12	25.16	1.26	83.95	71.43	29.34	54.49	1.41	11.46	44.99	393.95	0.61	1.69
S25°48.633' E29°19.471'	Maximum	8.61	361.00	5223.00	424.00	58.60	135.00	348.00	48.20	210.00	3.87	20.80	64.80	2284.00	33.70	50.20
	Minimum	2.79	49.70	362.00	1.60	0.01	30.00	39.40	5.26	25.90	0.15	3.48	28.60	159.00	0.01	0.01
	Coeff of Variation%	0.10	0.43	0.90	2.31	6.64	0.25	0.56	0.27	0.53	0.75	0.33	0.20	0.71	7.23	5.15
Olifants before Spk Spruit	Average	7.38	136.52	1153.80	7.36	0.07	33.20	110.93	12.66	110.16	0.19	16.21	43.97	738.15	0.08	0.11
S25°48.693' E29°19.464'	Maximum	7.90	224.00	2116.00	82.80	0.50	61.00	192.00	22.80	250.00	0.36	25.00	329.90	1362.00	2.00	0.57
	Minimum	6.28	75.30	544.00	0.80	0.01	11.00	60.60	4.62	41.20	0.11	8.59	25.10	348.00	0.01	0.01
	Coeff of Variation%	0.05	0.23	0.30	1.96	1.16	0.32	0.25	0.29	0.40	0.50	0.26	0.86	0.32	3.33	1.08
Downstream of Niekerkspruit	Average	6.80	43.71	301.81	19.89	0.06	11.33	22.30	11.84	16.09	0.45	16.11	28.51	178.40	0.09	0.49
S25°54'26.84 E029°25'17.51	Maximum	8.18	113.00	898.00	149.00	0.24	75.00	80.60	30.20	77.30	1.16	23.50	45.40	572.00	2.20	6.13
	Minimum	4.15	21.20	138.00	0.40	0.01	5.00	10.60	4.79	5.52	0.13	5.70	10.80	77.60	0.01	0.01
	Coeff of Variation%	0.11	0.35	0.44	1.64	0.67	0.94	0.54	0.37	0.78	0.47	0.30	0.27	0.46	3.66	2.28
S107 Douglas Dam Inlet	Average	6.51	277.90	2528.90	211.92	15.33	73.99	309.27	19.22	240.64	0.41	15.62	83.88	1776.80	0.01	4.49
S26°0'45.9 E029°25'17.51	Maximum	7.90	568.60	6150.00	1598.00	203.84	202.55	558.63	33.28	573.41	2.81	29.68	207.14	4164.90	0.27	13.88
	Minimum	3.38	26.70	228.00	0.00	0.00	0.00	19.63	3.14	13.72	0.06	5.08	2.32	101.64	0.00	0.00
	Coeff of Variation %	0.17	0.51	0.56	1.55	2.59	0.70	0.52	0.37	0.63	1.20	0.41	0.60	0.59	4.72	0.88

The values for various constituents measured around the proposed Dispatch Rider project were compared to the RQO for the Olifants River and SANS 241 guidelines. The results for pH, SO_4, EC, Iron (Fe) and Manganese (Mn) are discussed below.

pH

The pH of natural waters is a measurement of the acidity/alkalinity and is the result of complex acid-base equilibrium of various dissolved compounds. The pH of most raw water sources is within the range of 6.5 to 8.5. A decrease in the pH of water in a mining area will be an indication of acid mine drainage (AMD).

The results in **Table 10-6** and **Table 10-7** indicate the following:

- pH levels higher than 9.7 were recorded at D20 Tinys eyes in game camp over the October 2016 to December 2021 sampling period.
- pH levels lower than 5 were recorded at the following locations over the August 2012 to May 2015 period:
- D20b Small dam in game camp
- S53 Spookspruit Exit (SPK4)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S55 Spookspuit Entrance (SPK1)
- S63 Spookspruit Middelburg Road
- pH levels lower than 5 were recorded at the following locations over the October 2016 to December 2021 period:
- D20b Small dam in game camp
- 2180 - S51 Niekerkspruit instream
- 2181 - S52 Niekerkspruit Exit
- S54 Spookspruit Bankfontein Exit (SPK3)
- S55 Spookspuit Entrance (SPK1)
- S63 Spookspruit Middelburg Road
- Spookspruit joins Olifants
- Downstream of Niekerkspruit.
- S107 Douglas Dam Inlet

With the exception of D20b (Small dam in game camp), all of the above monitoring points are located within the existing mining area and therefore water quality may be attributed to existing mining activities.

At D20 (Tinys eyes in game camp), the higher pH levels may be due to the addition of agricultural lime as part of agricultural activities.

The average and maximum pH levels measured at each monitoring location, in terms of compliance with the RQO or SANS 241 are indicated in **Figure 10-12**.

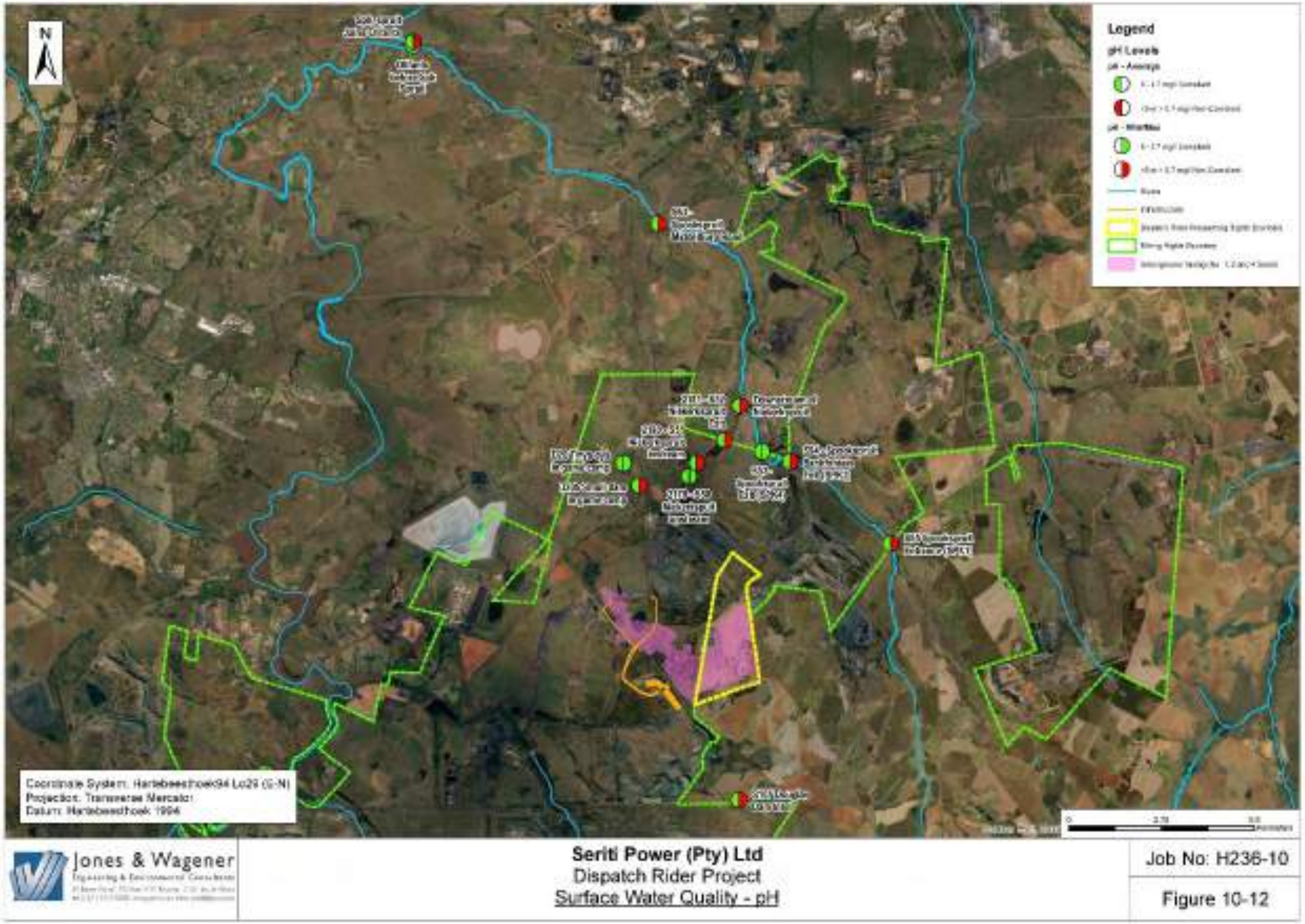


Figure 10-12: pH Levels (J&W, 2024b)

Sulfate (SO_4)

The concentration of sulfates in natural surface water is typically low (~5 mg/l), although concentrations of several hundred mg/l may occur where dissolution of sulfate minerals or discharge of sulfate-rich effluents takes place. AMD decanting or seeping from mining areas can increase the sulfate in surface water significantly. Chemical fall-out during rain events in areas where coal burning takes place can also increase the sulfate content of surface water bodies.

Sulfate is a key indicator of water affected by coal mining. The results in **Table 10-6** and **Table 10-7** indicate the following:

On average, elevated Sulfate concentrations (above 500 mg/l) were recorded at the majority of sampling locations over the August 2012 to May 2015 period:

- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Spookspruit. Joins Olifants
- Olifants before Spookspruit

On average, elevated sulfate concentrations (above 500 mg/l) were recorded at the majority of sampling locations over the October 2016 to December 2021 period:

- 2179 - S50 Niekerkspuit upstream
- 2180 - S51 Niekerkspruit instream
- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Olifants before Spookspruit
- S107 Douglas Dam Inlet

All of the above monitoring points with the exception of S107 Douglas Dam, are located within the existing mining area and therefore may be attributed to existing mining activities. The average and maximum SO_4 concentrations for the monitoring locations, in terms of compliance with the Olifants RQO and SANS 241 (2015), are indicated in **Figure 10-13**.

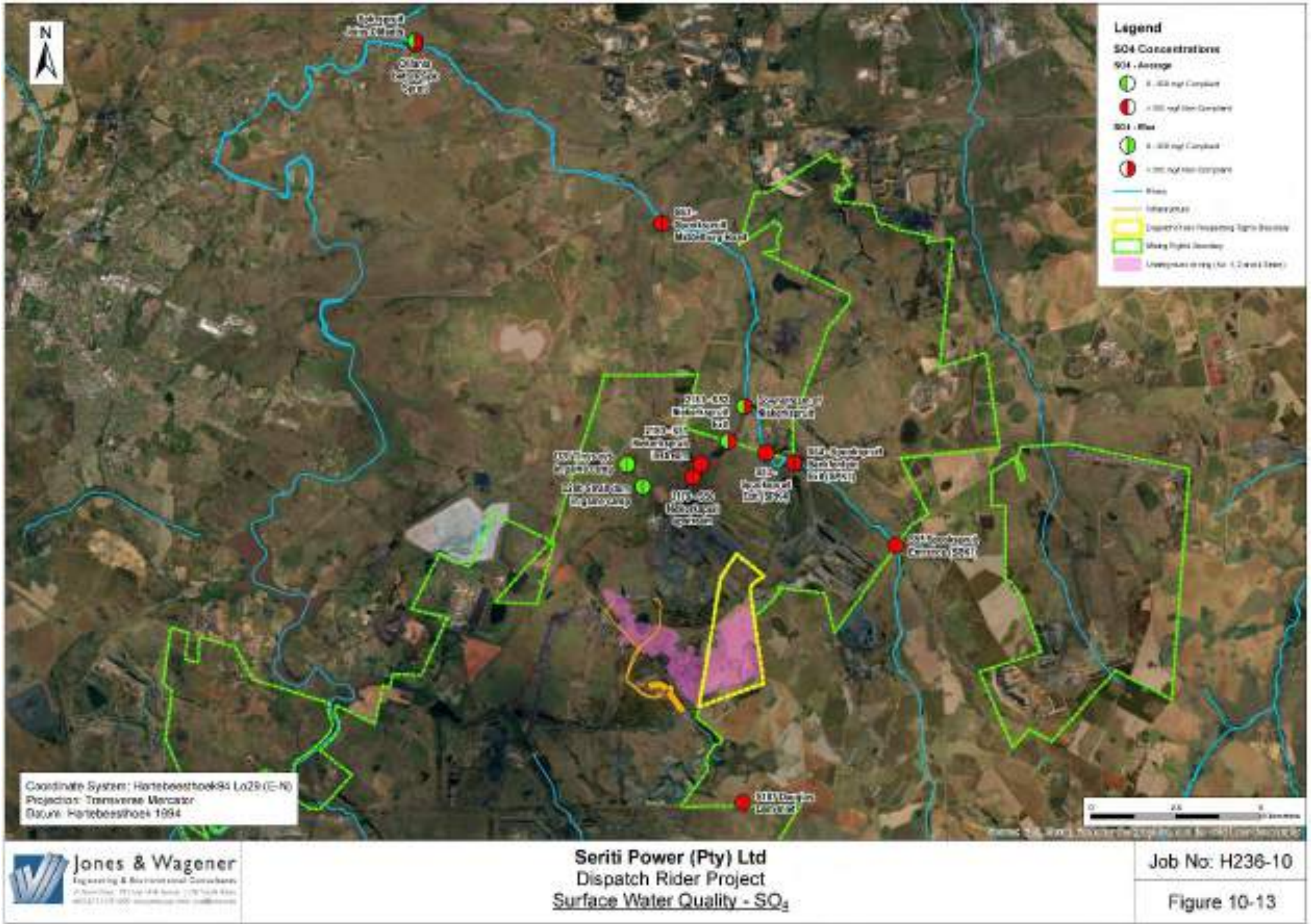


Figure 10-13: Sulfate concentrations (J&W, 2024b)

Electrical conductivity

Electrical conductivity (EC) is a measure of the ability of water to conduct an electrical current, which is as a result of the presence of charged ions such as carbonate, bicarbonate, chloride, sulfate, nitrate, potassium, calcium and. It is therefore an indicator of the salinity, or total salt content, of water. Accumulation of salts can influence the potential to use the water downstream by water users, such as irrigation for agriculture, as well as livestock watering.

The average and maximum EC levels measured at each monitoring location, in terms of compliance with the RQO or SANS 241 are indicated in **Figure 10-14**. The results in **Table 10-6** and **Table 10-7** indicate the following:

On average elevated EC values were recorded at the majority of sampling locations over the August 2012 to May 2015 period, which included:

- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Spooksprui. Joins Olifants
- Olifants before Spookspruit

On average elevated EC values were recorded at the majority of sampling locations over the October 2016 to December 2021 period, which included:

- 2179 - S50 Niekerkspuit upstream
- 2180 - S51 Niekerkspruit instream
- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Olifants before Spookspruit
- S107 Douglas Dam Inlet

All of the above monitoring points, with the exception of S107 Douglas Dam, are located within the existing mining area and therefore may be attributed to existing mining activities. The average and maximum EC values for the monitoring locations, in terms of compliance with the Olifants RQO and SANS 241 (2015), are indicated in **Figure 10-14**.

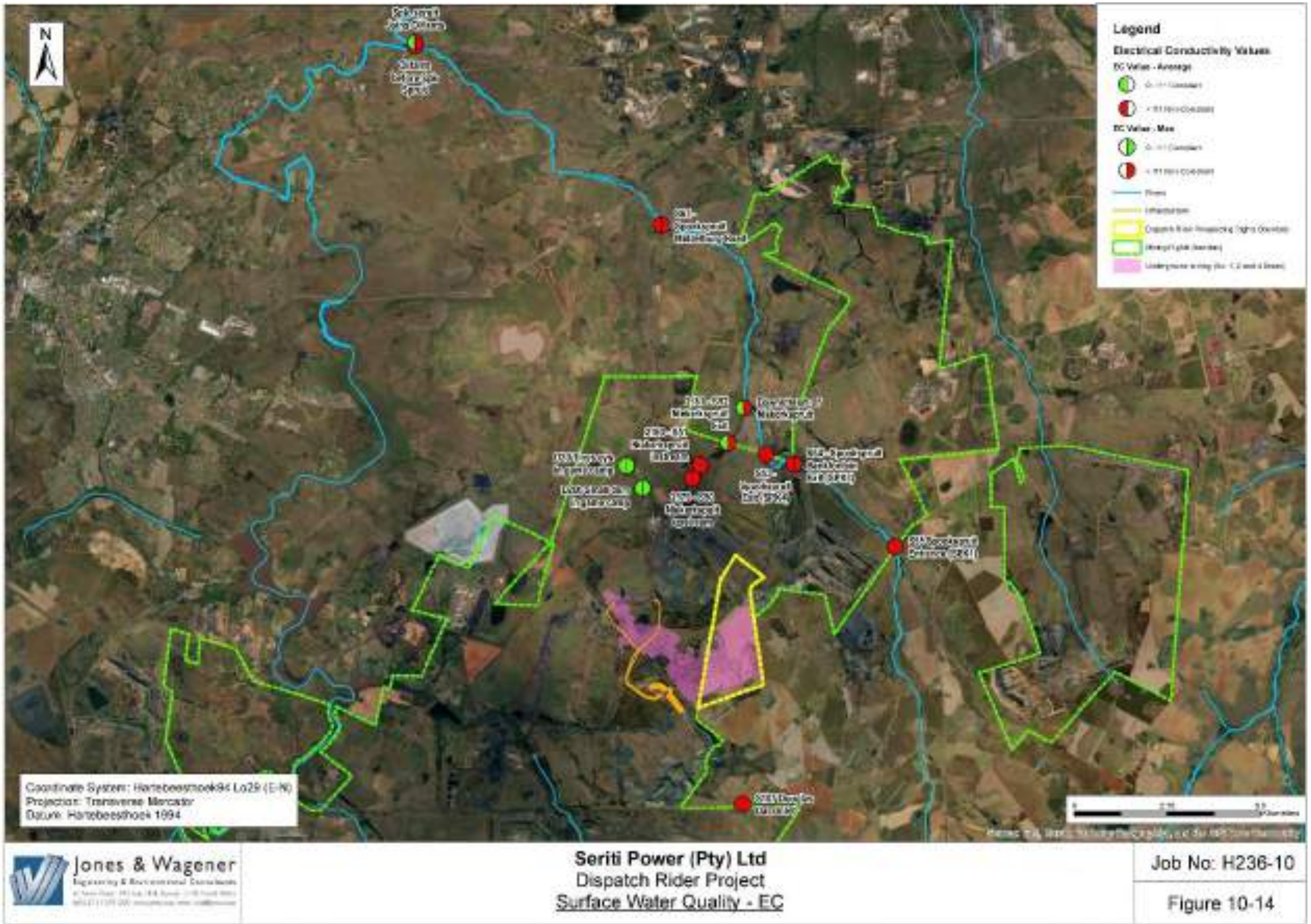


Figure 10-14: Electrical Conductivity values (J&W, 2024b)

Iron

Iron (Fe) is the fourth most abundant element, constitutes 5% of the earth's crust and is found in many minerals. An important mineral in the context of this investigation is pyrite (FeS), which is often associated with coal formations. Iron can be present in water as dissolved ferric iron (Fe III), as ferrous iron (Fe II) or as suspended iron hydroxides. The concentration of dissolved iron in unpolluted surface water is typically in the range of 0.001 - 0.5 mg/l .

The results in **Table 10-6** and **Table 10-7** indicate the following:

On average all of the monitoring locations fall within the SANS 241 2015 Drinking Water guideline limit of 2 mg/l over the August 2012 to May 2015 sampling period.

On average all of the monitoring locations fall within the SANS 241 2015 Drinking Water guideline limit of 2 mg/l over the October 2016 to December 2021 sampling period with the exception of S107 Douglas Dam Inlet.

The maximum record concentrations of Fe which exceed the SANS 241 2015 Drinking Water guideline limit of 2 mg/l over the August 2012 to May 2015 sampling period, include:

- D20b Small dam in game camp
- S55 Spookspruit Entrance (SPK1)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road

The maximum record concentrations of Fe which exceed the SANS 241 2015 Drinking Water guideline limit of 2 mg/l over the August 2012 to May 2015 period, include:

- D20b Small dam in game camp
- 2179 - S50 Niekerkspuit upstream
- 2180 - S51 Niekerkspruit instream
- S54 Spookspruit Bankfontein Exit (SPK3)
- S63 Spookspruit Middelburg Road
- Spooksprui. Joins Olifants
- S107 Douglas Dam Inlet

With the exception of D20b Small dam in game camp and S107 Douglas Dam inlet, all of the above monitoring points lie within the existing mining area and therefore may be attributed to existing mining activities.

Manganese

Manganese (Mn) is a relatively abundant element which constitutes 0.1% of the earth’s crust. The median concentration in fresh water is 8 µg/ℓ, with a range of 0.02 to 130 µg/l .

The results in **Table 10-6** and **Table 10-7** indicate the following:

On average the following monitoring points exceeded the SANS 241 2015 Drinking Water guideline limit of 0.4 mg/l over the August 2012 to May 2015 sampling period:

- D20b Small dam in game camp
- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)

- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Spooksprui. Joins Olifants
- Olifants before Spookspruit

On average the following monitoring points exceeded the SANS 241 2015 Drinking Water guideline limit of 0.4 mg/l over the October 2016 to December 2021 sampling period:

- 2180 - S51 Niekerkspruit instream
- 2181 - S52 Niekerkspruit Exit
- S55 Spookspruit Entrance (SPK1)
- S54 Spookspruit Bankfontein Exit (SPK3)
- S53 Spookspruit Exit (SPK4)
- S63 Spookspruit Middelburg Road
- Spooksprui. Joins Olifants
- S107 Douglas Dam Inlet

Elevated manganese concentrations may be due to agricultural activities at monitoring location D20b Small dam in game camp as well as at S107 Douglas Dam inlet, while all other locations lie within the existing mining area and may be attributed to mining activities in the surrounding area.

Other constituents that exceeded the SANS 241 2015 Drinking Water guideline and the RWQO limits over the October 2016 to December 2021 sampling period included:

- TDS: on average, the SANS 241 2015 limits, was exceeded at 2179- S50 Niekerkspruit upstream, 2180- S51 Niekerkspruit instream, S55 Spookspruit Entrance (SPK1), S54 Spookspruit Bankfontein Exit (SPK3), S53 Spookspruit Exit (SPK4), S63 Spookspruit Middelburg Road and S107 Douglas Dam Inlet.
- Maximum recordings of Nitrate that exceeded the RWQO were noted at 2179- S50 Niekerkspruit upstream.
- Maximum recordings of Sodium that exceeded the SANS 241 2015 limits were noted at S55 Spookspruit Entrance (SPK1), Olifants before the Spookspruit and S107 Douglas Dam Inlet.

Therefore, in terms of surface water quality within the study area there are existing notable impacts associated with mining activities both upstream and downstream of the proposed Dispatch Rider mining area.

Watercourse alterations

Although not within the Dispatch Rider project area, both the Niekerkspruit and the Spookspruit flow through the mine's property and have been diverted around the mine workings.

No alteration of watercourses is planned as part of the Dispatch Rider mining project.

Mining will take place underneath watercourses (including wetlands) and any subsidence as a result of mining may result in the alteration of the watercourses. Therefore, an application for Section 21 (c) and (i) water uses as defined in the NWA will be included in the IWULA to be conducted

10.1.1.6 Wetlands

A Wetland Assessment was undertaken by Wetland Consulting Services (WCS) in 2022 for the wetland systems that will be either directly impacted on by the proposed project or at risk due to the systems being downslope of the proposed project area. An update to this assessment was undertaken to take into account the stability assessment results (WCS, 2024)

Delineated wetlands

The following wetland hydrogeomorphic (HGM) units were identified on site:

- Depression wetlands (also referred to as pans); and
- Seep wetlands.

The aerial extent of the wetlands delineated and assessed onsite cover approximately 247.4 ha. The delineated wetlands and watercourses is indicated on **Figure 10-15** and **Table 10-8** provides information on the actual extent of the wetlands in terms of area and the contribution that the different wetland types make towards the total wetland area.

Table 10-8: Wetland types identified associated with the Dispatch Rider project area (WCS, 2024)

WETLAND HGM TYPE	AREA (HA)	% OF WETLAND AREA
Seep	115.6	47%
Pan (depression)	131.8	58%
GRAND TOTAL	247.4	100%

Seep wetlands cover 115.6 ha of the wetland areas assessed in the study area (47% of the wetland areas). Seep wetlands are typically maintained by sub-surface interflow through the soil profile, with surface water only appearing during periods of complete saturation. Given the widespread sandstone-derived soils within the study area which are generally conducive to interflow, seep wetlands are extensive in occurrence and extent within the project area. Most of the seeps recorded onsite are linked to the depressions (pans) and drain towards the depression basins. One seep wetland (HS7), would naturally have drained to the southwest, via an unnamed tributary, into the Boesmanskransspruit. However, the seep is now isolated as a result of opencast mining of the downstream portion of the wetland within the Boschmanskrans section, though its headwaters have been left intact.

Pan wetlands cover just over 131.81 ha of the wetland areas assessed in the study area. The individual pans vary in size from 8 ha to 40 ha. In general, the pan basins are characterised by a short, structured grass-sedge mosaic community with patches of taller reeds species, such as *Typha capensis* and (occasionally) *Phragmites australis*, most commonly present along the pan basin edges. Hydrophillic plant species commonly encountered in the pan basins included *Leersia hexandra, Panicum repens, T. capensis, Agrostis lachnantha, Helichrysum aureonitens, Fuirena* sp and *Eleocharis* sp. Standing water was present in several of the larger pans, though open water habitat was only observed in Pan P3.

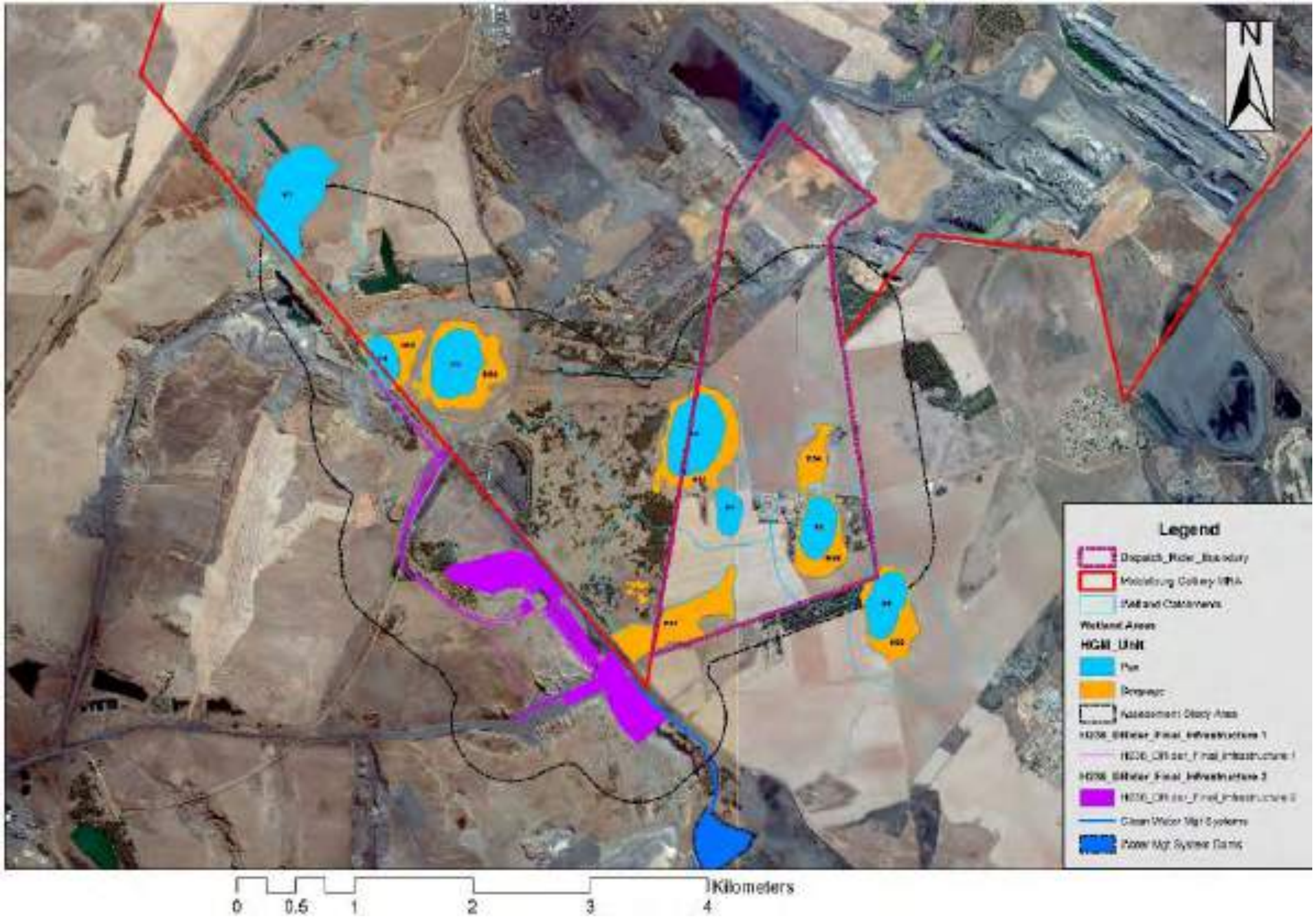


Figure 10-15: Delineated wetlands (WCS, 2024)

Wetland Present Ecological State

The outcome of the Present Ecological State (PES) assessment of the wetlands based on the WET-Health Version 2.0 assessment tool are illustrated in **Figure 10-16**. Most of the wetland habitat (45%) was determined to be in PES category D (Largely Modified). Approximately 39% of the wetland habitat onsite was found to fall within PES category C (Moderately Modified) and 16% of the wetland habitat onsite was found to fall within PES category E (Seriously Modified). The pans and seepage areas within the mining area have been impacted upon by the infrastructure associated with mining activities. Pans P1 and P7 are dissected by a haul road, conveyor belts and powerlines, and these activities have resulted in a quarter of the pan becoming isolated and of far lesser functionality.

Wetland Importance and Sensitivity

In assessing the Importance and Sensitivity (IS) of each of the wetlands, the following factors, in addition to observations made during the site assessments, such as the levels of disturbance of the wetland habitats, species composition, habitat functionality and assumed sensitivities (related to the HGM type), contributed to the outcomes of the IS assessments.

- The wetland vegetation type of the area, Mesic Highveld Grassland Group 4, which is considered to be Vulnerable, but Not Protected;
- The designation of various sections of the study area, including large areas of delineated wetland habitat, as “Other Natural Areas” and “Modified areas”. None of the wetland areas are within the “Critical Biodiversity Area” according to the MBSP;
- Of the wetlands identified on site, only Pan 3 (P3) is classified as a FEPA wetland;
- Within a mosaic of differing land uses, the wetlands provide areas of relatively natural habitat, including open water and mesic grassland of varying levels of saturation. The majority of the wetlands are spatially isolated systems of inwardly draining depressions and adjacent, linked seepage areas. Although isolated, several of the wetlands lie in very close proximity to one another, and as such provide valuable breeding and feeding habitat for a range of species, with migration between the wetlands still feasible for many species.

The results of the wetland IS assessment are illustrated in **Figure 10-17**.

Almost 31% of the wetland habitat is considered to be of High IS, with this including the majority of the depressions assessed onsite. A key determinant resulting in the High IS rating of many of the pan wetlands was the ecological IS, specifically the biodiversity support aspect. 66%of the wetlands were considered to be of Moderate IS, and this includes the majority of the seeps and smaller pans. The remaining 3% of the wetlands were rated as Low IS, and this includes a pan area (P1) which is traversed by mining infrastructures, which has resulted in a quarter of its area having become isolated and of very low functionality.

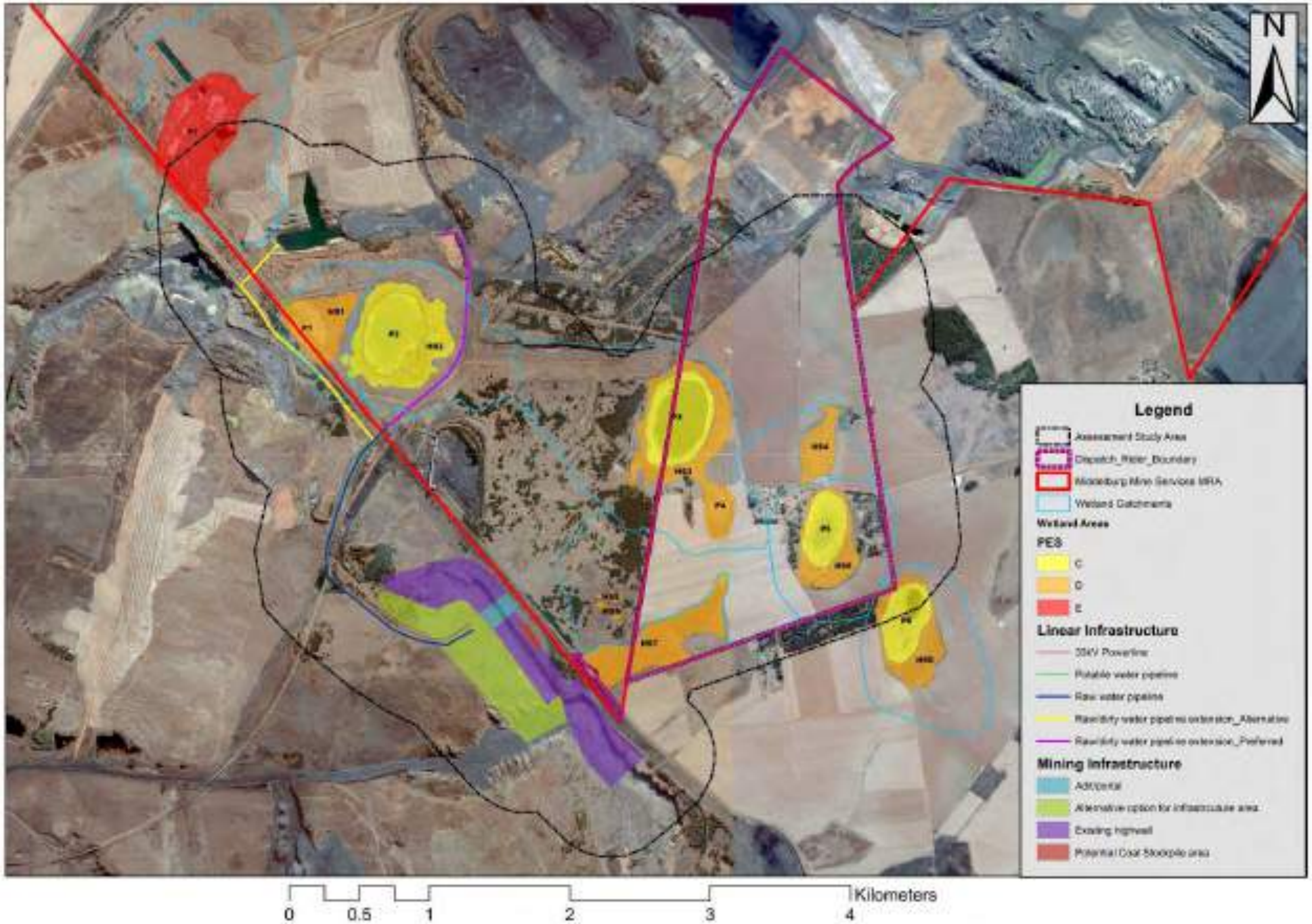


Figure 10-16: Results of the PES assessment of wetlands onsite (WCS, 2024)

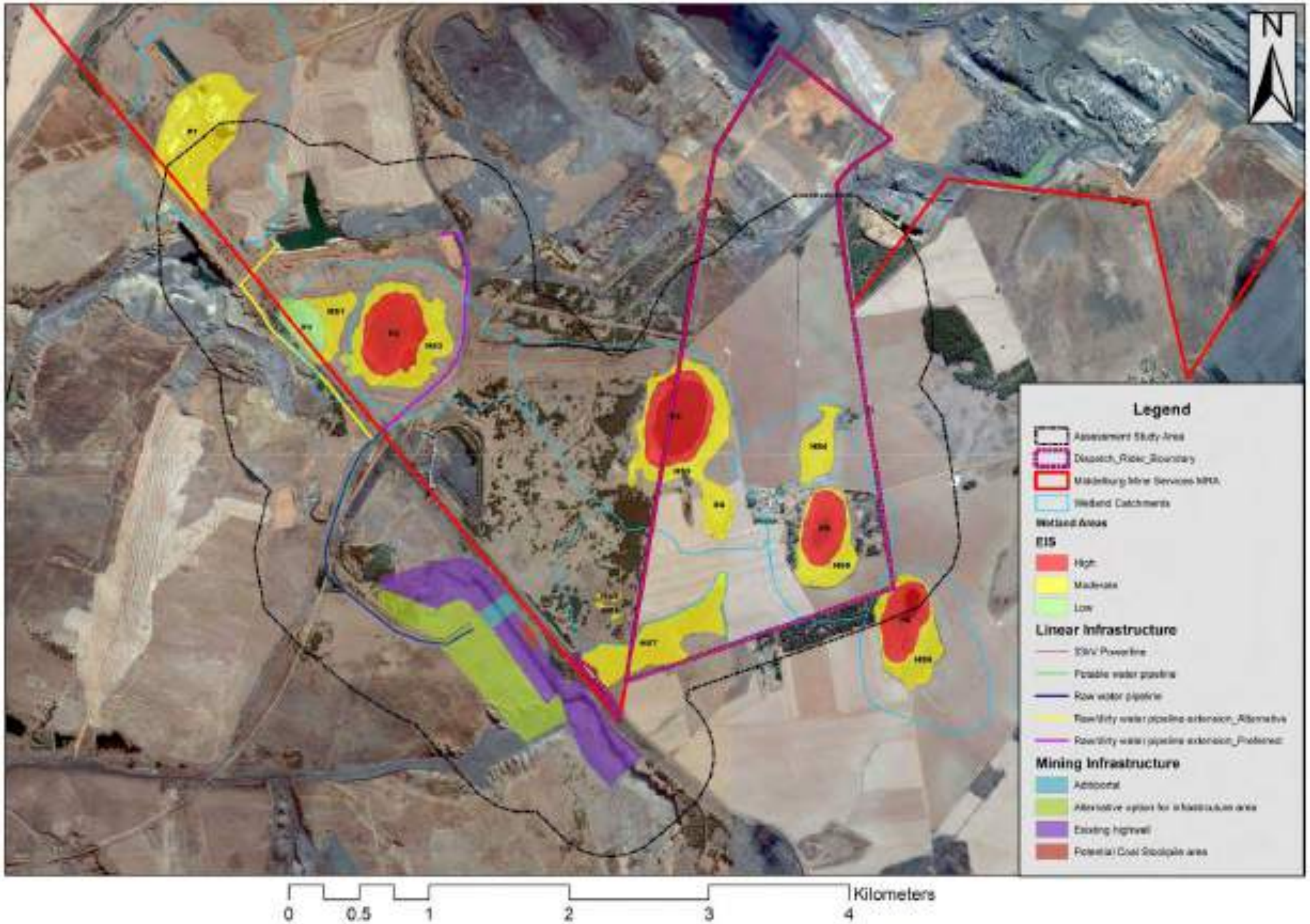


Figure 10-17: Results of the Importance and Sensitivity assessment of the wetlands within the study area (WCS, 2024)

Wetland Functional Assessment

Numerous functions are typically attributed to wetlands, which include nutrient removal (and more specifically nitrate removal), sediment trapping (and associated with this is the trapping of phosphates bound to iron as a component of the sediment), streamflow augmentation, flood attenuation, trapping of pollutants and erosion control. Many of these functions attributed to wetlands are wetland type-specific and can be linked to the position of wetlands in the landscape as well as to the way in which water enters and flows through the wetland. Thus, not all wetlands can be expected to perform all functions or to perform these functions with the same efficiency.

A Level 2 WET-EcoServices assessment was undertaken for the wetlands within the study area. In interpreting the results of the WET-EcoServices assessment, the following must be borne in mind:

- The level of services delivered is based on current as well as future potential benefits (i.e., a wetland might have a high ability to perform a service such as trapping pollutants but is currently afforded little opportunity to perform the service due to a lack of pollutants within the wetland catchment, resulting in an intermediate score);
- WET-EcoServices scores make no reference to the size of the wetland (i.e., a 3 ha wetland and a 300 ha wetland might both score 3 for flood attenuation. Given the size of the wetlands in question, the overall importance of flood attenuation performed by the 300 ha wetland is obviously greater than for the 3 ha wetland);
- Scores between different hydro-geomorphic wetland units (i.e., different wetland types) should not be compared directly.

The results of the WET-EcoServices assessment are illustrated in **Figure 10-18** and the nature of the services provided can be summarised as follows:

- *Water Quality Maintenance:* The location of the seep wetlands adjacent to cultivated fields that act as a source of sediment as well as phosphates and nitrates (from fertilisers) provides the opportunity for the wetlands to provide a beneficial function in this regard, buffering the downstream pans (receiving watercourses) from some of the impacts associated with cultivation;
- *Maintenance of Biodiversity:* The pans obtained higher scores for the maintenance of biodiversity. The majority of the pans onsite consist of a sizeable pan basin characterised by a mosaic of habitat types, including open water and mesic grassland supporting a variety of grass, sedge and reed species. Although no red data species or species of conservation concern were recorded within the wetlands at the time of the wetland survey, the diversity of habitats provide suitable niches for such species to utilise these pans;
- *Direct Human Use Benefits*: No evidence was observed within the wetlands on site of any use being made of the wetlands other than for crop production, and limited livestock grazing. The wetlands are not known to support any cultural practices.

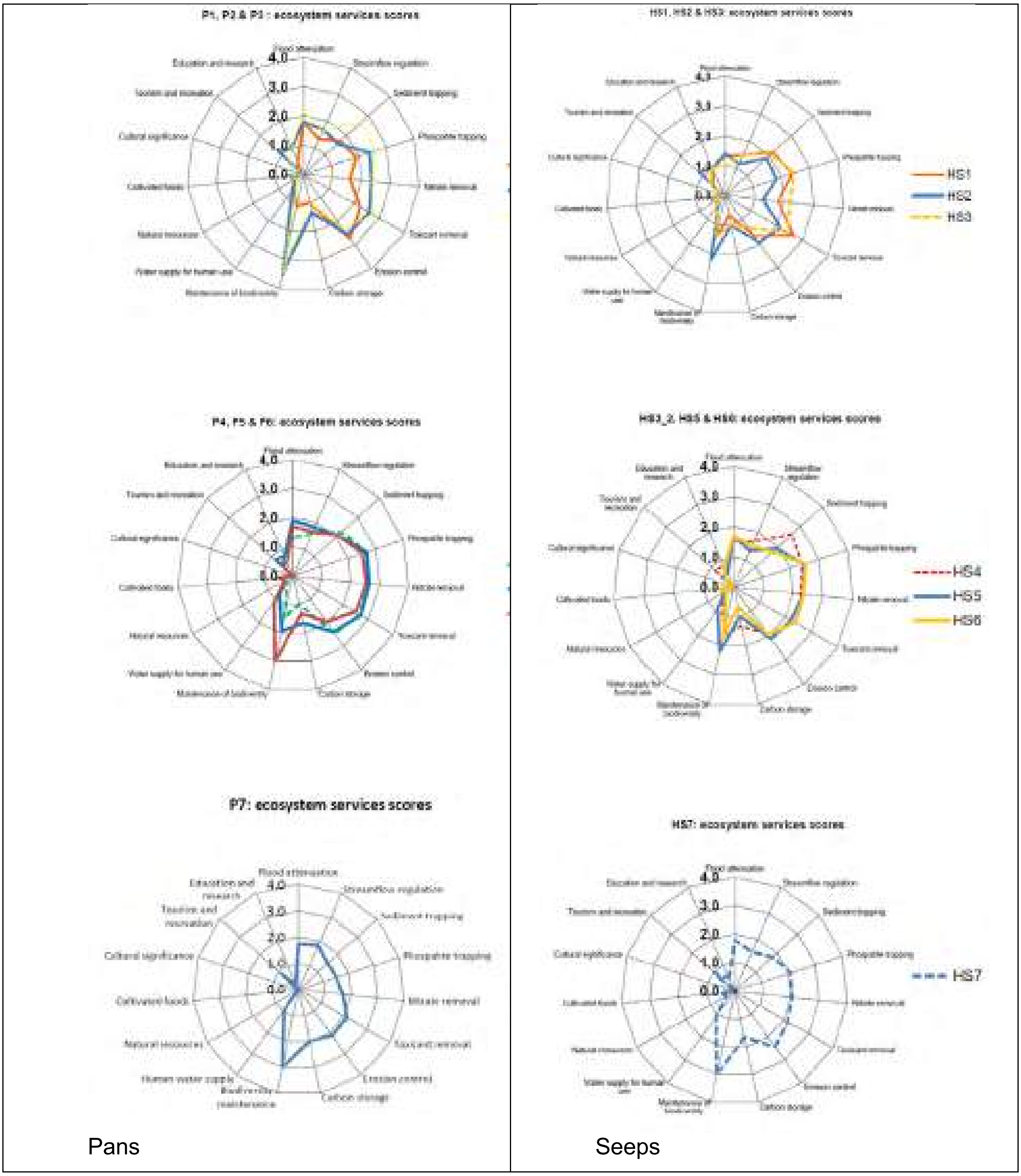


Figure 10-18: Results of the WET-EcoServices assessments of the wetlands within the study area (WCS, 2024)

Freshwater Ecosystem Priority Areas

FEPAs were identified through a systematic biodiversity planning approach that incorporated a range of biodiversity aspects such as ecoregion, the current condition of habitat, presence of threatened vegetation, fish, frogs and birds, and importance in terms of maintaining downstream habitat. FEPAs should be regarded as ecologically important and as generally sensitive to changes in water quality and quantity, owing to their role in protecting freshwater ecosystems and supporting sustainable use of water resources.

According to the updated NFEPA map for the Mpumalanga Highveld, only one Pan (P3) within the study area has been highlighted as a FEPA (refer to **Figure 10-19**).

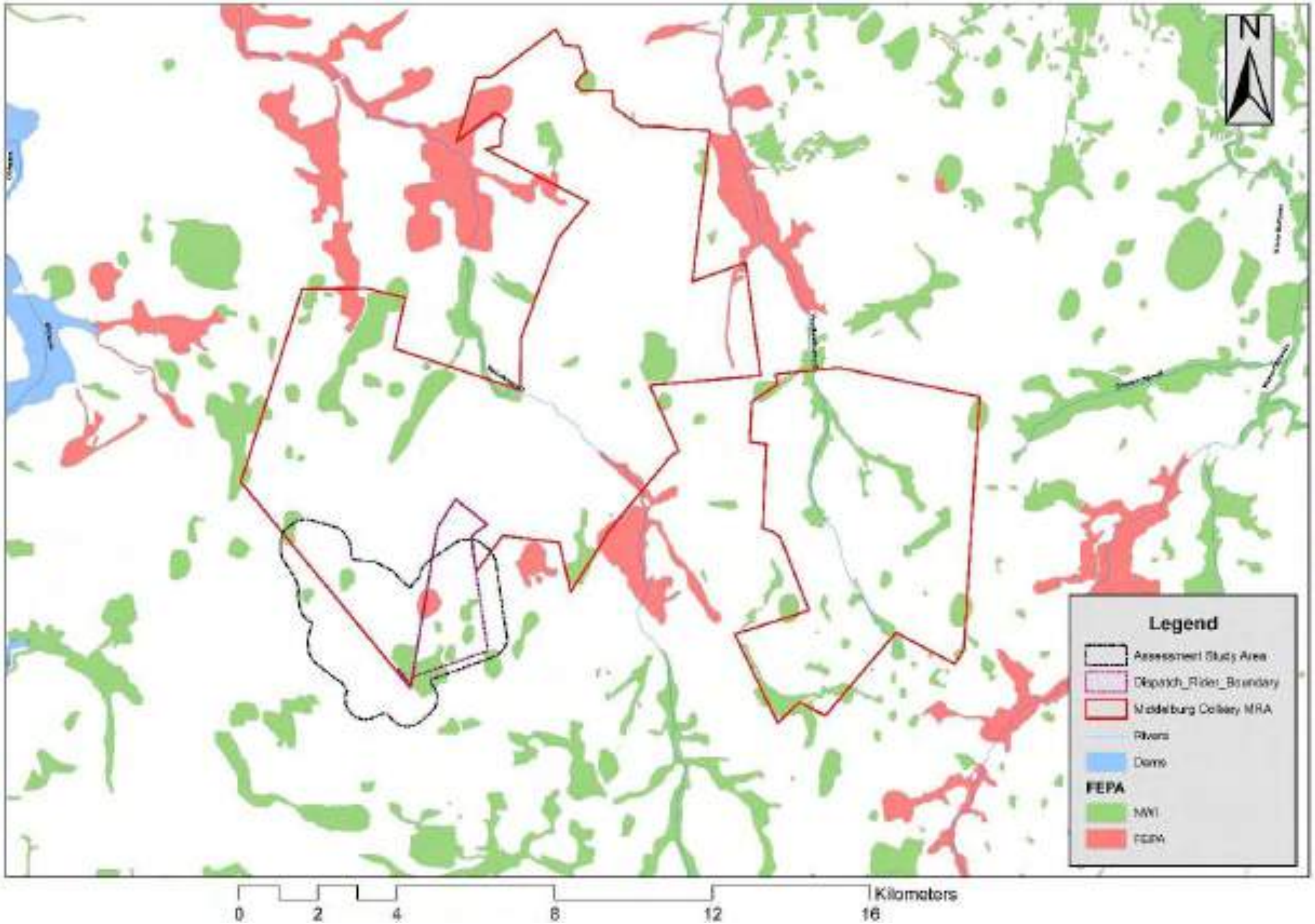


Figure 10-19: Mpumalanga Highveld NFEPA wetlands dataset highlighting the presence of FEPA wetlands within the study area (WCS, 2024)

10.1.1.7 Hydropedology

A Hydropedology Baselines and Impact Assessment was compiled by J&W (J&W, 2024c).

Soil Classification and Hydropedological Grouping

The entire Dispatch Rider project area falls within Land Type Ba4. Based on the transects surveyed, the Clovelly soil form was by far the most dominant on site and was found in four of the sample locations. The Clovelly soils are well drained yellow-brown apedal soils with no signs of water movement through the soil profile. In the lower slopes close to the depression systems on site, clays accumulate to form plinthic horizons that act as impeding layers to water seepage. The team also observed shallow sandstone outcrops that would influence the movement of water through the profile, especially on the slopes to the depressions. The hydropedological data for Land Type Ba4 is detailed in **Table 10-9** below.

Table 10-9: Hydropedological Data extraced from Land Type Inventory Data (Ba4) (J&W, 2024c)

SOIL FORM	DEPTH	HYDROPEDOLOGICAL CLASS	TMU 1 UNIT CREST	TMU 3 BACKSLOPE	TMU 4 FOOTSLOPE	TMU 5 VALLEY BOTTOM	CLAY CONTENT			
South African Soil Classification System (old)		mm	Van Tol et al (2019)	% of land type				%		
			45	40 10	5	Total	A	E		B21
Hutton (Hu)	900-1200+	Recharge (deep)	30	35			27.5	15-20		15-25
Ruston (Av), Kanhym (Av)	800-1200+	Interflow (soil/bedrock)	10	15	30		13.5	8-20		12-25
Longlands (Lo)	700-1000	Interflow (A/B horizon)		10	40	30	9.5	8-15	8-15	25-35
Middelburg (Hu), Kyalami (Hu)	900-1200+	Recharge (deep)	5	15			8.3	8-15		8-15
Wasbank (Wa)	500-700	Interflow (A/B horizon)	10	5	5		7	8-15	8-15	
Appam (Gc), Weltevrede (Gc)	600-900	Stagnating (soil/hard plinthic)	10	5			6.5	8-20		8-20
Oatsdale (Cv), Mossdale (Cv)	700-1200+	Recharge (deep)	5	5	20		6.3	8-20		8-20
Cartref (Cf), Kusasa (Cf)	300-600	Interflow (A/B horizon)	5	5	5	10	5.3	8-15	6-15	
Klipfontein (Ms)	250-400	Recharge (shallow)	5				2.3	8-15		

SOIL FORM	DEPTH	HYDROPEDOLOGICAL CLASS	TMU 1 UNIT CREST	TMU 3 BACKSLOPE	TMU 4 FOOTSLOPE	TMU 5 VALLEY BOTTOM	CLAY CONTENT			
Katspruit (Ka), Killarney (Ka)	300-500	Responsive (saturated)				40	2	20-25		25-30
Rosehill (Sw), Swartland (Sw)	250-400	Recharge (deep)		5			2	20-25		30-35
Rensburg (Rg), Willowbrook (Wo)	400-500	Responsive (saturated)				20	1	40-60		
Pans			20				9			

Hydropedological Groupings

The soil samples collected, along the transects, were analysed and classified according to their hydropedological characteristics as either recharge, response, or interflow soils (**Figure 10-20**). The Clovelly soil form which was the most dominant is classified as a recharge (deep) soil along with the Hutton and Glencoe soil forms. These soils were found on the crests and midslopes in the landscape, with the redder soils higher in the landscape and the yellow soils lower down.

The lower slopes approaching the pans and along the drainage lines on site are characterised by interflow soils, mostly with soft plinthic clay layers as the impeding layer. Soil forms include Longlands, Constantia and Westleigh.

In the depressions and streams the soils are all response soils with well-developed clay layers (Rensburg, Katspruit and Willowbrook soil Forms).

Figure 10-20: Hydropedological Groupings (J&W, 2024c)

Hydrological Flow Drivers

Seep wetlands

Based on the soil samples collected on site, the soils can be classified as sandy clay loam. These soils, from the Vryheid geological formation, generally allow for easy infiltration of rainfall, resulting in reduced surface runoff. Where the hillslope seeps are present the water is moving subsurface, laterally along the hillslope gradient, against a lesser permeable layer (soft plinthic or ferricrete in areas where Glencoe soils are present). The presence of seep wetlands indicates the emergence of this sub-surface flow (interflow) within the top 50 cm of the soil profile. Seep wetlands were present along all three transect lines. The crests and midslopes along all three transects were generally characterised by recharge soils, with the interflow soils being present along the foot slopes and the midslope (for Transect 3) in the vicinity of the seep wetlands.

Pan systems

The pan systems on site are fed by rainfall, surface run-off and from the lateral input of the adjacent seep wetlands within the perched aquifer. These seeps, and associated perched aquifer, provides seepage at the foot slopes surrounding the pan systems assessed. In accordance with the groundwater report undertaken by J&W (2024a) the weathered and fractured aquifers are unlikely to be in contact with the pans on site as the groundwater levels in these aquifers are situated lower than the pan basin. The soils within the pan systems are response soils.

10.1.1.8 Aquatic Ecosystems

An Aquatic Ecosystem Baseline and Impact Assessment was conducted by Ecology International in 2022 (Ecology International, 2022).

Freshwater Ecoregion

MMS North Colliery is located within the Southern Temperate Highveld freshwater ecoregion, which is delimited by the South African interior plateau sub-region of the Highveld aquatic ecoregion, of which the main habitat type, in terms of watercourses, is regarded as Savannah-Dry Forest Rivers. Aquatic biotas within this bioregion have mixed tropical and temperate affinities, sharing species between the Limpopo and Zambezi systems. The Southern Temperate Highveld freshwater ecoregion is considered to be bio-regionally outstanding in its biological distinctiveness and its conservation status is regarded as Endangered. The ecoregion is defined by the temperate upland rivers and seasonal pans.

Strategic Water Source Areas

The present study area is not located within any designated Strategic Water Source Area.

Sampling site selection

Depressional pan systems selected for the aquatic specialist assessment were based on the extent of proposed underground mining activities and its direct association with overlying features. The samplings sites are indicated in **Figure 10-21**.

Water quality

Table 10-10 below provides the *in situ* water quality data obtained at each assessment site during the February 2022 assessment. Based on the *in situ* water quality variables assessed at the time of the February 2022 assessment, the greatest variability between pans was noted in the electrical conductivity values and the dissolved oxygen concentrations.

Table 10-10: *In situ* water quality variables determined during the February 2022 aquatic ecosystem assessment (Ecology International, 2022)

SITE	TEMP (ºC)	PH	ELECTRICAL CONDUCTIVITY (µS/CM)	DISSOLVED OXYGEN	
				(MG/L)	(%SAT)
Pan 322 (Pan P5 as per WCS report)	19.8	6.00	133.4	1.45	16.5
Pan 323 (Pan P6 as per WCS report)	22.7	7.42	671.0	2.03	23.4
Pan 324 (Pan P3 as per WCS report)	23.5	8.23	699.0	6.43	77.2
Pan 325 (Pan P2 as per WCS report)	24.4	8.14	916.0	6.26	77.6

SITE	TEMP (ºC)	PH	ELECTRICAL CONDUCTIVITY (µS/CM)	DISSOLVED OXYGEN	
				(MG/L)	(%SAT)
Pan 328 (Pan P1 as per WCS report)	23.7	6.74	124.3	2.30	27.1

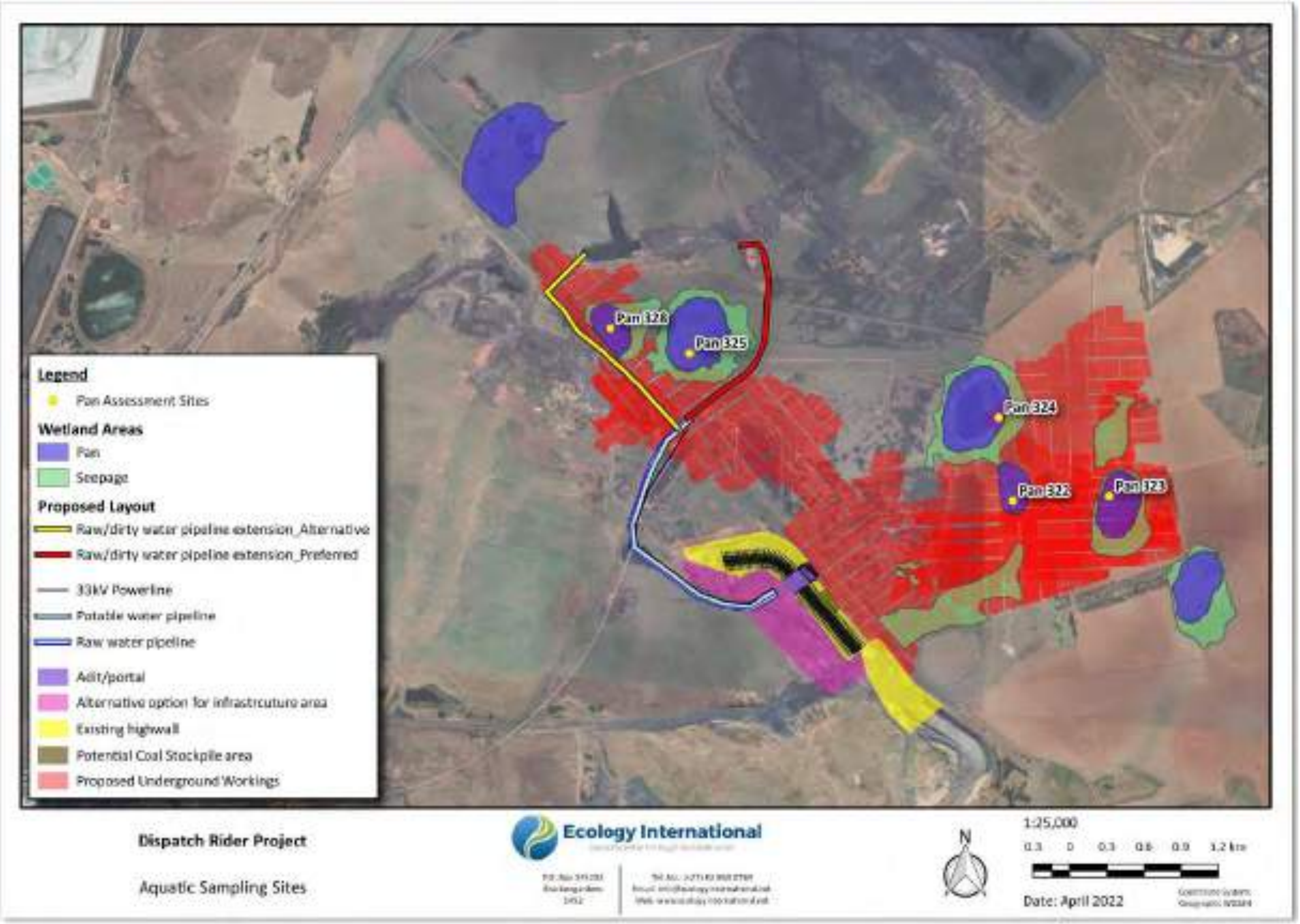


Figure 10-21: Aquatic sampling sites (Ecology International, 2022)

The pans associated with the proposed Dispatch Rider project can be classified as having endorheic drainage basins which retains water and dissolved solids that enter the system primarily from the surrounding catchment. As a result of their inwardly draining (closed) nature, water within such endorheic systems is subsequently lost via evaporation only, which results in the accumulation of salts, particularly within the central portions of the pans where elevation is marginally lower due to possible mechanical erosion by wind or other factors. As such, temporary or non-perennial pans such as those associated with the proposed Dispatch Rider project allow for the precipitation of minerals, including phosphates, due to the concentrating effects of evaporation.

The pans within the study area are likely maintained by a combination of direct rainfall, surface runoff, interflow and shallow groundwater inputs from the weathered aquifer or from alluvial aquifers, with the water contribution from each differing between pans and which to some degree will account for differences in water qualities between the pans, as will the level of inundation. However, in addition to the natural factors affecting water quality, land use and/or anthropogenic input should be considered significant drivers in terms of the water quality observed within these systems.

Aquatic Habitat

Aquatic habitat within pans is generally regarded as limited from an aquatic biota perspective, with no hydraulic variability as may be found in lotic (flowing) systems. As such, none of the published aquatic habitat indices often included in lotic systems assessments such as the Invertebrate Habitat Assessment System (IHAS), Integrated Habitat Integrity (IHI) assessment, etc. could be utilised during the present study. Accordingly, the associated wetland specialist study compiled by Wetland Consulting Services should be used for determination the current ecological state of wetland habitat for the assessed depressional pan systems and their associated seepages.

It was determined that Pan 322 (Pan P5 as per WCS report), Pan 323 (Pan P6 as per WCS report), Pan 325 (Pan P2 as per WCS report) and Pan 328 (Pan P1 as per WCS report) could be grouped as grass depressions, all of which comprised dense growths of hygrophilous grasses and sedges with limited to no open water present. In contrast, Pan 324 could be classified as an open-water pan which was devoid of any aquatic vegetation, with only limited marginal vegetation present.

Aquatic Macroinvertebrates

For the purpose of the present study, aquatic macroinvertebrates were sampled using the SASS5 approach and identified to order or where possible family level, with numbers estimated in order to allow for some level of comparisons using statistical analyses while limiting costs. While this approach is considered inadequate for establishing the true diversity of aquatic macroinvertebrates associated with such depressional systems, it was considered relevant for supplementary purposes and to demonstrate taxa differences between pans at the time of the site visit.

During the course of the present study, a total of 22 aquatic macroinvertebrate taxa were collected within the identified pans. In addition, a total of 12 taxa were noted to be present throughout the study area, with five taxa being collected at all the pans assessed.

Unsurprising and consistent with the environments in which they were sampled, it is noted that taxa collected had a very low to low preference for unmodified water quality, a preference for the lack of flowing water, and a preference for aquatic or marginal vegetation. In general, taxa collected during the present study indicated species considered largely characteristic of non-perennial pans that undergo significant desiccation, and included taxa of the groups Anostraca, Conchostraca and Ostracods.

Depressions such as those present within the study area are likely to support various aquatic macroinvertebrates that have developed life strategies and unique adaptations that allow them to cope with the harsh environments and have an opportunistic life cycle that allow them to take advantage of the temporary nature of the inundation period by growing, reaching sexual maturity, and reproducing within an extremely short period of time, with the inherent aquatic macroinvertebrate diversity (most notably branchiopods) being primarily supported by the egg bank present within the upper sediment layers of each such depressional feature.

Based on the results obtained, it could be determined that aquatic macroinvertebrate taxa richness at the time of the February 2022 assessment was highest in Pan 322 and lowest in Pan 328. Based on Pielou's Evenness Index, the highest level of evenness was measured at Pan 323 while the lowest level of evenness was measured at Pan 322 with the diversity within Pan 322 being dominated by a single taxon.

Diatoms

A summary of the results of the diatom assessment for each pan is provided below:

- Pan 322 obtained a Specific Pollution sensitivity Index (SPI) score of 15.1, reflecting good biological water quality (Ecological Category B). Higher nutrient levels may be originating from agricultural fields that surround the pan.
- Pan 323 obtained an SPI score of 6.9, reflecting poor biological water quality (Ecological Category D/E). Higher organic load and nutrient levels were most probably due to cattle that use the pan as a watering point. Key indicator species associated with industrial impact were generally absent, suggesting that mining was not the main impact on the dam.
- Pan 325 obtained a SPI score of 9.6, reflecting poor biological water quality (Ecological Category D). While the presence of *Nitzschia archibaldii* could be an indication of possible mining impact, this species and the other dominant species are rather associated with fluctuating nutrient and organic load mainly as a result of the natural variation within the pan ecosystem.
- Pan 322 obtained an SPI score of 20, reflecting high biological water quality (Ecological Category A). Key indicator species associated with industrial impact were generally absent, suggesting that mining was not impacting the pan.

10.1.1.9 Groundwater

The information in the following section was extracted from the hydrogeological impact assessment report undertaken by J&W for the Dispatch Rider project (J&W, 2024a).

Aquifer types

Three aquifers are typically present in the project area. These are:

- A shallow perched aquifer in the lower lying areas or depressions where a low permeable, clayey, ferricrete layer is overlain by alluvium and transported hillwash material. Wetlands are commonly associated with these aquifers;
- A weathered aquifer, which extends to depths of approximately 20 metre below surface (mbs), depending on the extent of weathering. In the project area, this aquifer is expected to be clay-rich, with comparatively low aquifer parameters. This aquifer is therefore not considered to be a major aquifer, although it plays a role in recharge to the deeper hard-rock aquifers and baseflow to streams; and

- A deeper fractured rock aquifer, which is characterised by fractures, faults and contact zones with the dolerite intrusions in the Karoo sediments. This aquifer is underlying the weathered aquifer and extends down to the bottom of the No. 2 coal seam.

The average depths of the various aquifers within the study area, as based on the existing borehole database, is summarised in **Table 10-11** below.

Table 10-11: Average aquifer depths (J&W, 2024a)

AQUIFER	DEPTH (mbs)	GEOLOGY
Perched	0 – 8	Sands including alluvium & transported hillwash underlain by clay / ferricrete
Weathered	8 – 16	Weathered sandstone and siltstone underlain by unweathered sandstone, siltstone, carbonaceous shale and coal seams
Fractured	16 -72	Slightly weathered to unweathered shale, sandstone and siltstone with coal seams underlain by basement rock

Aquifer classification

Based on information received it can be concluded that the aquifer system in the study area can be classified as a "Minor Aquifer System", based on the fact that the local population is not fully dependent on groundwater and the aquifer is low yielding in terms of supply volumes.

Aquifer parameters

The calculated mean aquifer parameters for the tested boreholes from the 2005, 2009 and 2016 J&W investigations are included in **Table 10-12.** The results indicate a good correlation between the different investigations.

Table 10-12: Mean Aquifer Parameters (J&W, 2024a)

ESTIMATED MEAN PARAMETER	TRANSMISSIVITY (T)	HYDRAULIC CONDUCTIVITY (K)	STORATIVITY
	(m^2/day)	(m/day)	-
Weathered Aquifer			
Geometric Mean (2015)	1.0	0.080	N/A
Harmonic Mean (2015)	0.65	0.050	N/A
Calculated J&W Mean	0.83	0.070	N/A
JMA Slug Tests (2011)	-	0.040	-
Fractured Aquifer			
Geometric Mean (2015)	1.1	0.030	N/A
Harmonic Mean (2015)	0.73	0.020	N/A
Calculated Mean	0.92	0.030	N/A
JMA Slug Tests (2011)	-	0.0040	-

Transmissivity values of less than 1.0 m^2/day were calculated in both the weathered and fractured aquifers and is what is expected in the typically double porosity Karoo aquifers.

The average hydraulic conductivity is in the order of 0.030 to 0.040 m/day.

Groundwater vulnerability

Aquifer vulnerability assessment indicates the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer. Stated in another way, it is a measure of the degree of insulation that the natural and manmade factors provide to keep contamination away from groundwater.

The aquifer vulnerability for a contaminant released from surface to a specified position in the groundwater system after introduction at some location above the uppermost aquifer was determined using the criteria described below and assuming a worst-case scenario:

- Highly vulnerable (> 60), the natural factors provide little protection to shield groundwater from contaminating activities at the land surface.
- Medium Vulnerable = 30 to 60%, the natural factors provide some protection to shield groundwater from contaminating activities at the land surface, however based on the contaminant toxicity mitigation measures will be required to prevent any surface contamination from reaching the groundwater table.
- Low Vulnerability (< 30 %), natural factors provide relatively good protection and if there is little likelihood that contaminating activities will result in groundwater degradation
- The Groundwater Decision Tool calculated a vulnerability value of 55%, which is medium.

Aquifer protection

A Groundwater Quality Management Index of 4 was estimated for the study area from the ratings for the Aquifer System Management Classification. According to this estimate a medium-level groundwater protection is required for the aquifer. Reasonable and sound groundwater protection measures based on the modelling will therefore be recommended to ensure that no cumulative pollution affects the aquifer, even in the long term.

Groundwater gradients, levels and flow

The first important aspect when evaluating the hydrogeological regime and groundwater flow mechanisms is the groundwater gradients. Groundwater gradients, taking into consideration fluid pressure, are used to determine the hydraulic head which is the driving force behind groundwater flow. The average depth to groundwater table for the study area was calculated to be 23.2 mbs.

Typically, a linear relationship exists between the depth to groundwater and the topography since groundwater normally drains under gravity towards streams and rivers. The boreholes in the study area were evaluated either to prove or disprove if this concept is valid within this study area. All available static water levels (SWL) were plotted against topography as shown in **Figure 10-22**. The results indicate a correlation of 65% between the topography and groundwater observed levels. The correlation is quite low because of active dewatering occurring from the underground workings at Bankfontein Colliery (located directly south-east of the Dispatch Rider project).

As groundwater levels follow topography it can be assumed that groundwater flow takes place under unconfined to semi-confined conditions. It is shown in **Figure 10-23** that locally and in general groundwater flows towards the topographically low and centrally located Spookspruit. The dewatering effect of Bankfontein Colliery can also clearly be seen to the south. This dewatering effect will impact on local groundwater gradients and flow directions. The Spookspruit drains the study area in a northerly direction.

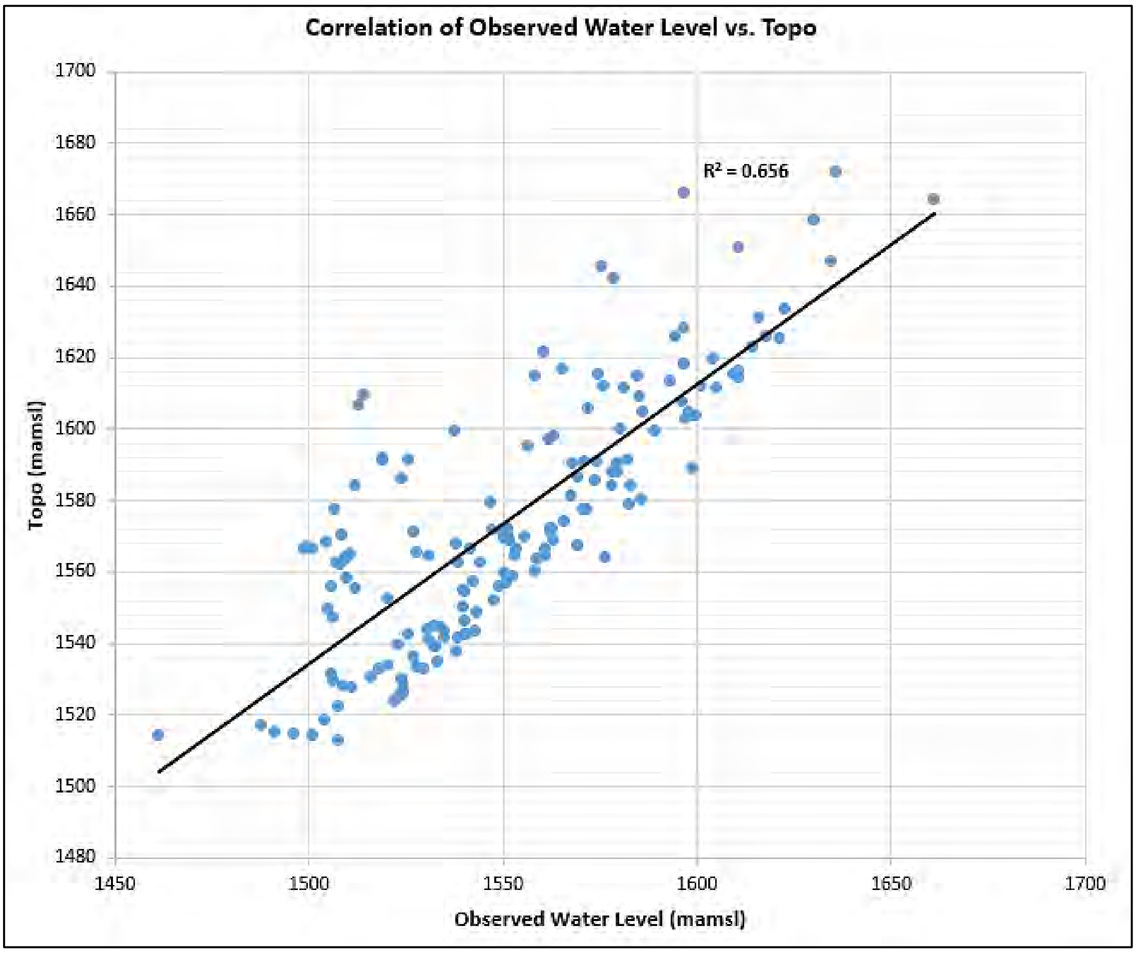


Figure 10-22: Relationship between groundwater table and topography (J&W, 2024a)

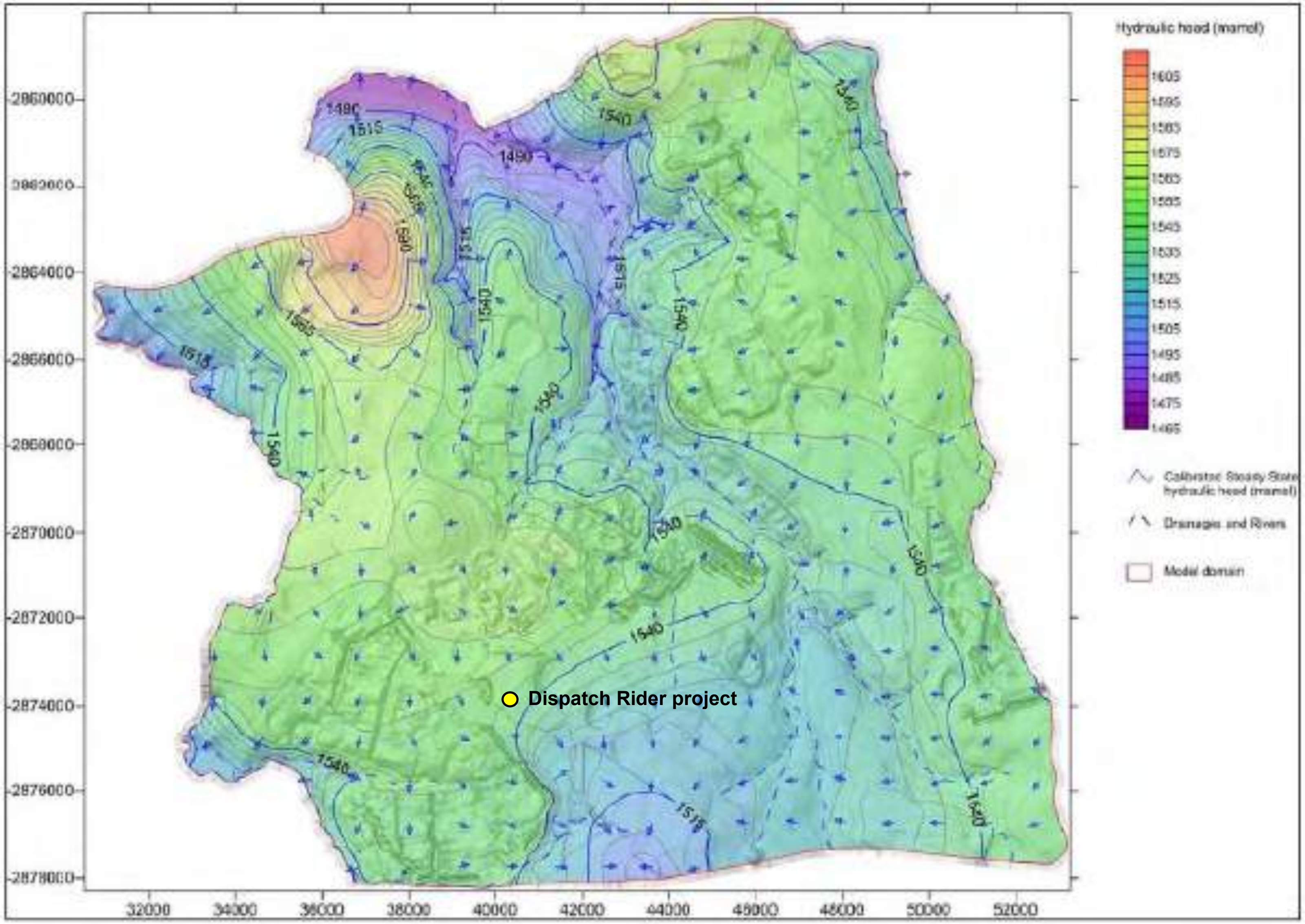


Figure 10-23: Interpolated groundwater levels for MMS North (J&W, 2024a)

Groundwater recharge

Recharge is defined as the process by which water is added from outside to the zone of saturation of an aquifer, either directly into a formation, or indirectly by way of another formation. A recharge of 2% of MAP has generally been accepted as the norm for the Karoo formations. The values specific to this study are usually higher than values determined with other methods because of the presence of higher porosity material as indicated in **Table 10-13.**

Table 10-13: Recharge values assigned to the study area (J&W, 2024a)

	LITHOLOGY	RECHARGE (%)	RECHARGE (m/d)	KX, KY (m/d)	KZ (m/d)	STORAGE COEFFICIENT	POROSITY
1	Spoils	25%	5.21E-04	40	40	3.00E-01	30%
2	Levelled	20%	4.17E-04	20	2	2.00E-01	30%
3	Rehabilitated	15%	3.13E-04	17.5	1.75	2.00E-01	30%
4	Pits (voids)	50%	1.04E-03	40	40	3.00E-01	30%
6	Underground mined out (UG)	0%	0.00E+00	40	40	3.00E-01	30%
7	Tailings Dam	20%	4.17E-04	2	2	1.00E-01	30%
8	Weathered zone/regolith	2%	4.17E-05	0.2	0.2	5.00E-03	2%
9	Vryheid Formation	2%	4.17E-05	0.1	0.01	5.00E-03	2%
10	Dwyka diamictite	2%	4.17E-05	0.01	0.001	5.00E-03	2%
11	Diabase sills	2%	4.17E-05	0.1	0.01	5.00E-03	2%
12	Loskop Formation	2%	4.17E-05	0.1	0.01	5.00E-03	2%
13	Selons River Fm (volcanic rocks)	2%	4.17E-05	0.1	0.01	5.00E-03	2%

Groundwater quality

Monitoring data for 36 boreholes located at the site was received from Seriti Power. The latest water quality results available were for December 2021 and were compared with the maximum recommended concentrations for domestic use as defined by SANS 241 2015 Drinking Water target water quality limits. The SANS 241 2015 Drinking Water guideline is applicable to all water services institutions and sets numerical limits for specific determinants to provide the minimum assurance necessary that the drinking water is deemed to present an acceptable health risk for lifetime consumption. The results of the screened groundwater quality results for December 2021 are presented in **Table 10-14** to **Table 10-17** and discussed in the section below:

- The **pH** value is below the allowable limit in sample PIZ 19 Bottom. The hydrochemistry of this sample is a dilute reflection of acid generation processes in a mining environment (slightly elevated sulfate and metals, especially manganese) and the alkalinity in this borehole is depleted. Therefore, limited acid generation may have occurred in this borehole but further data evaluation may be needed to understand the hydrochemistry observed.
- **Electrical conductivity** and **Total Dissolved Solids (TDS)** values exceed the allowable limit in various samples (North - NP 3, North - NP 14, South - SP 7, PIZ 1 (Bottom), PIZ 7, PIZ 8, PIZ 12 (Top), PIZ 12 (Bottom), PIZ 16 (Top), PIZ 16 B, PIZ

19 (Bottom), E5, E6, E8, G6, and HBB 4). These samples have elevated concentrations of sulfate, and this can explain the elevated electrical conductivity and TDS values.

- **Sulfate** exceeds the allowable limit in various samples (North - NP 3, North - NP 14, South - SP 7, PIZ 1 (Bottom), PIZ 7, PIZ 8, PIZ 12 (Top), PIZ 16 (Top), PIZ 16 B, PIZ 19 (Bottom), E5, E6, E8, G6). The elevated sulfate concentrations in these boreholes are likely due to existing mining activities.
- **Iron** exceeds the allowable limit in samples North - NP 2, North - NP 13, North - NP 14, South - SP 7, PIZ 12 (Top), PIZ 12 (Bottom), PIZ 16 (Top), PIZ 19 (Bottom), G7, likely due to mining activity in the area.
- **Manganese** exceeds the allowable limit in samples North - NP 3, North - NP 14, South - SP 5, South - SP 7, PIZ 8, PIZ 12 (Top), PIZ 16 (Top), PIZ 19 (Bottom), E2, E5, E6, E8, and G6 likely due to a concentration of manganese in the local sedimentary geology and, in highly elevated concentrations, due to mining activities.

The Piper diagram constructed using the sample chemistry indicates that a few samples have been affected by mining activities which are illustrated by the samples plotting in the top quadrant of the quadrilateral diamond. The samples plotted in the bottom quadrant of the quadrilateral diamond indicates ancient groundwater and ion-exchange within the aquifer. Mining activities have not influenced these samples. The samples plotted in the left quadrant of the quadrilateral diamond indicate freshly recharged groundwater unaffected by mining activities – see **Figure 10-24**.

Table 10-14: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	NORTH - NP 2	NORTH - NP 3	NORTH - NP 13	NORTH - NP 14	SOUTH - SP 1	SOUTH - SP 2	SOUTH - SP 4	SOUTH - SP 5	SOUTH - SP 15
pH - Value @ 25 ºC		> 5.0 or < 9.7	7.7	8.7	7.5	6.0	7.1	8.0	7.7	7.3	8.7
Electrical Conductivity in mS/m @ 25°C	mS/m	170	14	157	42	257	15	17	21	81	14
Total Dissolved Solids @ 180°C	ppm	1200	84	1320	228	2652	84	104	138	594	84
Total Alkalinity as $CaCO_3$	mg/l	NG	64	96	240	32	81	60	109	55	72
Chloride as Cl	mg/l	300	2	10	6	2	3	9	4	4	4
Sulfate as SO_4	mg/l	500	2	910	0	1985	2	21	10	424	6
Fluoride as F	mg/l	1.5	2.01	0	0.57	0	0	0.25	0.32	0	0.46
Nitrate as N	mg/l	11	0	0.7	0	0	0	0.14	0.18	0.23	0
Free and Saline Ammonia as N	mg/l	1.5	0	1.53	6.17	1.02	2.99	0.99	0	0.23	0.29
Sodium as Na	mg/l	200	23	34	13	20	8	11	32	10	28
Potassium as K	mg/l	NG	7	28	12	26	3	3	1	8	1
Calcium as Ca	mg/l	NG	5	34	37	326	13	15	11	72	3
Magnesium as Mg	mg/l	NG	1	249	16	299	5	6	5	70	1
Aluminium as Al	mg/l	0.30	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1
Iron as Fe	mg/l	2.0	1.1	0.26	0.9	36.6	0.0	0.1	0.3	0.2	0.1
Manganese as Mn	mg/l	0.40	0.01	0.47	0.22	19.6	0.3	0	0	0.44	0
Phosphate as P	mg/l	NG	0	0.0	0	0	0.0	0	0	0.0	0.0

Table 10-15: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	SOUTH - SP 7	BH 5	SP 18	PIZ 1 (TOP)	PIZ 1 (BOTTOM)	PIZ 2 (TOP)	PIZ 2 (BOTTOM)	PIZ 2 B (TOP)	PIZ 2 B (BOTTOM)
pH - Value @ 25 ºC		> 5.0 or < 9.7	8.0	7.9	7.3	7.7	7.6	7.8	7.5	7.0	6.4
Electrical Conductivity in mS/m @ 25°C	mS/m	170	166	12	62	93	184	51	11	6	4
Total Dissolved Solids @ 180°C	ppm	1200	1528	86	226	694	1428	326	78	46	21
Total Alkalinity as $CaCO_3$	mg/l	NG	11	53	328	130	282	274	45	11	8
Chloride as Cl	mg/l	300	11	9	8	3	6	3	3	3	2
Sulfate as SO_4	mg/l	500	1106	3	3	388	788	9	3	6	2
Fluoride as F	mg/l	1.5	0.24	1.33	0.42	0.34	0.84	0.47	0	0	0.0
Nitrate as N	mg/l	11	0	0	0	0.22	2.12	1.04	0.95	0.77	0.8
Free and Saline Ammonia as N	mg/l	1.5	1.3	0.27	17.1	0	0	0	0.25	0.21	0
Sodium as Na	mg/l	200	36	19	10	39	202	21	6	5	4
Potassium as K	mg/l	NG	5	3	14	12	15	13	2	2	2
Calcium as Ca	mg/l	NG	214	5	21	95	157	44	12	3	1
Magnesium as Mg	mg/l	NG	154	1	39	58	91	32	4	2	1
Aluminium as Al	mg/l	0.30	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Iron as Fe	mg/l	2.0	0.4	0.0	0.1	0	0.0	0.0	0.0	0.0	0.1
Manganese as Mn	mg/l	0.40	0.13	0	0.14	0	0.18	0.1	0.0	0.01	0.01
Phosphate as P	mg/l	NG	0.0	0.0	0.0	0	0	0.11	0.11	0.0	0.0

Table 10-16: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	PIZ 5 (TOP)	PIZ 5 (BOTTOM)	PIZ 6 (TOP)	PIZ 6 (BOTTOM)	PIZ 7	PIZ 8	PIZ 9	PIZ 10 (TOP)	PIZ 10 (BOTTOM)
pH - Value @ 25 ºC		> 5.0 or < 9.7	8.2	8.2	7.4	7.6	7.6	6.7	7.5	7.8	7.5
Electrical Conductivity in mS/m @ 25°C	mS/m	170	70	69	14	19	162	297	21	19	16
Total Dissolved Solids @ 180°C	ppm	1200	426	430	112	134	1474	3092	134	102	114
Total Alkalinity as $CaCO_3$	mg/l	NG	265	280	66	91	89	138	83	91	70
Chloride as Cl	mg/l	300	26	26	2	3	6	7	5	4	3
Sulfate as SO_4	mg/l	500	41	39	3	5	893	1944	14	7	13
Fluoride as F	mg/l	1.5	13.5	13.6	0.3	0.3	0.23	0	0.2	0.39	0.0
Nitrate as N	mg/l	11	0.0	0.0	1.4	1.03	0.4	0	1.6	0.2	0.0
Free and Saline Ammonia as N	mg/l	1.5	0	0.2	0	0	0	0.42	0	0	0
Sodium as Na	mg/l	200	170	171	11	14	31	56	14	6	5
Potassium as K	mg/l	NG	2	2	3	3	12	25	4	3	4
Calcium as Ca	mg/l	NG	3	3	10	15	226	445	17	14	15
Magnesium as Mg	mg/l	NG	1	1	6	8	130	289	9	14	9
Aluminium as Al	mg/l	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron as Fe	mg/l	2.0	0.08	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Manganese as Mn	mg/l	0.40	0	0.0	0.02	0	0.0	1.92	0.01	0	0.24
Phosphate as P	mg/l	NG	0.0	0.0	0.16	0.14	0	0	0	0	0

Table 10-17: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	PIZ 11 (TOP)	PIZ 11 (BOTTOM)	PIZ 12 (TOP)	PIZ 12 (BOTTOM)	PIZ 14	PIZ 16 (TOP)	PIZ 16 B	PIZ 17 (TOP)	PIZ 17 (BOTTOM)
pH - Value @ 25 ºC		> 5.0 or < 9.7	7.7	8.0	7.2	7.1	6.6	6.3	7.5	7.9	7.1
Electrical Conductivity in mS/m @ 25°C	mS/m	170	21	31	165	165	74	220	184	41	62
Total Dissolved Solids @ 180°C	ppm	1200	146	198	1400	1352	486	2238	1452	264	348
Total Alkalinity as $CaCO_3$	mg/l	NG	96	142	166	338	66	74	594	219	378
Chloride as Cl	mg/l	300	4	4	6	6	192	9	9	3	5
Sulfate as SO_4	mg/l	500	11	18	809	710	8	1338	581	16	1
Fluoride as F	mg/l	1.5	0.4	0.7	0.2	0.27	0	0.28	0.53	1.7	1.2
Nitrate as N	mg/l	11	0.8	0.1	0	0	0.2	0	1.5	1.2	0
Free and Saline Ammonia as N	mg/l	1.5	0	0	1.51	7.23	0	0.54	6.46	0	7.98
Sodium as Na	mg/l	200	29	29	67	66	101	39	59	75	85
Potassium as K	mg/l	NG	3	3	14	14	10	22	17	5	11
Calcium as Ca	mg/l	NG	14	30	193	164	22	274	110	14	29
Magnesium as Mg	mg/l	NG	3	7	115	113	14	209	171	7	14
Aluminium as Al	mg/l	0.30	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Iron as Fe	mg/l	2.0	0.0	0.0	0.5	0.6	0.0	1.2	0.0	0.0	0.0
Manganese as Mn	mg/l	0.40	0.01	0	0.57	0.16	0.02	6.53	0.16	0.0	0.1
Phosphate as P	mg/l	NG	0.0	0	0	0	0	0.0	0	0.13	0.0

Table 10-18: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	PIZ 19 (TOP)	PIZ 19 (BOTTOM)	E1	E2	E3	E4	E5	E6	E8
pH - Value @ 25 ºC		> 5.0 or < 9.7	7.8	3.4	6.2	6.5	7.2	8.2	6.4	6.5	6.7
Electrical Conductivity in mS/m @ 25°C	mS/m	170	117	168	11	18	31	59	473	485	438
Total Dissolved Solids @ 180°C	ppm	1200	758	1450	84	140	180	354	5768	5994	5056
Total Alkalinity as $CaCO_3$	mg/l	NG	675	0	45	34	115	242	155	183	70
Chloride as Cl	mg/l	300	12	5	2	4	9	6	12	10	11
Sulfate as SO_4	mg/l	500	33	917	6	48	24	80	3872	3976	3376
Fluoride as F	mg/l	1.5	1.5	0.4	0.0	0.0	0.4	0.2	0.2	0.2	0.0
Nitrate as N	mg/l	11	0.74	0.1	0	0.41	4.69	4.18	0.32	0	0
Free and Saline Ammonia as N	mg/l	1.5	0	2.56	0.91	0	0	0	2.33	2.48	1.08
Sodium as Na	mg/l	200	236	36	5	5	39	43	66	60	52
Potassium as K	mg/l	NG	7	8	3	5	8	14	35	40	34
Calcium as Ca	mg/l	NG	21	212	9	17	8	6	482	510	176
Magnesium as Mg	mg/l	NG	19	101	4	8	13	56	712	829	833
Aluminium as Al	mg/l	0.30	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron as Fe	mg/l	2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Manganese as Mn	mg/l	0.40	0	15.5	0.31	0.5	0.01	0.01	12.8	12	5.11
Phosphate as P	mg/l	NG	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 10-19: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	G2	G3	G4	G5	G6	G7	HBB 1	HBB 2	HBB 3
pH - Value @ 25 ºC		> 5.0 or < 9.7	6.8	9.0	7.5	7.6	8.9	6.8	6.7	7.0	6.3
Electrical Conductivity in mS/m @ 25°C	mS/m	170	43	25	8	33	173	63	6	9	37
Total Dissolved Solids @ 180°C	ppm	1200	316	168	42	194	1458	252	25	31	252
Total Alkalinity as $CaCO_3$	mg/l	NG	55	102	36	161	229	333	17	23	47
Chloride as Cl	mg/l	300	2	4	5	13	6	6	2	2	3
Sulfate as SO_4	mg/l	500	166	35	1	3	883	3	3	2	139
Fluoride as F	mg/l	1.5	0.0	0.5	0.0	0.2	0.0	0.2	0.0	0.0	0.0
Nitrate as N	mg/l	11	0	0.41	0	0	0.96	0	0	0.21	0
Free and Saline Ammonia as N	mg/l	1.5	0	0	0.25	0.82	12.5	22.8	0	0	0
Sodium as Na	mg/l	200	17	57	8	17	22	16	6	8	15
Potassium as K	mg/l	NG	5	2	2	7	34	9	2	2	4
Calcium as Ca	mg/l	NG	39	3	4	33	60	44	1	1	32
Magnesium as Mg	mg/l	NG	27	1	3	16	238	15	1	1	21
Aluminium as Al	mg/l	0.30	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0
Iron as Fe	mg/l	2.0	0.0	0.1	0.0	0.0	0.0	20.3	0.0	0.1	0.0
Manganese as Mn	mg/l	0.40	0.14	0.01	0.02	0.13	0.46	0.37	0.02	0	0.04
Phosphate as P	mg/l	NG	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0

Table 10-20: Water qualities compared to SANS 241-1:2015 guidelines for human consumption (J&W, 2024a)

SAMPLE ID	UNITS	SANS 241 (2015)	MBH 15 4 F	MBH 15 4 W	MBH 15 4P
pH - Value @ 25 ºC		> 5.0 or < 9.7	6.4	6.2	5.8
Electrical Conductivity in mS/m @ 25°C	mS/m	170	6	5	2
Total Dissolved Solids @ 180°C	ppm	1200	54	22	18
Total Alkalinity as $CaCO_3$	mg/l	NG	19	11	11
Chloride as Cl	mg/l	300	3	2	1
Sulfate as SO_4	mg/l	500	3	0	2
Fluoride as F	mg/l	1.5	0.0	0.0	0.0
Nitrate as N	mg/l	11	0	1.51	0.12
Free and Saline Ammonia as N	mg/l	1.5	0	0	0.24
Sodium as Na	mg/l	200	5	4	4
Potassium as K	mg/l	NG	3	2	0
Calcium as Ca	mg/l	NG	2	1	1
Magnesium as Mg	mg/l	NG	1	1	1
Aluminium as Al	mg/l	0.30	1.0	0.0	0.3
Iron as Fe	mg/l	2.0	0.2	0.0	0.1
Manganese as Mn	mg/l	0.40	0.01	0	0.01
Phosphate as P	mg/l	NG	0.0	0.0	0.0

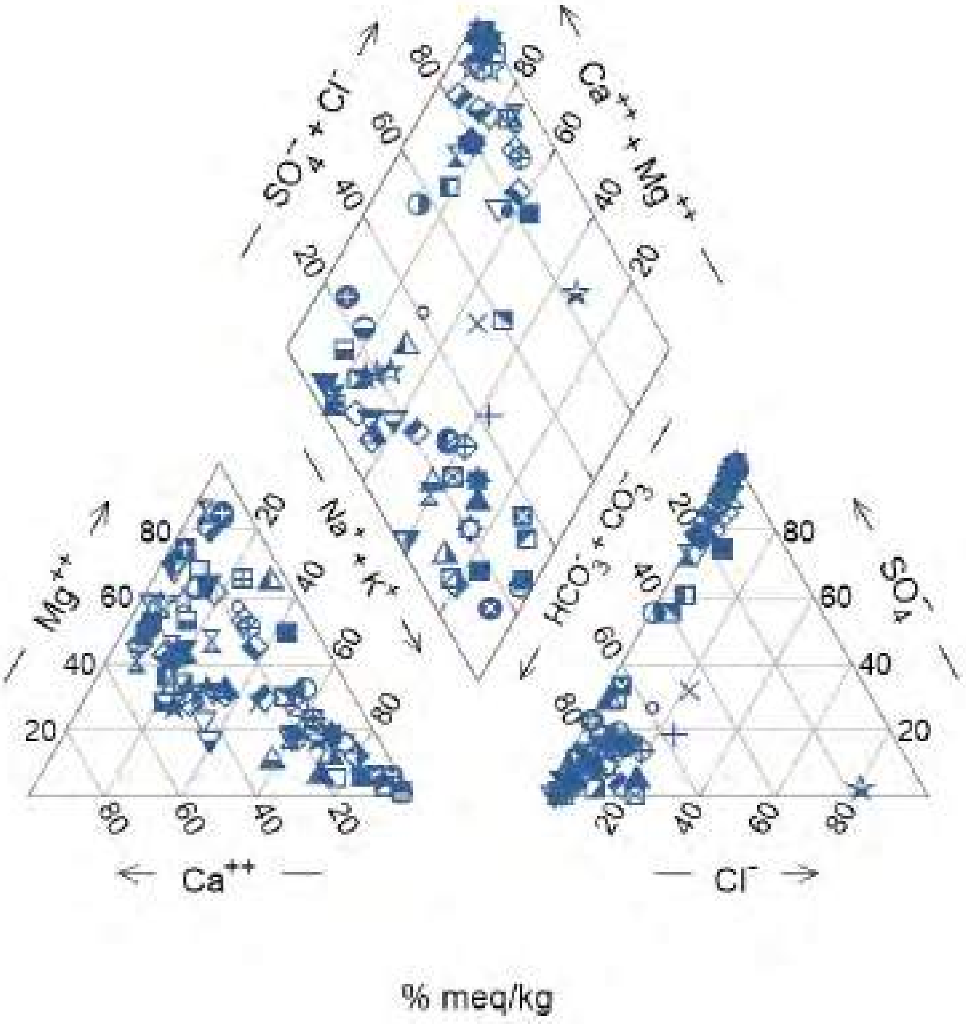


Figure 10-24: Piper Diagram (J&W, 2024a)

Hydrocensus

The Institute for Groundwater Studies (IGS) conducted a hydrocensus study at Middelburg Mine in May 2006 to identify all boreholes and springs in the study area. The study also identified the use of each borehole and the hydrochemistry of specified boreholes. The monitoring database has been continually updated with water levels and water chemistry. A hydrocensus was conducted in June 2015 to identify and collect information from the boreholes in the study area. Being a brownfields area surrounded by mining complexes, a limited number of private user boreholes are located within the vicinity of the affected opencast and underground mining areas. A total of 70 boreholes were identified to be relevant to this study and were used in the calibration of the numerical groundwater model. Information on the boreholes is included in **Table 10-21** and illustrated on **Figure 10-22**.

Table 10-21: Existing borehole database for MMS North (J&W, 2024a)

BOREHOLE ID	COORDINATES (WGS84)	COLLAR ELEVATION	GROUNDWATER LEVEL (MBS)
BH 5	S -25.932233, E29.393167	1577	4.3
E 1	S -25.932806, E 29.421500	1555	16
E 2	S -25.882972, E 29.421667	1505	5.6
E 3	S -25.883222, E 29.421417	1505	3.2
E 4	S -25.922417, E 29.421111	1537	4.3
E 5	S -25.920556, E 29.421389	1533	9.8
E 6	S -25.924694, E 29.425722	1534	6.2
E 7	S -25.860083, E 29.447733	1584	-
E 8	S -25.935800, E 29.425600	1556	29
DN-1	S -25.952260, E 29.362410	1581	1.7
DN-3	S -25.974510, E 29.337610	1565	9.8
G 2	S -25.871444, E 29.447389	1543	5.4
G 3	S -25.870944, E 29.444806	1537	1.8
G 4	S -25.869278, E 29.445083	1544	5.9
G 5	S -25.867667, E 29.447861	1552	6.9
G 6	S -25.865583, E 29.449750	1562	22
G 7	S -25.860083, E 29.447733	1570	20
HBB 1	S -25.962050, E 29.386600	1605	8.6
HBB 2	S -25.962317, E 29.383917	1601	27
HBB 3	S -25.956967, E 29.379333	1584	10
HF972	S -25.96752, E 29.39413	1604	-

BOREHOLE ID	COORDINATES (WGS84)	COLLAR ELEVATION	GROUNDWATER LEVEL (MBS)
HF981	S -25.97677, E 29.40401	1615	-
HFN10	S -25.97106, E 29.41912	1605	-
HFN12	S -25.98009, E 29.41915	1614	-
HN-1	S -25.989860, E 29.415720	1605	21
KLIP 1	S -25.957139, E 29.448694	1579	22
KLIP 5	S -25.990350, E 29.508267	1604	4.7
KLIP 6	S -25.920817, E29.518200	1586	8.3
KLIP 7	S -25.955750, E 29.504983	1608	29
NP2	S -25.930900, E 29.400267	1555	2.5
NP3	S -25.922767, E 29.408250	1535	2.7
NP13	S -25.929300, E 29.400417	1554	2.7
NP14	S -25.938767, E 29.408200	1557	5.1
PIZ 1 Top & Bottom	S -25.918250, E 29.371970	1569	1.1
PIZ 2 Top & Bottom	S -25.912187, E 29.397672	1555	3.2
PIZ 2 B Top & Bottom	S -25.912139, E 29.397667	1554	2.4
PIZ 5 Top & Bottom	S -25.944278, E 29.465972	1538	0 (Overflow)
PIZ 6 Top & Bottom	S -25.907083, E 29.391583	1549	0.74
PIZ 7	S -25.918417, E 29.407056	1541	0.57
PIZ 8	S -25.918583, E 29.409639	1539	0 (Overflow)
PIZ 9	S -25.914583, E 29.406306	1546	2.9
PIZ 10 Top & Bottom	S -25.916333, E 29.402306	1550	6.2
PIZ 11 Top &Bottom	S -25.927722, E 29.394306	1565	2.4
PIZ 12 Top & Bottom	S -25.917611, E 29.417361	1524	0 (Overflow)
PIZ 13 Top & Bottom	S -25.918250, E 29.429389	1541	
PIZ 14	S -25.953970, E 29.375675	1601	7.3
PIZ 16 Top & Bottom	S -25.892889, E 29.446861	1589	7.1

BOREHOLE ID	COORDINATES (WGS84)	COLLAR ELEVATION	GROUNDWATER LEVEL (MBS)
PIZ 16 B	S -25.892889, E 29.446861	1581	6.4
PIZ 17 Top & Bottom	S -25.953000, E 29.445833	1562	4.3
PIZ 19 Top & Bottom	S -25.926472, E 29.445667	1556	3.8
RNN-6	S -25.925260, E 29.351030	1547	1.7
SN-1	S -25.958300, E 29.348740	1585	5.5
SP-1	S -26.014250, E 29.334667	1577	8.3
SP-2	S -26.007583, E 29.333917	1557	8.9
SP-4	S -26.010500, E 29.331250	1553	4.3
SP-5	S -26.005867, E 29.330983	1549	3.3
SP7	S -25.991666, E 29.346117	-	3.1
SP-15	S -26.002300, E 29.333300	1542	5.2
SW60	S -25.91246, E 29.48133	1585	-
SW73	S -25.91845, E 29.46075	1591	-
SW87	S -25.91957, E 29.48146	1595	-
WM 6	S -25.991640, E 29.383940	1575	6.2
WM 12	S -26.005030, E 29.369310	1557	18
MBH15-1W	S -25.84107, E 29.43921	1606	13
MBH15-1F	S -25.84105, E 29.43918	1606	29
MBH15-2W	S -25.84978, E 29.43685	1564	4.3
MBH15-2F	S -25.84978, E 29.43688	1564	4.6
MBH15-4P	S -25.96600, E 29.39318	1606	-
MBH15-4W	S -25.96600, E 29.39315	1606	4.9
MBH15-4F	S -25.96600, E 29.39312	1607	14
Mr Allen Second borehole	S -25.98388, E 29.41652	1614	-
Mr Allen Main borehole	S -25.96763, E 29.42380	1602	-
Mr Allen Spare borehole	S -25.97197, E 29.43316	1604	-
Mr Allen Vorster borehole	S -25.98991, E 29.41569	1614	-

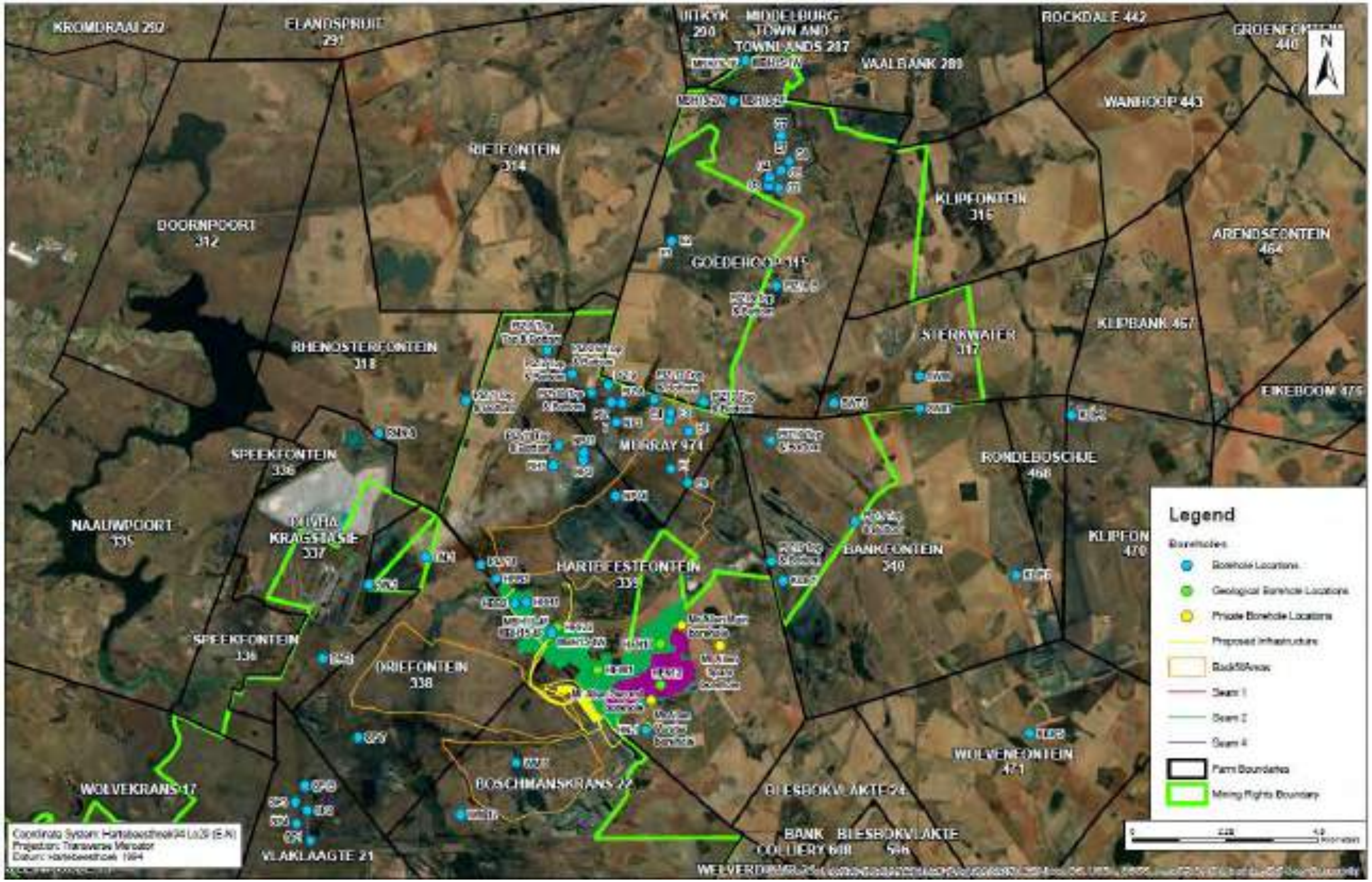


Table 10-22: Boreholes in the study area (J&W, 2024a)

10.1.1.10 Biodiversity

A biodiversity assessment was conducted in the area by Prism in 2016 as part of the application for EA for the Wolvekrans North amendment. An update to this study was done by The Biodiversity Company (TBC) in 2022.

Desktop spatial assessment

A desktop assessment based on spatial data that are provided by various sources such as such as the provincial environmental authority and South African Biodiversity Institute (SANBI), was done to describe the general area and habitat.

Mpumalanga Biodiversity Sector Plan

In terms of the MBSP, the proposed development is located within protected areas listed in the MBSP (**Figure 10-25(a)**).

The proposed development areas will potentially overlap with:

- Protected Area (PA): This refers to the Heyns Private Nature Reserve, which was designated in 1956 on portions of the farm Hartbeestfontein 339 JS. The area has however not been managed as conservation areas and the areas have been mined for extensive periods (Prism, 2016);
- Ecological support area (ESA): The area delineated as ESA is a 100 m buffer around the PA referred to above. As stated, the PA has not been managed as such and has been mined since the 1980’s;
- Other Natural Areas (ONA) which consist of those areas in good or fair ecological condition that fall outside the protected area network and have not been identified as Critical Biodiversity Areas (CBAs) or ESAs; and
- Moderately or Heavily Modified Areas (MMA’s or HMA’s) which are areas that have been heavily modified by human activity so that they are by-and-large no longer natural, and do not contribute to biodiversity targets (TBC, 2022).

National Biodiversity Assessment

The two headline indicators assessed in the National Biodiversity Assessment are ecosystem threat status and ecosystem protection level:

Ecosystem Threat Status

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends.

Ecosystem types are categorised as critically endangered (CR), endangered (EN), vulnerable (VU) or Least Threatened (LT), based on the proportion of each ecosystem type that remains in good ecological condition.

The project area is located in a VU ecosystem as shown on **Figure 10-25(b)**.

Ecosystem Protection Level

Ecosystem protection level tells us whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as not protected, poorly protected, moderately protected or well protected, based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act.

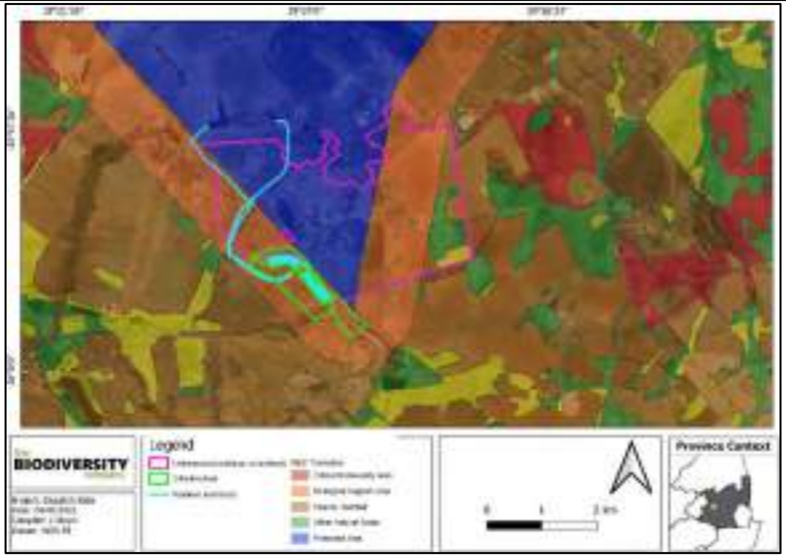
The terrestrial ecosystems associated with the proposed project area are rated as not protected (**Figure 10-25(c)**). This means that these ecosystem types (and associated habitats) are not protected anywhere in the country (such as in nationally protected areas) (TBC, 2022).

Mining and Biodiversity Guidelines

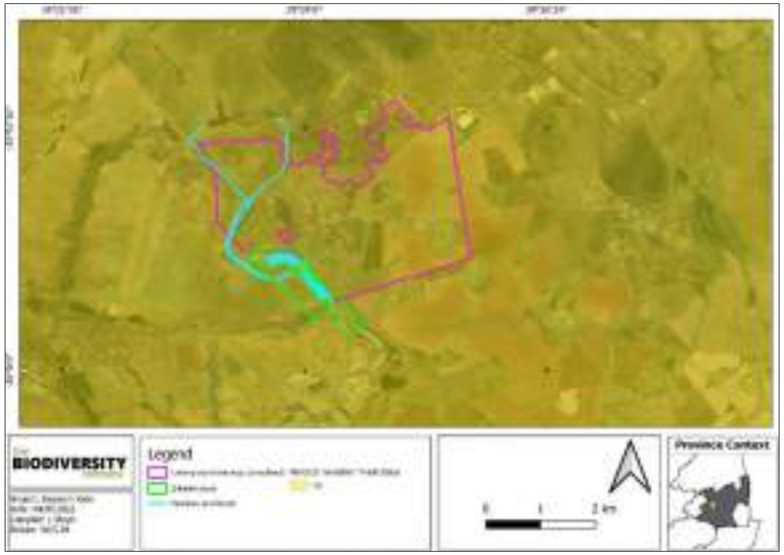
The Mining and Biodiversity Guidelines (2013) was developed by the Department of Mineral Resources, the Chamber of Mines, the South African National Biodiversity Institute and the South African Mining and Biodiversity Forum, with the intention to find a balance between economic growth and environmental sustainability. The Guideline is envisioned as a tool to "foster a strong relationship between biodiversity and mining" which will eventually translate into best practice within the mining sector. In identifying biodiversity priority areas which have different levels of risk against mining, the Guideline categorises biodiversity priority areas into four categories in relation to their importance from a biodiversity and ecosystem service point of view as well as the implications for mining in these areas:

- Legally protected areas, where mining is prohibited;
- Areas of highest biodiversity importance, which are at the highest risk for mining;
- Areas of high biodiversity importance, which are at a high risk for mining; and
- Areas of moderate biodiversity importance, which are at a moderate risk for mining.

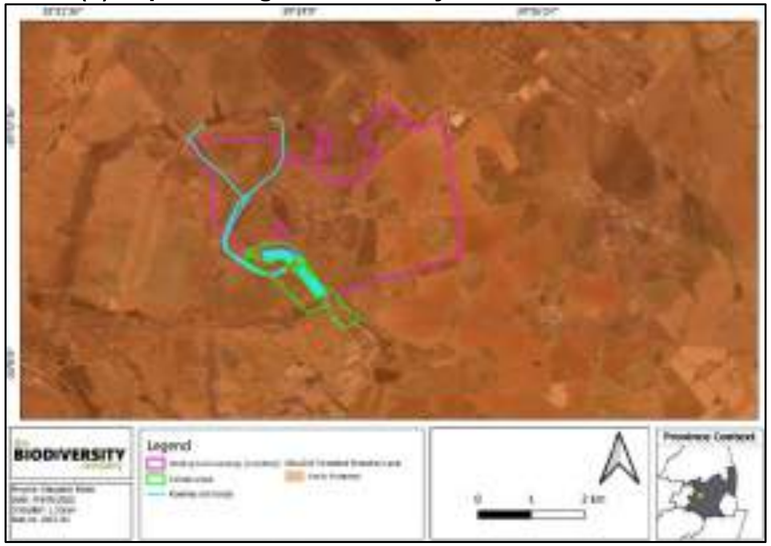
Some portions of the project area overlap with areas classified as "High Biodiversity Importance" and "Moderate Biodiversity Importance" (refer to **Figure 10-25(d)**). These classifications indicate that some limitations or restrictions to mining activities may therefore apply (TBC, 2022).



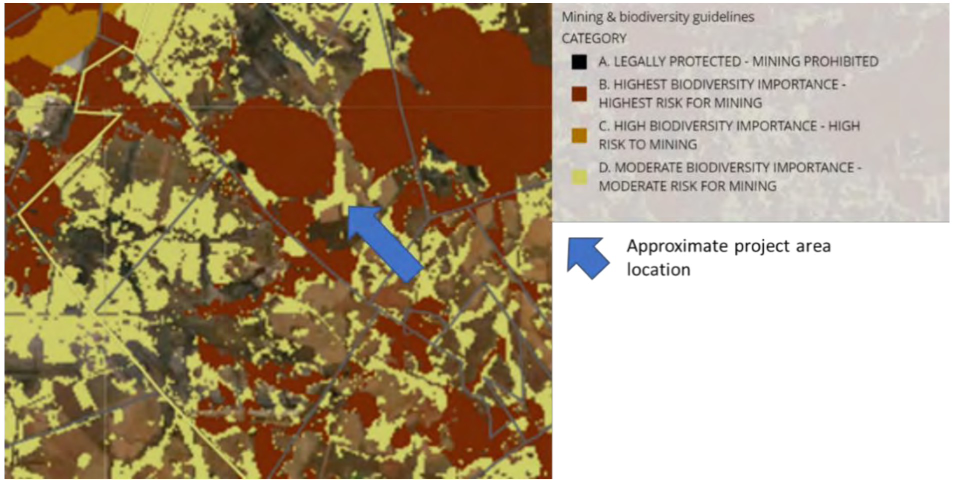
(a) Mpumalanga Biodiversity Sector Plan



(b) Ecosystem threat status of the associated terrestrial ecosystems



(c) Level of protection of terrestrial ecosystems



(d) Mining and biodiversity guidelines

Figure 10-25: Project area superimposed with various spatial datasets (TBC, 2022)

Terrestrial Floral Biodiversity

The grassland biome comprises many different vegetation types. The Dispatch Rider project area is situated the Eastern Highveld Grassland.

Habitat Assessment

Four primary habitats were delineated for the Dispatch Rider underground mining area include the following:

- Natural grassland,
- Transformed areas,
- Degraded grassland; and
- Wetland areas, mainly being Pans/depressions.

The natural grassland habitats are the areas which are considered to have been somewhat disturbed but is still in a natural ecological state. Currently, impacts arise from the surrounding land use, which is mainly mining, and the impacts consists of coal dust and habitat fragmentation. The habitat functions as important refugia and a source of food for the remaining fauna present. The wetland areas do overlap with this habitat from a terrestrial perspective.

The degraded grassland habitats are fragmented areas which have been either rehabilitated in the past or fragmented and disturbed from current mining practices. Due to the extent of the previous and current disturbance, from the anthropogenic mining surroundings, the area is in a degraded state. The degraded grassland indicated by the arrow in **Figure 10-26** is in a more intact condition than the other degraded areas (TBC, 2021). This habitat is regarded as areas that has been impacted by edge effects of transformed areas as well as direct impacts from littering, dumping and infringement. These habitats are not entirely transformed but is in a constant disturbed state. It cannot recover to a more natural state due to ongoing disturbances and impacts from the surrounding transformed areas. These areas may be used as a movement corridor and in many cases form a barrier between the more natural grassland and the disturbed/transformed areas.

The pans/depressions are regarded as habitats that as with all the habitats, were and are impacted by the surrounding mining activities. Even though somewhat disturbed, the ecological integrity, importance and functioning of these areas play a crucial role as a water resource system and an important habitat for various fauna and flora. The preservation of this system is a crucial aspect to consider for the proposed development. This habitat needs to be protected and improved due to the role of this habitat as a water resource.

The transformed areas are the areas which have little to no natural areas left due to them being transformed by mining or roads and other infrastructure.

The habitat types identified in the Dispatch Rider project area are indicated on **Figure 10-26**.

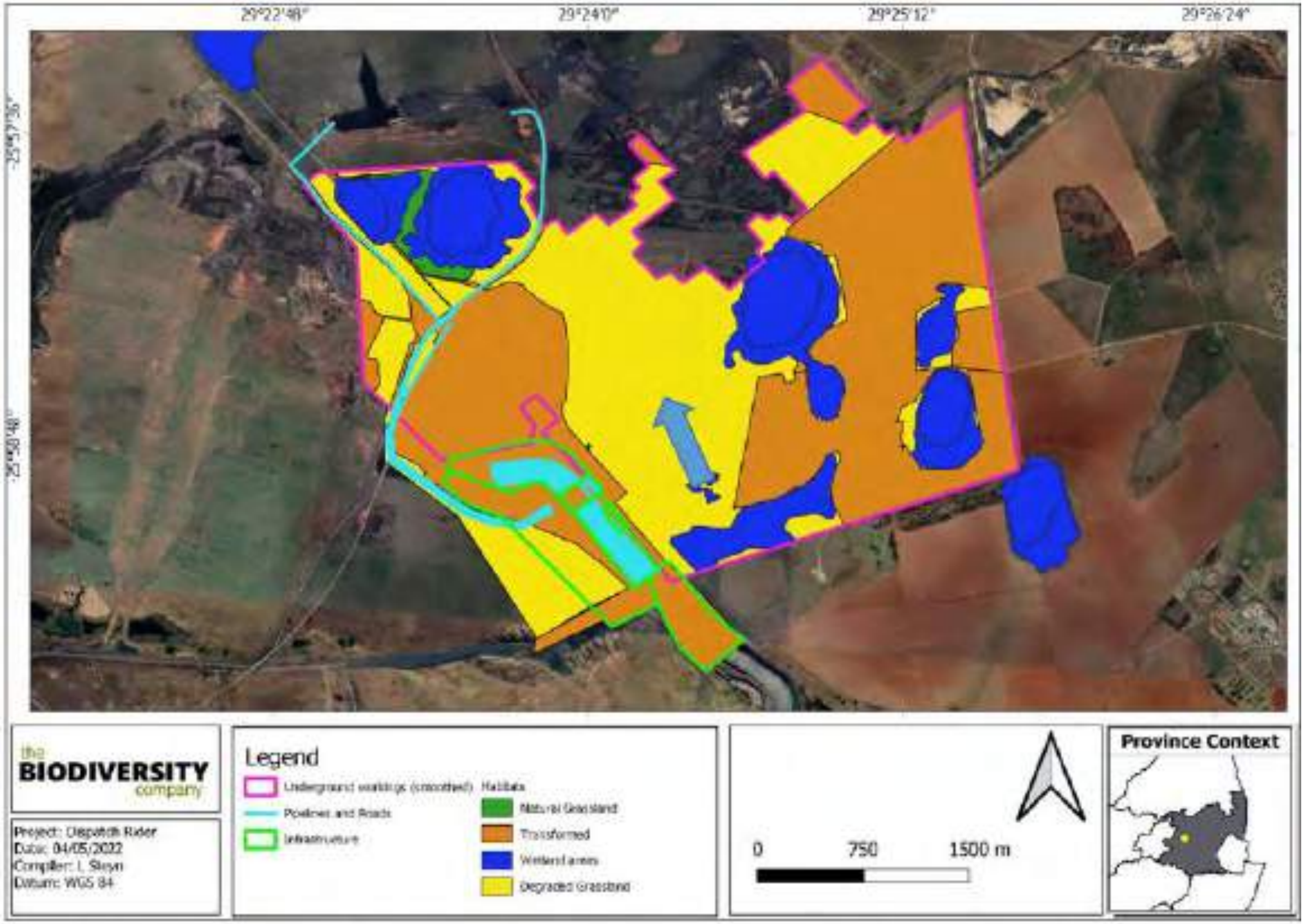


Figure 10-26: Habitats identified in the Dispatch Rider project area. The arrow indicates a more intact grassland within the degraded areas (TBC, 2022)

Vegetation assessment

The vegetation assessment was conducted throughout the extent of the project area. A total of 53 tree, shrub and herbaceous plant species were recorded in the project area during the field assessment as summarised in **Table 10-24**. Plants listed as Category 1 alien or invasive species under the NEMBA appear in green text. Plants listed in Category 2 or as 'not indigenous' or 'naturalised', appear in blue text.

The possible plant species of conservation concern (SCC) identified in the 2016 study are listed in **Table 10-23**. Only *Hypoxis hemerocallidea* was observed in the July 2019 survey by TBC (it should be noted that the 2016 study covered a larger area and therefore may not be present in the Dispatch Rider project area).

Table 10-23: Plant species of conservation concern observed in 2016 assessment (TBC, 2022)

SPECIES	THREAT STATUS	PROVINCIAL LISTING: MPUMALANGA SCHEDULE 14
Boophone disticha	LC	Protected
Eucomis autumnalis	LC	Protected
Hypoxis hemerocallidea	LC	Protected

Table 10-24: Trees, shrubs and weeds recorded at the proposed project area during the July 2019 survey (TBC, 2022)

SCIENTIFIC NAME	THREAT STATUS (SANBI, 2017)*	SA ENDEMIC	NEMBA CATEGORY
Acacia mearnsii			NEMBA Category 2
Aristida congesta subsp congesta	LC	No	
Aristida junciformis	LC	No	
Berkheya echinacea	LC	No	
Bidens pilosa			Naturalized exotic weed
Buddleja salviifolia	LC	No	
Cirsium vulgare			NEMBA Category 1b
Conyza bonariensis			Naturalized exotic weed
Cortaderia selloana			NEMBA Category 1b
Cymbopogon caesius	LC	No	
Cymbopogon nardus	LC	No	
Cynodon dactylon			NEMBA Category 2
Datura ferox			NEMBA Category 1b
Eragrostis chloromelas	LC	No	
Eragrostis curvula	LC	No	
Eragrostis gummiflua	LC	No	
Eragrostis lehmanniana	LC	No	
Eragrostis racemosa	LC	No	
Eucalyptus camaldulensis			NEMBA Category 1b

SCIENTIFIC NAME	THREAT STATUS (SANBI, 2017)*	SA ENDEMIC	NEMBA CATEGORY
Felicia muricata	LC	No	
Gomphocarpus fruticosus	LC	No	
Helichrysum inornatum	LC	No	
Helichrysum rugulosum	LC	No	
Hermannia depressa	LC	No	
Heteropogon contortus	LC	No	
Hyparrhenia hirta	LC	No	
Hypothelia dissoluta	LC	No	
*Hypoxis hemerocallidea**	LC	No	
Hypoxis rigidior	LC	No	
Imperata cylindrica	LC	No	
Lopholaena coriifolia	LC	No	
Melinis repens	LC	No	
Monocymbium ceresiiforme	LC	No	
Nicotiana glauca			NEMBA Category 1b
Oldenlandia herbacea	LC	No	
Pennisetum setaceum			NEMBA Category 1b
Phragmites australis	LC	No	
Phytolacca octandra			NEMBA Category 1b
Pogonarthria squarrosa	LC	No	
Salix babylonica			Naturalized exotic
Schkuhria pinnata			Naturalized exotic weed
Setaria sphacelata	LC	No	
Solanum mauritianum			NEMBA Category 1b
Solanum sisymbriifolium			NEMBA Category 1b
Sporobolus africanus	LC	No	
Stoebe plumosa	LC	No	
Tagetes minuta			Naturalized exotic weed
Themeda triandra	LC	No	
Typha capensis	LC	No	
Urochloa mosambicensis	LC	No	
Verbena astrigera			Naturalized exotic weed
Verbena bonariensis			NEMBA Category 1b
Walafrida densiflora	LC	No	

LC: Least concern
*Protected in Mpumalanga

Terrestrial Faunal Biodiversity

Avifauna

Thirty-two (32) bird species were recorded in the project area during the July 2019 survey based on either direct observation, vocalisations, or the presence of visual tracks and signs (refer to **Table 10-25**). No SCC were observed, however, signs of possible occurrence of African Grass-owls (*Tyto capensis*) were observed.

Table 10-25: A list of avifaunal species recorded for the project area during the July 2019 study (TBC, 2022)

SPECIES	COMMON NAME	CONSERVATION STATUS	
		REGIONAL (SANBI, 2017)	IUCN (2017)
Acridotheres tristis	Myna, Common	Unlisted	LC
Acrocephalus gracilirostris	Swamp-warbler, Lesser	Unlisted	LC
Anas undulata	Duck, Yellow-billed	Unlisted	LC
Anhinga rufa	Darter, African	Unlisted	LC
Asio capensis	Owl, Marsh	Unlisted	LC
Aviceda cuculoides	Hawk, African Cuckoo	Unlisted	LC
Bostrychia hagedash	Ibis, Hadeda	Unlisted	LC
Cisticola tinniens	Cisticola, Levaillant's	Unlisted	LC
Columba guinea	Pigeon, Speckled	Unlisted	LC
Cossypha caffra	Robin-chat, Cape	Unlisted	LC
Elanus caeruleus	Kite, Black-shouldered	Unlisted	LC
Estrilda astrild	Waxbill, Common	Unlisted	LC
Fulica cristata	Coot, Red-knobbed	Unlisted	LC
Lonchura cucullata	Mannikin, Bronze	Unlisted	LC
Motacilla capensis	Wagtail, Cape	Unlisted	LC
Numida meleagris	Guineafowl, Helmeted	Unlisted	LC
Oena capensis	Dove, Namaqua	Unlisted	LC
Passer domesticus	Sparrow, House	Unlisted	LC
Phalacrocorax africanus	Cormorant, Reed	Unlisted	LC
Ploceus velatus	Masked-weaver, Southern	Unlisted	LC
Pternistis swainsonii	Spurfowl, Swainson's	Unlisted	LC
Pycnonotus tricolor	Bulbul, Dark-capped	Unlisted	Unlisted
Quelea quelea	Quelea, Red-billed	Unlisted	LC
Rhinoptilus chalcopterus	Courser, Bronze-winged	Unlisted	LC
Riparia paludicola	Martin, Brown-throated	Unlisted	LC
Saxicola torquatus	Stonechat, African	Unlisted	LC
Sigelus silens	Flycatcher, Fiscal	Unlisted	LC

SPECIES	COMMON NAME	CONSERVATION STATUS	
		REGIONAL (SANBI, 2017)	IUCN (2017)
Streptopelia capicola	Turtle-dove, Cape	Unlisted	LC
Streptopelia senegalensis	Dove, Laughing	Unlisted	LC
Thamnolaea cinnamomeiventris	Cliff-chat, Mocking	Unlisted	LC
Vanellus armatus	Lapwing, Blacksmith	Unlisted	LC

Prism (2016) showed that there is a high likelihood of occurrence of Lesser and Greater Flamingos within their larger study area that extended further northwards. It is, however, not clear if they were indeed observed during the 2016 assessment within the larger study area. They were not observed in the TBC July 2019 survey.

Mammals

Six (6) mammal species were recorded during the July 2019 survey based on direct observations and/or the presence of visual tracks and signs (refer to **Table 10-26**). One SCC namely Serval (*Leptailurus serval*) was observed. Serval occurs widely through sub-Saharan Africa and is commonly recorded from most major national parks and reserves. The Serval's status outside reserves is not certain, but they are inconspicuous and may be common in suitable habitat as they are tolerant of farming practices provided there is cover and food available. In sub-Saharan Africa, they are found in habitat with well-watered savanna long-grass environments and are particularly associated with reedbeds and other riparian vegetation types. The wetlands in the project area creates good habitat for this species.

Table 10-26: Mammal species recorded in the project area during the July 2019 survey (TBC, 2022)

SPECIES	COMMON NAME	CONSERVATION STATUS	
		REGIONAL (SANBI, 2016)	IUCN (2017)
Hystrix africaeaustralis	Cape Porcupine	LC	LC
Leptailurus serval	Serval	NT	LC
Lepus saxatilis	Scrub Hare	LC	LC
Potamochoerus larvatus	Bushpig	LC	LC
Redunca arundinum	Southern Reedbuck	LC	LC
Sylvicapra grimmia	Common Duiker	LC	LC

LC: Least concern
NT: Near Threatened

In the 2016 study by Prism, four species of mammals were observed in the project area, two of which are SCCs (refer to **Table 10-27**). It is again noted that the Prism study area extended further northward over a larger area.

Table 10-27: Mammal species observed in 2016 study by Prism (TBC, 2022)

SPECIES	COMMON NAME	CONSERVATION STATUS	
		REGIONAL (SANBI, 2016)	IUCN (2017)
Hystrix africaeaustralis	Cape Porcupine	LC	LC
Leptailurus serval	Serval	NT	LC
Ourebia ourebi	Oribi	EN	LC
Redunca arundinum	Southern Reedbuck	LC	LC

LC: Least concern
NT: Near Threatened
EN: Endangered

Herpetofauna (Reptiles and Amphibians)

Herpetofauna diversity was considered to be low in the area. No reptiles or amphibians were recorded in the project area, this is ascribed to the season in which the survey was undertaken. Prism also did not record SCCs in the project area during the 2016 study.

Area Site Ecological Importance

The biodiversity theme sensitivity as indicated in the screening report was derived to be Very High, mainly due to the area being CBA2, a VU ecosystem and a SA Protected Area (**Figure 10-27**), while the animal (**Figure 10-28**) theme is Medium and Low sensitivity. The plant species (**Figure 10-29**) theme sensitivity shows that the area is classified as Medium sensitivity. The specialist agrees with some of the classifications as per the screening tool but disputes some portions of the "very high' sensitivity based on the degraded state of those areas.

Figure 10-27: Terrestrial Biodiversity Theme Sensitivity (DEA Screening Tool, 2021)

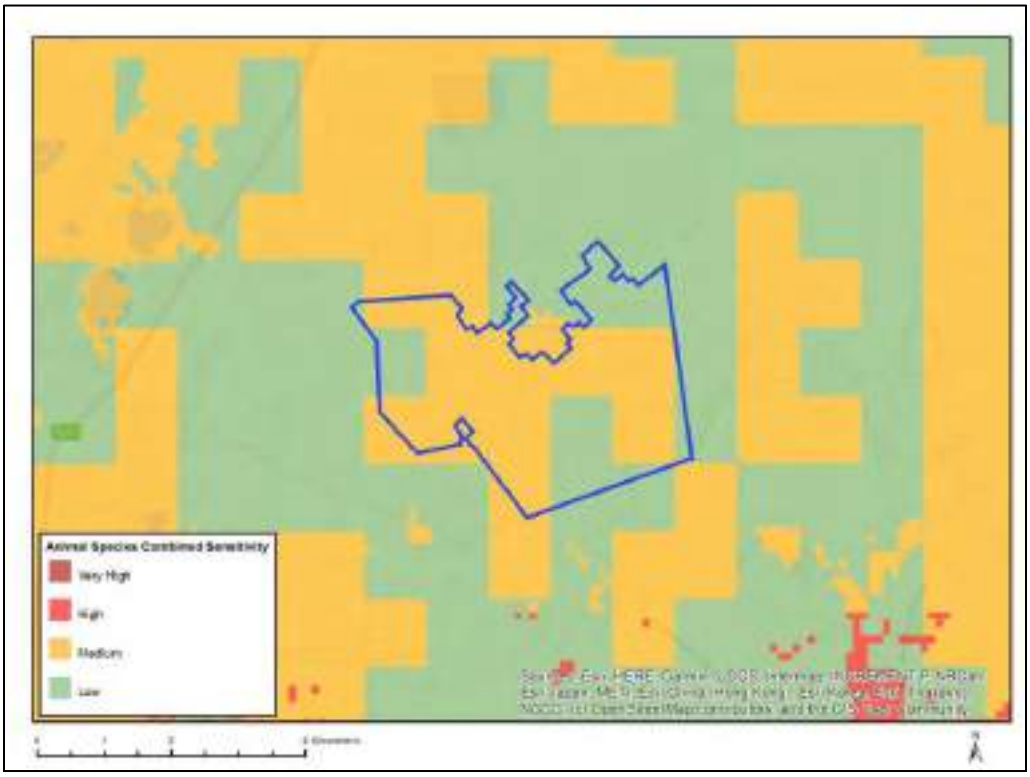


Figure 10-28: Animal Sensitivity (DEA Screening Tool, 2021)

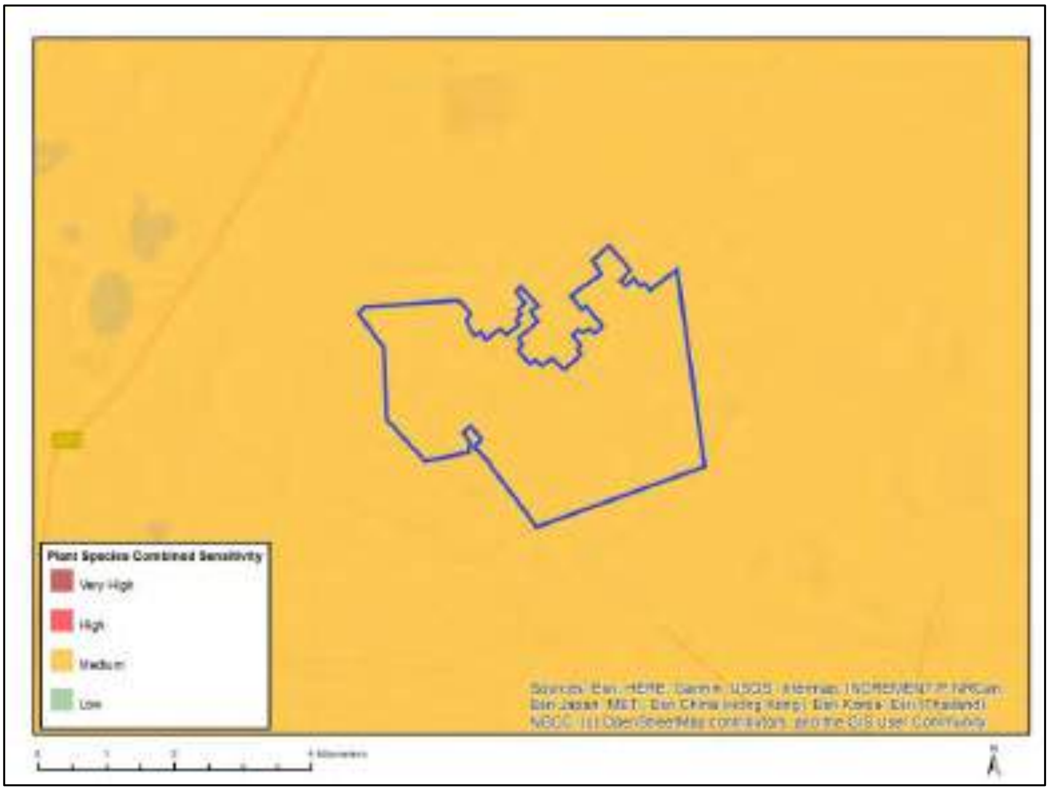


Figure 10-29: Flora Sensitivity (DEA Screening Tool, 2021)

10.1.1.11 Social setting

A social impact assessment was conducted by Batho Earth in 2022 (Batho Earth, 2022). The results of the baseline assessment are summarised here.

The MMS North mining right area (Farms Hartbeesfontein and Goedehoop) is situated within the STLM (Wards 6 and 8) which falls under the NDM. The Dispatch Rider Project falls within Ward 6. Settlements within the larger area are Evergreen, Polmaise/Paulmercy, Rockdale, Uitkyk and the mining villages of Blinkpan, Naledi Village and Meerlus.

The area of land on which the proposed infrastructure will be developed is owned by Ingwe Surface Holdings (Pty) Ltd, subsidiary of Seriti. The surface rights for the proposed underground mining area are owned by Ingwe Surface Holdings, and a part belongs to a private landowner (RE/2 of Hartbeesfontein 399 JS).

The area is further dominated by agriculture (annual cropping and cattle), coal mining, coal fired power stations and various industrial developments.

Population dynamics

The population of the STLM increased from 182 502 individuals in 2007 to 229 831 in 2011, with 64 971 households. In 2016, the total population in the STLM was 278 749. The area is under significant pressure due to this population growth and it is estimated that the population number for 2030 will be at more or less 509 000 people given the historic population growth per annum which will put pressure on the infrastructure and basic service delivery and eventually also sustainable job creation in the long run (Batho Earth, 2022).

According to the 2016 survey the most populous age group in the municipal area were between the ages 25 to 29 (StatsSA 2011). In 2016, the overall youth population (15-34 years) constituted about 40.7% of the total population.

Education levels

Between 2011 and 2016, the matric rate increased from 2011 (35%) to 2016 (43%) in the STLM area. The local municipality's education profile has a higher success rate compared to that of the district.

Labour market

The employment profiles within the NDM and STLM compared to those of the affected wards (2011 statistics) are indicated in **Table 10-28**.

Table 10-28: Employment profile (Batho Earth, 2022)

MUNICIPALITY	UNEMPLOYMENT RATE (2011)	YOUTH UNEMPLOYMENT RATE	UNEMPLOYMENT RATE 2016
NDM	30%	39.6%	18%
STLM	16.7%	27.1%	13%
Ward 6	16%	Unavailable	20%
Ward 8	28%	Unavailable	10%

Employment sectors

The STLM's economy is one of the biggest economic areas in the district and it is therefore expected that a significant number of employment opportunities are being provided in the area. Mining, trade and manufacturing are the major leading employment drivers in this municipality. The mining sector provides 22.7% of employment, followed by trade at 19.4% and the community services sector at 13.7%.

Income levels

Based on information from the 2001 and 2011 statistics, the number of people without an income in the STLM decreased to a limited extent. In 2011, the majority of individuals (63 690) within the STLM earn within the R1-R 3 200 category, followed by about 47 633 individuals who earn from R3 200-R102 400. There has thus been an increase in earnings in these categories which could be due to the mining companies and manufacturing industries located within the municipal area.

In 2018, the section of the population below the lower-bound poverty line in the STLM was still high even though it was the lowest among the different municipal areas in the district.

Basic services

Based on the 2016 statistics, the majority of the population within the STLM still had access to potable water (household connections and communal stands) (90%). This shows a decline in the service delivery as the 2011 statistics indicated this at 98.2%.

In 2011, 86.8% of households had access to flush and chemical toilets, but this also declined to only 79.4% in 2016. This is mainly due to the number of households increasing from 2011 to 2016.

Electricity is the main source of energy used for heating, lighting and cooking purposes. Within STLM, 87% of the households have access to electricity, with 90.6% using electricity for lighting purposes.

The growing population continues to place a huge demand on the municipality to continue to provide basic services and infrastructure.

Housing

In 2011, 83% of the total population in the STLM resided in formal dwellings. A decline in traditional dwellings could be seen, although there was an increase in informal dwellings from 2001 to 2011. Due to the high migration and urbanisation rates, the informal settlements within the municipal area are likely to remain. The implementation of human settlement projects by the municipality further remains very limited. The private sector enterprise (mining organisations) is at this stage the main role-player focusing on reducing the housing backlog through their Social and Labour Plan initiatives.

10.1.1.12 Visual Aesthetics

A visual assessment was undertaken in 2016 by J&W as part of the North Amendment project, which included Dispatch Rider. The following information was extracted from the 2016 Report (J&W, 2016). The assessment was reviewed in 2022 (J&W, 2022) in line with the latest layouts at that time. It was determined that the 2016 report is still valid and that the findings and recommendations of the study are a true and accurate reflection of the potential visual impacts.

The site and surrounding area may be characterised as grassland and agricultural land with patches of mining in the study area. The land is used for commercial crop production, mostly maize, and for grazing of cattle and goats. These activities are interspersed with coal mining, both opencast and underground. The terrain is relatively flat with the rolling topography of the Highveld. In terms of road infrastructure, the main roads in the study area are the N4, R35 and the R575 (J&W, 2016).

Potential views to the proposed mine extension are likely to be blocked at some locations by vegetation or local landform features within the viewshed. Similarly, glimpses of the proposed infrastructure to support the Dispatch Rider underground mine may be available from some high-elevation locations outside the plotted viewshed. The visibility of the Dispatch Rider infrastructure areas is shown on **Figure 10-30**[5]**.**

[5] The infrastructure layout used in the 2016 assessment differs slightly from the current preferred layout. However, this is still regarded as representative of the likely site visibility.

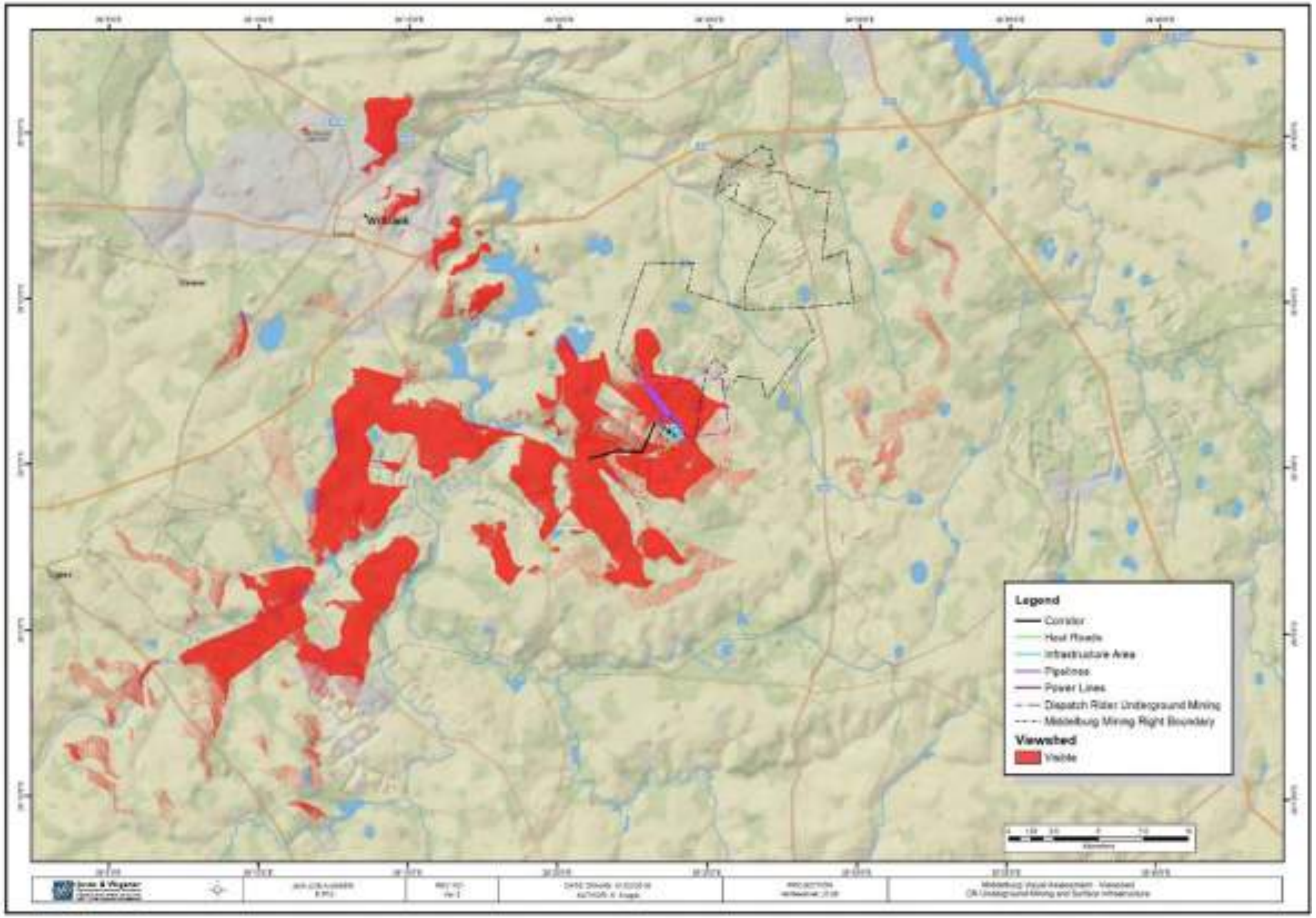


Figure 10-30: Viewshed of the proposed Dispatch Rider mining project (J&W, 2016)

10.1.1.13 Noise

A noise assessment was undertaken in 2022 by dBA Acoustics . The following information was extracted from the noise impact assessment report.

Existing mining activities, traffic, seasonal agricultural and domestic activities contribute to the prevailing ambient noise levels of the study area.

The location of the farmhouses and/or housing areas in close proximity to the Dispatch Rider project area is illustrated in **Figure 10-31.**

The distances between the different residential properties and the proposed Dispatch Rider project are illustrated in **Table 10-29**.

Table 10-29: Distances between the residential areas and the Dispatch Rider project in meters (dBA Acoustics, 2022)

RESIDENTIAL AREA	1 – ADIT	2 – VENTILATION	3 – INFRASTRUCTURE	4 – COAL TRANSFER AREA
A	1915	2172	2197	1813
B	2542	2753	2645	2424
C	4711	4856	4779	4408
D	6217	5969	6170	6454
E	5447	5218	5434	5626

Table 10-30 indicates prevailing ambient noise levels for the specific areas, which include all the noise sources currently in the area such as domestic, traffic noise, distant mine noise and natural noise sources. The peak noise levels for the daytime were from traffic noise and distant mining activities (conveyor), and residential properties. The peak noise levels during the night-time were from insect activities (crickets).

Figure 10-31: Residential areas in the vicinity of the current mine boundary (dBA Acoustics, 2022)

Table 10-30: Noise levels for the day and night in the study area (dBA Acoustics, 2022)

Position	Daytime				Night – time 1				Night-time 2			
	Leq - dBA	Lmax (Fast) - dBA	Lmin (Fast) - dBA	Remarks	Leq - dBA	Lmax (Fast) - dBA	Lmin (Fast) - dBA	Remarks	Leq - dBA	Lmax (Fast) - dBA	Lmin (Fast) - dBA	Remarks
1	53.6	66.3	48.8	Conveyor & traffic	57.0	63.8	54.5	Conveyor, transfer station and traffic	55.9	62.1	53.4	Conveyor, transfer station and traffic
2	34.7	50.5	22.0	Distant mining	47.9	54.2	31.7	Insects	57.4	63.2	34.2	Insects
3	32.1	63.7	24.7	Birds & domestic	46.8	50.0	42.5	Distant Goedehoop mine	48.1	50.2	43.7	Distant Goedehoop mine
4	59.2	79.4	28.0	Traffic noise	60.8	75.6	47.2	Traffic & insects	55.4	72.1	44.2	Traffic & insects
5	35.5	55.0	27.4	Goedehoop mine	47.6	52.8	43.5	Distant Goedehoop mine & insects	48.0	54.5	44.8	Distant Goedehoo p mine & insects

10.1.1.14 Air quality

An air quality impact assessment was conducted by Prism in 2022. The baseline findings are summarised below.

Sources of air pollution

The project area is located within existing coal mining activities. The closest activities beyond the project boundary are coal mining, power generation, stainless steel, ferrochrome and char production, farming and residential and the associated industry and commercial activities. These activities are likely to result in particulate emissions at a localised scale (Prism, 2022).

The criteria pollutants of interest for the project and the likely sources resulting in these pollutants within the vicinity of the project is listed in **Table 10-31.**

Table 10-31: Key pollution sources in the vicinity of the project for the pollutants of interest (Prism, 2022)

POLLUTANT	ACTIVITY
Total Suspended Particulates (TSP), Particulate matter less than 10 microns in diameter (PM_{10}), Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)	• Mining sources • Transport (vehicles moving along the national and main roads) • Dust entrainment on sand and gravel roads and smaller paved roads • Agriculture (land clearing and controlled burning) • Biomass burning • Residential fuel burning • Power station sources • Windblown dust from exposed agricultural land

Sensitive receptors

Sensitive receptors surrounding the site are given in **Table 10-32** The closest sensitive receptor is Mr M Allen and the Polmaise 21 informal settlement, located to the east of the proposed Dispatch Rider project.

The key sensitive receptors are the surrounding human settlements including Naledi Mining Village, Lasedi Mining Village, Duvha Power Station Village, Blinkpan, Mooifontein Mining Village and CJ Schoeman Chicken Farm (Prism, 2022).

Table 10-32: Sensitive receptors surrounding the study area (Prism, 2022)

RECEPTOR	TYPE	DIRECTION FROM SITE	DISTANCE FROM SITE
Komati	Residential	SE	~ 12.1 km
CJ Schoeman Chicken Farm	Residential	SW	~ 6.7 km
Naledi Mining Village	Residential	NW	~ 6.0 km
Lasedi Mining Village	Residential	W	~ 5.0 km
Duvha Power Station Village	Residential	W	~ 12.0 km
Blinkpan	Residential	SSE	~ 10.1 km
Mooifontein Mining Village	Residential	W	~ 6.0 km
Mr Allen	Residential	W	~ 2.1 km

Air quality

The Highveld area in South Africa is associated with poor air quality and elevated concentrations of criteria pollutants due to the concentration of industrial and non-industrial sources. The (then) Minister of Environmental Affairs therefore declared the Highveld Priority Area (HPA) on 23 November 2007.

Baseline monitoring and assessment of atmospheric pollutants was appraised using data from the South African Air Quality Information System (SAAQIS) database. The project area is located in the Steve Tshwete hot spot area in terms of PM_{10}, SO_2 and NO_2 according to the HPA Air quality Management Plan (2 March 2012). Two monitoring stations were assessed, namely the Mpumalanga Province Monitoring Station in Middelburg; and the DFFE Monitoring Station in Middelburg.

PM_{10} concentrations

Hourly PM_{10} concentrations between January 2018 and January 2019 recorded at the Mpumalanga Province Middelburg Station and the DFFE Middelburg Station are included in **Figure 10-32**. The average PM_{10} readings for this period are within the current NAAQS for PM_{10} of 75 µg/m³ (47 µg/m³ and 44 µg/m³ at each station respectively). However, the limit is frequently exceeded with the maximum occurring in June 2018 (359 µg/m³) for Mpumalanga Province Station and in September 2018 for the DFFE Station (646 µg/m³).

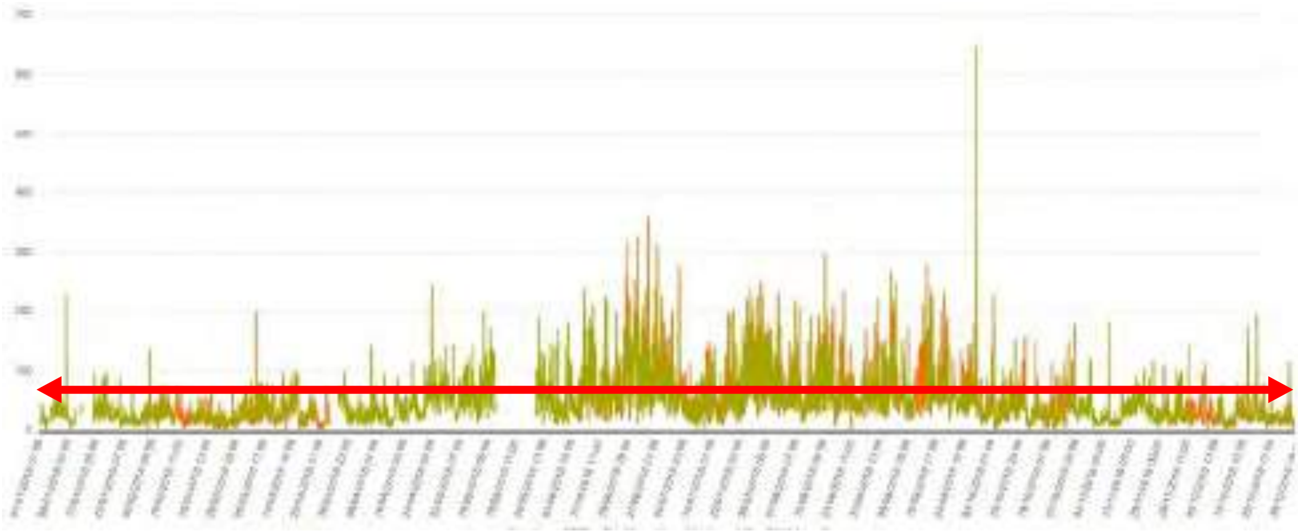


Figure 10-32: PM$_{10}$ hourly values at the Mpumalanga Province Middelburg Air Quality Monitoring Station (Green) and the DFFE Middelburg Air Quality Monitoring Station (Orange) for the January 2018 to January 2019 period (Prism, 2022)

PM$_{2.5}$ concentrations

Average daily PM$_{2.5}$ concentrations recorded at the Mpumalanga Province Middelburg Ambient Air Quality Monitoring Station and the DFFE Middelburg Air Quality Monitoring Station are presented in **Figure 10-33**. The average measured background PM$_{2.5}$ concentration for the period is generally within the current NAAQS for PM2.5 of 40 µg/m³ (effective from 1 January 2016 – 31 December 2019), with the average for Mpumalanga Province Station being 19 µg/m³ and the average for the DFFE station, 23 ug/m³. However, the limit was frequently exceeded and the maximum for the Mpumalanga and DFFE stations being 381 µg/m³ (in Jun 2018) and 255 µg/m³ (in November 2018) respectively.

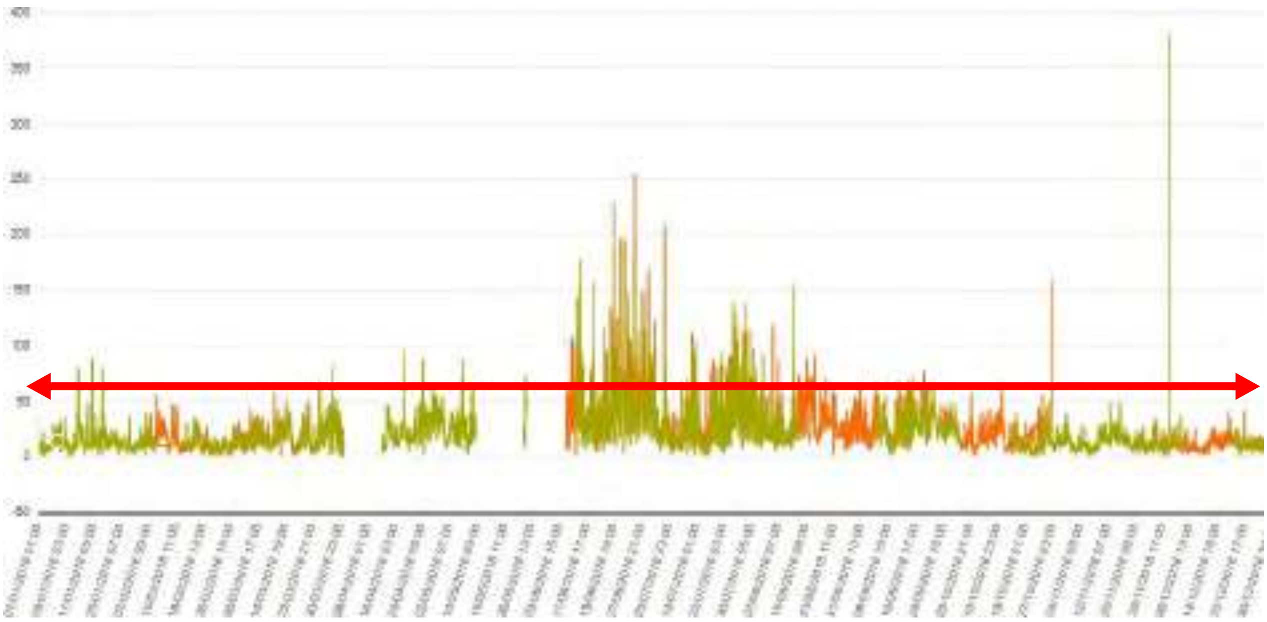


Figure 10-33: PM$_{2.5}$ hourly values at the Mpumalanga Province Middelburg Air Quality Monitoring Station (green) and DFFE Middelburg Air Quality Monitoring Station (orange) for the January 2018 to January 2019 period (Prism, 2022)

Carbon monoxide concentrations

The Carbon Monoxide (CO) concentrations measured at Mpumalanga Province Middelburg Ambient Air Quality Monitoring Station and the DFFE Air Quality Monitoring Station are below the prescribed NAAQS 1-hr limit value of 26 ppm (**Figure 10-34**) The peaks observed in CO concentration are not in exceedance of the standard. The pollutant is known to contribute to greenhouse effect and global warming.

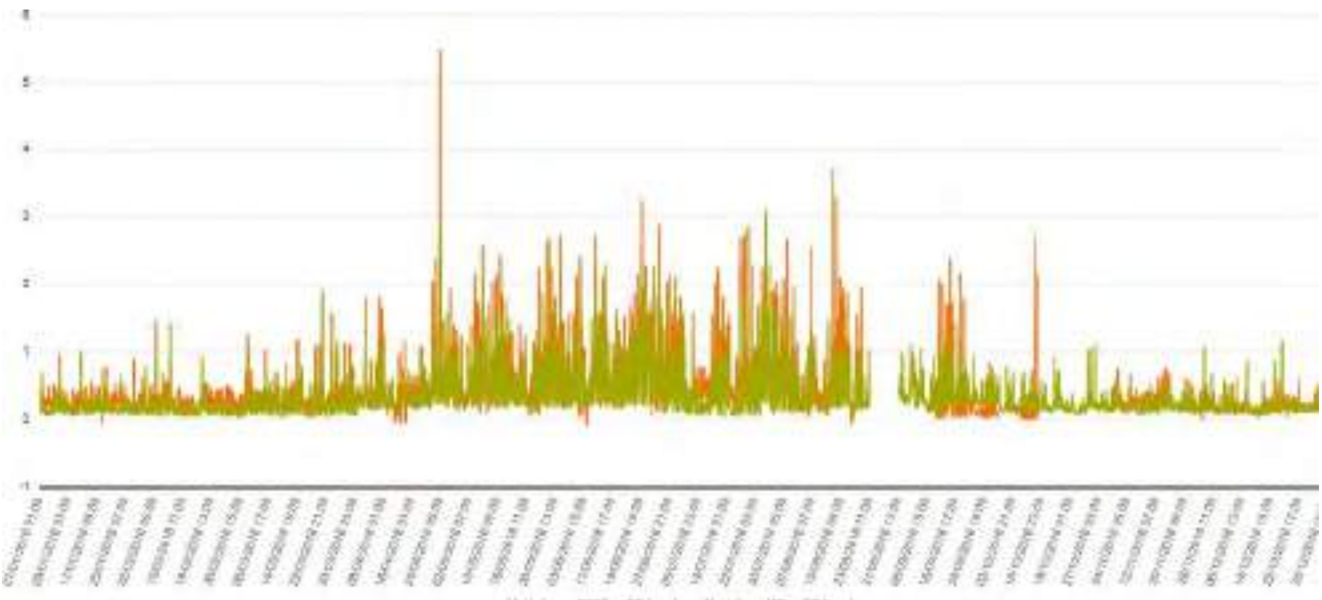


Figure 10-34: Carbon monoxide hourly daily values at the Mpumalanga Province Middelburg Air Quality Monitoring Station and DFFE Middelburg Station for the January 2018 to January 2019 period (Prism, 2022)

Nitrogen dioxide concentrations

The South African NAAQS nitrogen dioxide (NO_2) standard is 200 µg/m^3 (106 ppm). It is assumed that the complete conversion of all emitted NO to NO_2 has occurred, as per USEPA's Guideline on Air Quality Models, Appendix W to 40 CFR Part 51. As seen in **Figure 10-35**, the recorded values for NO_2 at both stations are below this limit.

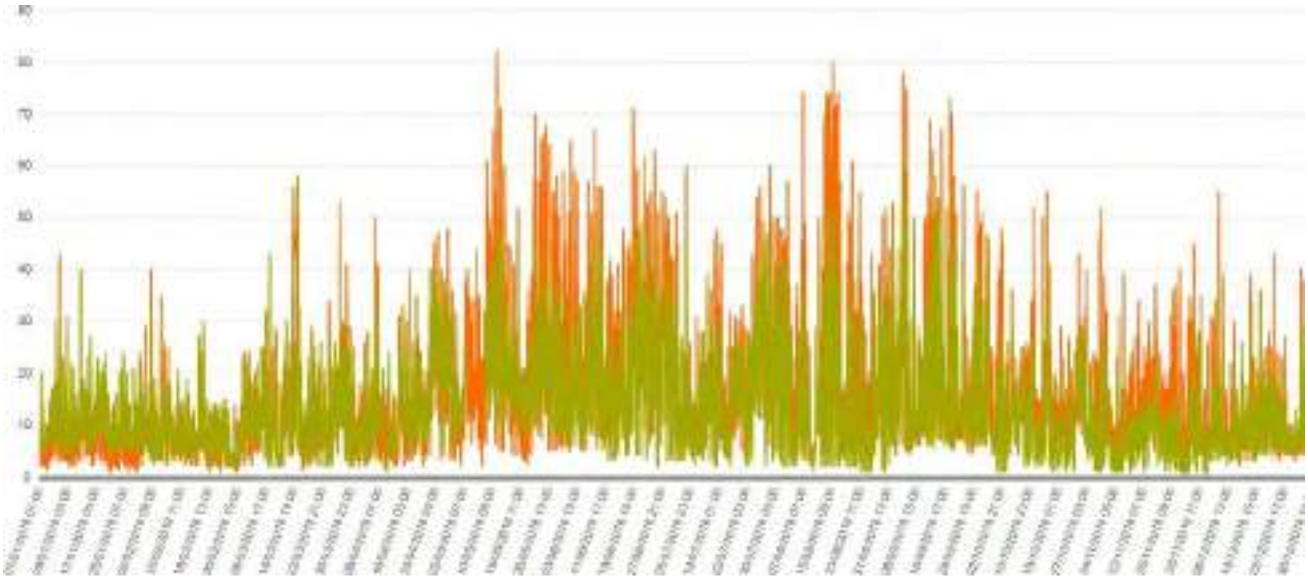


Figure 10-35: Nitrogen dioxide hourly daily values in ppb at the Mpumalanga Province (green) Middelburg Air Quality Monitoring Station and DFFE Middelburg Monitoring Station (orange) for the January 2018 to January 2019 period (Prism, 2022)

Sulphur dioxide concentrations

The sulphur dioxide (SO_2) concentration between January 2018 and January 2019 at the Mpumalanga Province Middelburg Ambient Air Quality Monitoring Station and the DFFE Middelburg Monitoring Station is provided below. Values are generally below the prescribed South African 1 hour limit of 134 ppb (**Figure 10-36**).

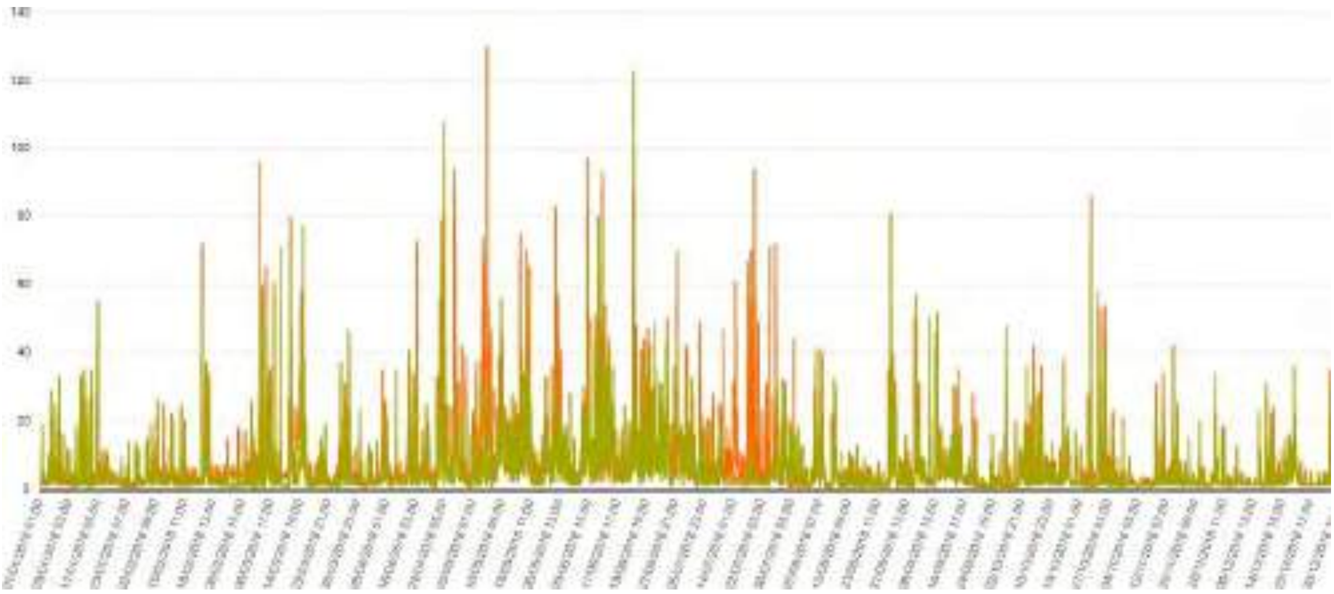


Figure 10-36: Sulphur dioxide hourly daily values at the Mpumalanga Province Middelburg Air Quality Monitoring Station (green) and the DFFE Middelburg Monitoring Station (orange) for the January 2018 to January 2019 period (Prism, 2022)

Dust fallout baseline

Average daily dust fallout levels recorded over the period February 2017 to March 2019 are presented in **Figure 10-37**. Dust fallout monitoring was averaged over 30 day periods. The measured dust fallout levels were generally found to be low and well below the Non-residential limits.

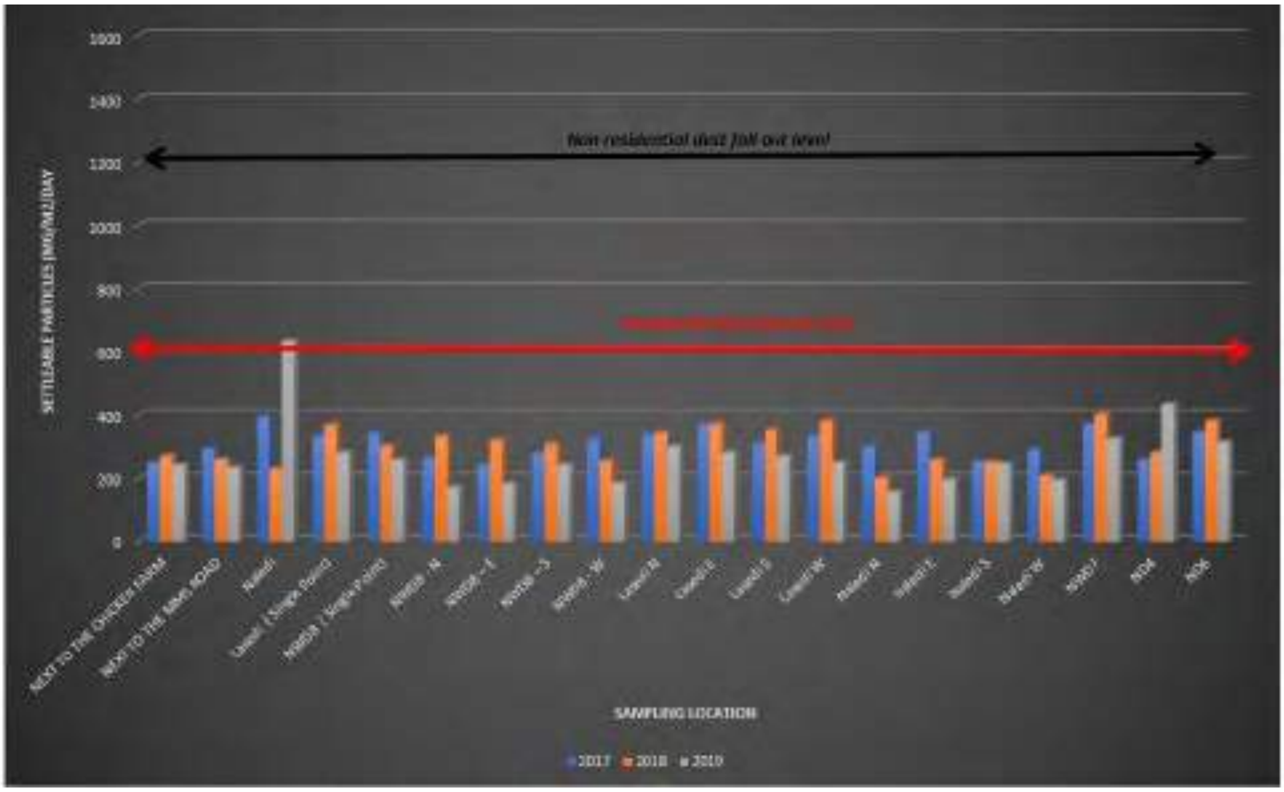


Figure 10-37: Annual average value for dust deposition at selected dust monitoring sites for MMS North for the February 2017 – March 2019 period (Prism, 2022)

10.1.1.15 Heritage and Paleontological setting

A heritage and palaeontological assessment was conducted by Prism (2016). Following a request from the SAHRA, a site-specific report was compiled confirming the findings of the Prism (2016) study (Beyond Heritage, 2024).

Heritage resources

A Phase 1 Archaeological Impact Assessment (AIA) was undertaken in 2016 as part of the North Amendment project, which included Dispatch Rider, to determine the presence of cultural heritage sites and the impact of the previous proposed project on these resources within the underground mining footprint. Since this application will apply for changing the mining method to underground mining, there will no longer be a direct impact on these heritage resources (Prism, 2016e).

In the Dispatch Rider project area on the farm Hartbeesfontein, two cemeteries and a couple of Late Stone Age (LSA) miscellaneous flakes were recorded next to a pan. These artefacts made from crypto crystalline silica (CCS) are scattered too sparsely to be of any significance apart from noting their presence, which has been done so in this report. The study area is void of raw material suitable for the manufacture of stone tools or rocks for the construction of Stone Walled settlements.

Cemetery 2 and 3 consist of headstones with stone packed grave dressing. Cemetery 1 is located in the area that will be undermined and Cemetery 3 is located in the northern periphery of the Dispatch Rider prospecting right area. Therefore, no direct impact is foreseen on these cemeteries.

Heritage significance: Graves are of high social significance **-** Generally Protected A (GP.A)

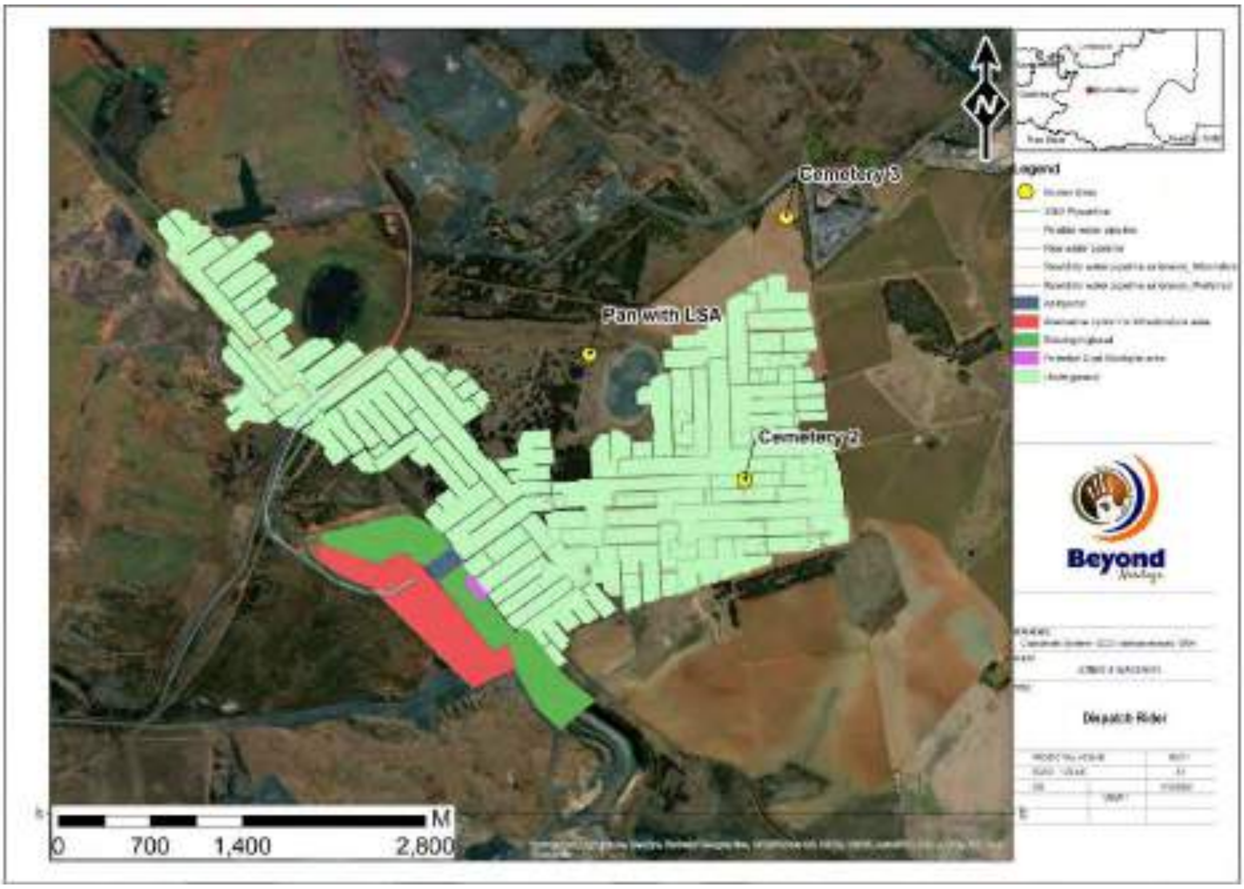


Figure 10-38: Heritage sites in relation to the proposed project (Beyond Heritage, 2024)

Palaeontology

Geological context

A Phase 1 (desktop) palaeontological assessment was undertaken by Prof Marion Bamford in 2020 for the Dispatch Rider project area. The geology associated with the project area is indicated on **Figure 10-39,** with the abbreviations of the rock types used on the Figure explained in **Table 10-33**. The green shaded formations indicate those impacted by the project.

Based on the geology of the area and the palaeontological record, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and do contain fossil plant, insect, and invertebrate material. The exposed and weathered shales and carbonaceous shales would not preserve fossils (Bamford, 2020).

Figure 10-39: Geological maps of the area around MMS North and the Dispatch Rider project with the site indicated within the yellow rectangle (Bamford, 2020)

Table 10-33: Explanation of symbols for the geological map and approximate ages (Bamford, 2020)

SYMBOL	GROUP/FORMATION	LITHOLOGY	APPROXIMATE AGE
Q	Quaternary	Alluvium, sand, calcrete	Neogene, ca 2.5 Ma to present
Jd	Jurassic dykes	Dolerite dykes, intrusive	Jurassic, approx. 180 million years
Pe	Vryheid Formation, Ecca Group, Karoo Supergroup	Shales, sandstone, coal	Early Permian, Middle Ecca
Pd	Dwyka Group, Karoo Supergroup	Diamictites, tillites, shales, mudstones	Late Carboniferous to Early Permian

The colliery is in the northern part of the Karoo Basin in the Witbank coalfield with many other coal mines in the region. The coals were formed over time from peats that accumulated in and around the large Karoo inland “sea”, during the Early Permian.

As the continent gradually moved northwards away from its position over the South Pole, the ice sheets melted and drained into the inland Karoo Sea. The early sediments deposited were the Dwyka tillites and diamictites, i.e., debris and stones that had been entrapped in the icesheets. Then the region was densely vegetated as the climate warmed. This vegetation formed peats that were buried under more and more sediments. Because of the uneven topography and local settings such as swamps, deltas, lakes, rivers, the peats and later the coals vary in thickness, type and quality. Successive deposition of sediments and the gradual drying of the climate meant that no more peats were formed so overlying sediments do not have coal seams, this includes most of the Beaufort Group rocks (Bamford, 2020).

Palaeontological context

The palaeontological sensitivity of the area under consideration is presented in **Figure 10-40** with the Vryheid Formation indicated as very highly sensitive (red on the SAHRIS map).

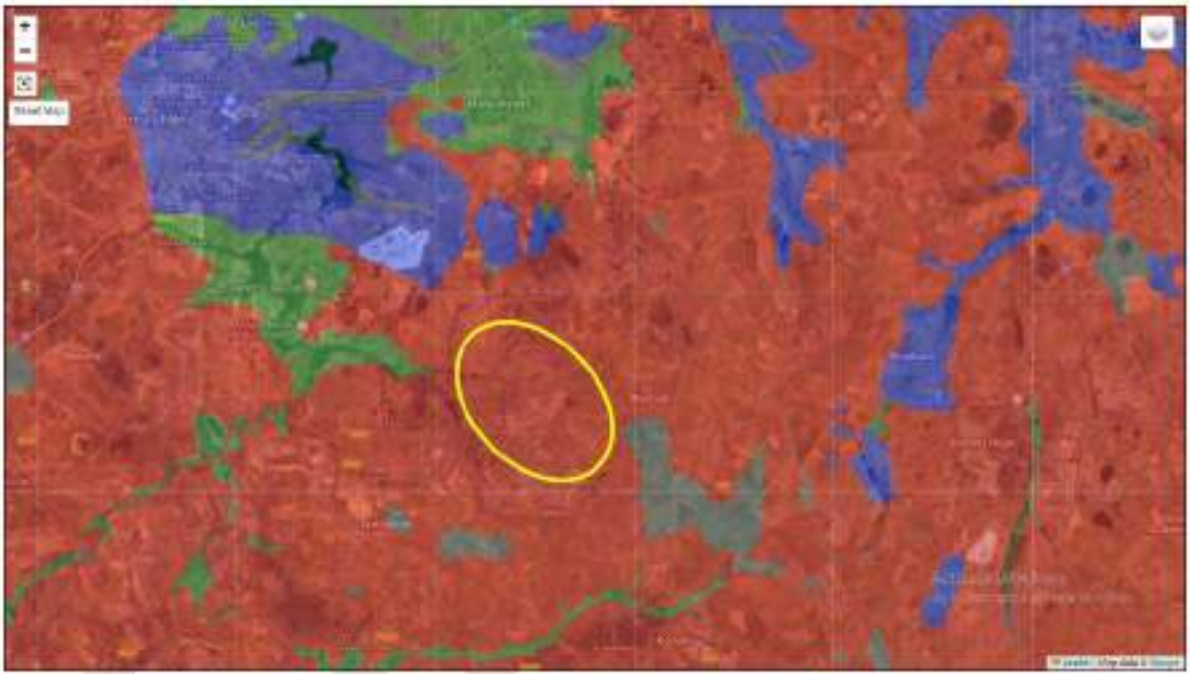


Figure 10-40: Dispatch Rider project in relation to SAHRIS palaeosensitivity map (Beyond Heritage, 2024)

The fossils occurring in the Vryheid Formation are plants of the Glossopteris flora and include leaves, roots and reproductive structures of the seed fern Glossopteris, as well lycopods, sphenophytes, ferns and early gymnosperms. Although these plants are abundant in exposures where they occur, the distribution of sites is scattered and unpredictable. There were very few land vertebrates at this time as they evolved later. Also, one seldom finds fossils plants and animals together because the conditions for preservation are different: plants require a reducing environment and bones require an oxidizing environment (Bamford, 2020).

10.1.1.16 Stability Assessment

A third-party review of rock engineering design aspects for the Dispatch Rider Project was compiled in May 2024 by Saxum Mining (Saxum Mining, 2024) (

APPENDIX G). The outcome of relevance to this report is that no clear fatal flaw was identified in the latest mine design and layouts, with the exception of a few, isolated areas that have a possible, limited risk. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk. Where specialist reports have not been updated with these findings, the findings within their reports (i.e. impact ratings) related to subsidence include a footnote describing the reasoning behind the elevated rating. Mitigation measures related to subsidence have been included in this report as good practice to be implemented for the areas that will be mined.

10.1.2 Description of the current land uses

The proposed underground mining development is located on a brownfield site. The grassland area has already been altered considerably, mostly due to the main current land uses, including mining and agriculture. Refer to **Figure 10-6** for the current land uses in the project area.

10.1.3 Description of specific environmental features and infrastructure on the site

A detailed description of the existing environmental features based on the baseline assessment was described in the preceding sections. The following infrastructure has been developed within the mining area where the Dispatch Rider project will be located (**Figure 4-1**):

- Middlings plant, located further north within the Hartbeesfontein section;
- Washed coal is transported from the plant to the rapid loadout rail terminal, located to the north of the proposed Dispatch Rider infrastructure area by means of a 7 km overland conveyor. The coal is then railed from the siding via to Richards Bay;
- A number of hauls roads and service roads;
- Duvha-Hendrina pipeline (the raw water supply to the mine);
- South Eskom and Export plants are located to the south-west of the Dispatch Rider project area;
- A number of remaining voids from partially rehabilitated mining areas. Access to the Dispatch Rider underground mine will be via the existing highwall at the N7 void;
- A number of pollution control dams to the south of the Dispatch Rider project area;
- 132 kV and smaller powerlines;
- Railway line.

10.1.4 Environmental and current land use map

Land use in the project area is mainly mining and agriculture (refer to **Figure 10-6**).

A number of watercourses (pans and seepage wetlands) are present in the project area. These will not be directly impacted by the proposed development, but sections of the pans and seepage wetlands will be undermined.

Two cemeteries were identified within the Dispatch Rider prospecting right area and will not be directly impacted by the proposed development. The environmental sensitivities, as well as residential areas are shown in **Figure 10-41**.

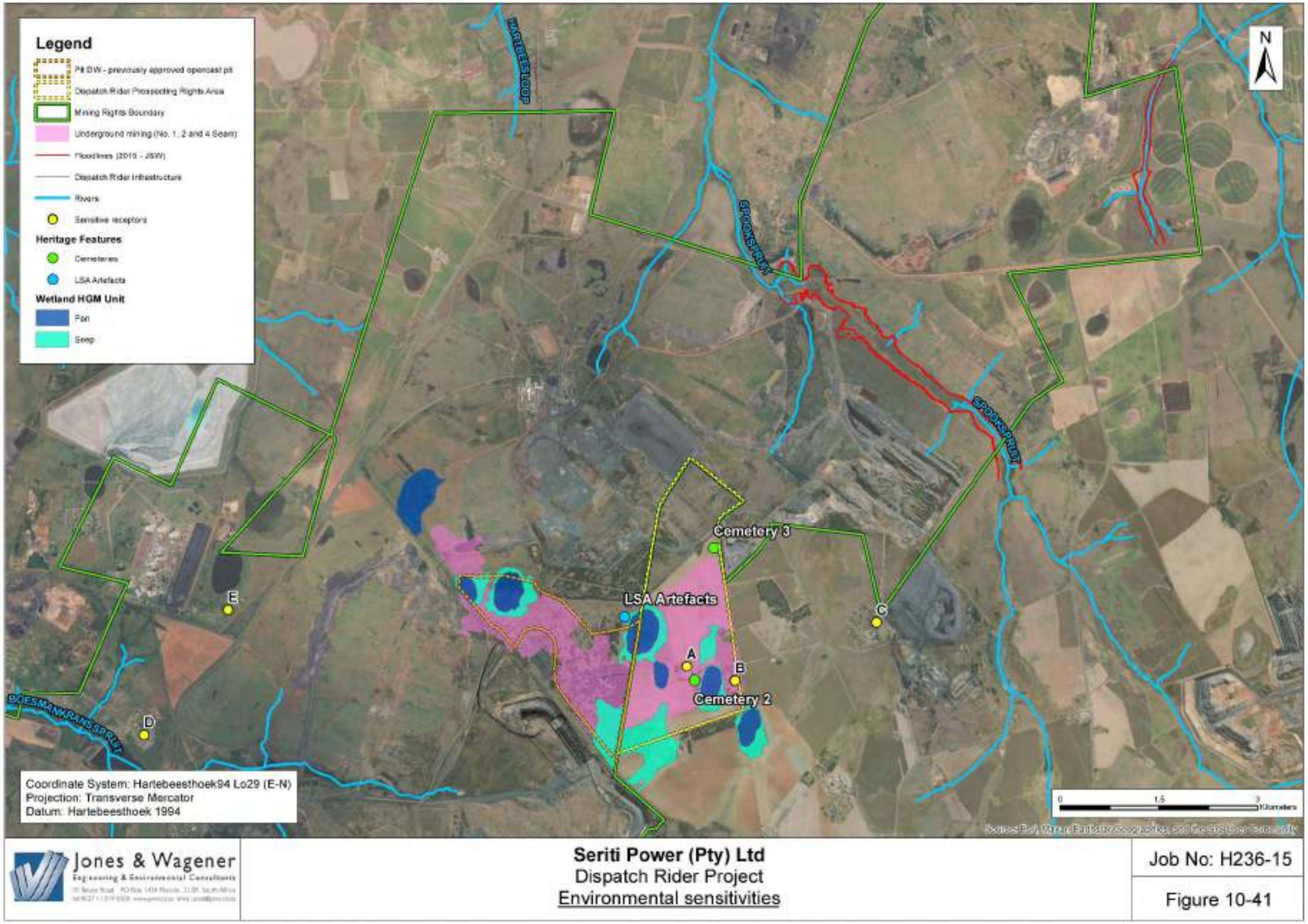


Figure 10-41: Environmental sensitivities

11. 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 / AVOIDED / MANAGED AND / OR MITIGATED

The proposed infrastructure development is anticipated to impact on various biophysical aspects, and to a lesser extent on socio-economic aspects. The impacts identified during the Impact Assessment Phase are summarised in **Table 11-1**. Several specialist studies were conducted to investigate and assess the potential impacts in detail. A detailed impact assessment was conducted by each specialist where the significance, extent, duration, and probability of the impacts were determined. The methodology for assessing the impacts is described in detail in **Section 12** below.

Table 11-1: Potential environmental impacts investigated in the impact assessment phase

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
Soil, land use and capability	• Loss of utilisable resource (sterilisation and erosion), compaction and contamination or salinisation due to site clearing, and stripping of soil and vegetative cover. • Loss of utilisable resource (sterilisation and erosion), compaction, de-nutrification and contamination or salinisation due to activities involving the, potential spillage of the in-situ and stockpiled materials, dirty water runoff, contaminated dust deposition / dispersion, de-nutrification of stockpiled soils, uncontrolled vehicle movement and wind and water erosion. • Net loss of soil volumes and utilisation potential from areas of infrastructure, bulking factor and the potential for ponding over underground rehabilitated areas. • Erosion due to disturbed soils. • Positive: Reduction in areas of disturbance and return of soil utilisation potential following rehabilitation.
Flora	• Loss of habitat. • Disturbance, degradation of, and fragmentation of, portions of vegetation community. • Alien invasive plant species encroachment. • Potential subsidence impact on habitat composition and floral distribution (low probability based on stability assessment outcomes).
Fauna	• Loss of habitat. • Displacement and fragmentation of faunal community. • Potential subsidence resulting in impacts on habitats and associated fauna (low probability based on stability assessment outcomes).
Surface water	• Pollution of surface water quality resources due to discharge of contaminated water, poor quality runoff of infrastructure surfaces and spillage of contaminated water and coal particulates • Reduction in catchment yield due to containment of runoff from the site • Potential subsidence impact on surface water availability (low probability based on stability assessment outcomes).
Wetlands	• Loss of flow to and from wetlands. • Potential surface subsidence in wetlands (low probability based on stability assessment outcomes). • Water quality deterioration due to discharge of contaminated mine water. • Water quality deterioration due to decant of contaminated mine water.

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
Aquatic Ecosystem	• Loss of water to and from wetlands resulting in loss of aquatic biodiversity • Limited impact on aquatic biota as a result of contamination and water quality deterioration • Loss of aquatic biodiversity due to mine affected water decant
Hydrogeology	• Dewatering of the surrounding aquifer during operation. • Groundwater level to rise to an equilibrium that differs from the pre-mining level following mine closure. • Groundwater within the mine areas expected to deteriorate due to chemical interactions between geological material and groundwater following mine closure. • Discharge has the potential to occur due to excessive rainfall and run-off water entering the mine following closure. • Polluted water could migrate away from mining areas following closure.
Hydropedology	• If the hanging wall remains intact and the deeper fractured aquifer remains delinked from the shallow weathered and perched aquifers, the impact on the wetlands is anticipated to be insignificant. • Should subsidence, sinkholes and cracking occur, the lateral flow within the perched aquifer, will be disrupted and ponding within the subsidence may also occur, both of these scenarios will likely result in a loss of water to the downstream wetlands. The cracking will also result in the three aquifers being linked and the dewatering of the aquifers may then impact on the flow of water within the perched aquifer.
Heritage resources	• Construction and operational activities may cause damage to the historical structures identified (i.e., ruins, game board engraving), artefacts (i.e., a few Late Stone Age miscellaneous flakes) and graves.
Palaeontology	• Surface activities may impact upon the fossil heritage if preserved in the development footprint. • Fossil plant impressions of the Glossopteris flora in the Vryheid Formation may be found below ground in un-weathered shales, once mining operations commence.
Socio-economic	• Inflow of workers and jobseekers • Employment opportunities and local procurement • Capacity building and socio-economic development • Changes to daily living and movement patterns • Disturbance to farming activities • Changes to sense of place • Changes in safety and security • Health disturbance • Noise disturbance
Air quality	• Construction activities, including vehicle movement, have the potential to emit fine (PM10) and settleable (TSP) dust. • Vehicle-entrained dust emissions during operation potentially represent a significant source of fugitive dust. • Dust emissions due to erosion of open storage piles and exposed areas
Noise	• Construction phase activities may generate noise • Increased noise levels during operational phase activities on a temporary and/or permanent noise basis • Rehabilitation phase activities may generate noise
Visual	• Observers will be exposed to visibility of construction equipment, site clearance and construction of infrastructure areas.

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
	• During operation, observers may be exposed to the surface development. • Positive impact during closure, as infrastructure areas will be cleared and revegetated. • Equipment for closure will be visible.

12. METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

Potential environmental impacts will be identified by means of determining what activities will be undertaken as part of the proposed infrastructure development. Changes in the status quo of an aspect/attribute as a result of the activities being undertaken as part of the proposed development, will indicate a potential environmental impact, be it positive or negative.

In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology will be used to describe the impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in **Table 12-1.**

Table 12-1: Quantitative rating and equivalent descriptors for the impact assessment criteria

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE	PROBABILITY
1	VERY LOW	Isolated corridor / proposed corridor	Incidental	Practically impossible
2	LOW	Study area	Short-term	Unlikely
3	MODERATE	Local	Medium-term	Could happen
4	HIGH	Regional / Provincial	Long-term	Very Likely
5	VERY HIGH	Global / National	Permanent	It's going to happen / has occurred

A more detailed description of each of the assessment criteria is given in the following sections.

12.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of the area affected by atmospheric pollution may be extremely large (1 000 km^2) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in **Table 12-2** below.

Table 12-2: Description of the significance rating scale

RATING		DESCRIPTION
5	VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	HIGH	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	MODERATE	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	LOW	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	VERY LOW	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity is needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit.
0	NO IMPACT	There is no impact at all - not even a very low impact on a party or system.

12.2 Spatial scale

The spatial scale refers to the extent of the impact i.e., will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table 12-3.**

Table 12-3: Description of the spatial scale

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible and will be felt at a regional scale (District Municipality to Provincial Level). The impact will affect an area up to 50 km from the proposed site / corridor.
3	Local	The impact will affect an area up to 5 km from the proposed route corridor / site.
2	Study Area	The impact will affect a route corridor not exceeding the boundary of the corridor / site.
1	Isolated Sites / proposed site	The impact will affect an area no bigger than the corridor / site.

12.3 Temporal Scale

To accurately describe the impact, it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in **Table 12-4**.

Table 12-4: Description of the temporal rating scale

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium term	The environmental impact identified will operate for the duration of life of the project.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

12.4 Degree of Probability

The probability or likelihood of an impact occurring will be described, as shown in **Table 12-5** below.

Table 12-5: Description of the degree of probability of an impact occurring

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

12.5 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus, the total value of the impact is described as the function of significance, spatial and temporal scale as described below.

$$\textit{\textbf{Impact Risk}} = \frac{\text{SIGNIFICANCE} + \textit{Spatial} + \text{Temporal}}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown in **Table 12-6**.

Table 12-6: Example of Rating Scale

IMPACT	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
	LOW	Local	Medium Term	Could Happen	
Impact to air	2	3	3	3	1.6

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2.67. The probability (3) is divided by 5 to give a probability rating of 0.6. The criteria rating of 2.67 is then multiplied by the probability rating (0.6) to give the final rating of 1.6. The impact risk is then classified according to 5 classes as described in **Table 12-7**.

Table 12-7: Impact Risk Classes

RATING	IMPACT CLASS	DESCRIPTION - NEGATIVE	DESCRIPTION - POSITIVE
0.1 – 1.0	1	Very Low	Very Low
1.1 – 2.0	2	Low	Low
2.1 – 3.0	3	Moderate	Moderate
3.1 – 4.0	4	High	High
4.1 – 5.0	5	Very High	Very High

Therefore, with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

13. THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY (IN TERMS OF THE INITIAL SITE LAYOUT) AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

Alternatives were considered for the mining method, as well as the infrastructure layout (refer to **Section 8.1** for a detailed discussion on alternatives):

Mining method alternative: Pit DW was approved for opencast mining in the 2007 EMPR. Alternatives considered are underground mining (the preferred mining method) as well as a hybrid option which includes underground mining and three mini-pits.

Site layout: Two site layouts were considered for the Dispatch Rider project. The first layout involves constructing a new high wall as a result of additional opencast mine operations that would be carried out prior to developing the infrastructure required for the underground mining operations. The position of the current high wall will move by approximately 60 m. Two inclined conveyors would transfer coal from the underground mining operations to the stockpile areas on the surface, and other infrastructure would include: haul roads, a LDV access road, brake test ramp, underground machine parking area, machine loading area, evaporation terrace, raw water tanks and related platform, and stormwater measures.

The second layout involves utilising the existing high wall of an old opencast pit and access to the No. 2 seam coal would be via a ramp and portal, accessing the reserves at 40 m below surface. Infrastructure required would include: the portal and access ramp, portal sump for collection of contaminated runoff from portal, vent fans, an electrical substation and overhead line, a mine impacted water tank, wash bay, coal transfer area and service roads.

The positive and negative impacts of the alternatives are as discussed in **Table 13-1.**

Table 13-1: Positive and negative impacts associated with alternatives considered

Positive impacts	Negative impacts
Mining method	
Underground mining (preferred alternative)	
• Limited surface disturbance would result in limited impacts to the environment, specifically the wetland systems. • Land use activities would be able to continue with some restrictions.	• The stability assessment conducted in 2023 (• • • APPENDIX G) concluded that there are no fatal flaws. However, there are a few isolated areas that have a possible, limited risk. A commitment to exclude these areas from the mine plan in order to mitigate risk has been made by Seriti. Therefore, impacts are negligible. • Changes to the groundwater levels. • Potential impact on surface water and groundwater if water is not managed.
Opencast mining	
• Impacts to the surface area may be more predictable than impacts arising from underground mining.	• Total destruction of surface areas where opencast mining would take place, including three pan systems and seepage wetlands.

Positive impacts	Negative impacts
	• Significantly altered land use from agriculture to mining within the Dispatch Rider prospecting right area • Dust generation associated with opencast mining activities. • Impacts associated with blasting. • More pronounced visual disturbance as a result of draglines and opencast activities. • Potential impact on surface water and groundwater if water is not managed.
Hybrid mining	
• Hybrid mining may result in better planned grade compared to bord-and-pillar mining	• Will require infrastructure to support both opencast and underground mining, resulting in substantial capital investment. • Total destruction of surface areas where opencast mining would take place. • The stability assessment conducted in 2023 (• • • APPENDIX G) concluded that there are no fatal flaws. However, there are a few isolated areas that have a possible, limited risk. A commitment to exclude these areas from the mine plan in order to mitigate risk has been made by Seriti. Therefore, impacts are not applicable.
Site layout	
Site layout 1	
	• Additional opencast mining to move the existing highwall will result in the complete disturbance of surface areas. The position of the current high wall will move by approximately 60 m.
Site layout 2 (preferred alternative)	
• By utilising the existing high wall of an old opencast pit to gain access to the underground no additional opencast areas or disturbance of the surface area would be required.	• The ROM coal transfer area represents a potential pollution source to the environment.

14. THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

A detailed report of the comments received and the responses thereto, is provided in **Section 9.2** and an indication is provided of how the comments have been incorporated into the EIAr/EMPr.

No specific comments related to project alternatives were received.

A summary of the possible mitigation measures for the anticipated impacts are summarised in **Table 14-1** and discussed in more detail in **Section 21.**

Table 14-1: Summary of possible mitigation measures

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	POSSIBLE MITIGATION MEASURES
Soil and land capability	• Loss of utilisable resource (sterilisation and erosion), compaction and contamination or salinisation due to site clearing, contractor laydown area establishment and stripping of soil and vegetative cover. • Loss of utilisable resource (sterilisation and erosion), compaction, de-nutrification and contamination or salinisation due to activities involving the access and haulage ways, potential spillage of the in-situ and stockpiled materials, dirty water runoff, contaminated dust deposition / dispersion, de-nutrification of stockpiled soils, uncontrolled vehicle movement and wind and water erosion. • Net loss of soil volumes and utilisation potential from areas of infrastructure, bulking factor and the potential for ponding over underground rehabilitated areas. • Erosion due to disturbed soils. • Positive: Reduction in areas of disturbance and return of soil utilisation potential following rehabilitation.	• Limit the area of impact • Implement concurrent rehabilitation of affected sites • Soil stripping to be conducted during less windy months, if possible • Cladding of berms and soil with vegetation or large rock fragments. • Keep height of soil berms to 1.5 m • Restriction of vehicle movement • Soil amelioration and/or seed within areas of rehabilitation • Timeous replacement of soils where disturbed • Regular vehicle servicing to be conducted in bunded areas or at existing workshops • Regular cleaning and maintenance of haulage ways, conveyance routes and service ways, drains and storm water control facilities
Flora	• Loss of habitat. • Disturbance, degradation of, and fragmentation of, portions of vegetation community. • Alien invasive plant species encroachment. • Potential subsidence impact on habitat composition and floral distribution (low probability based on stability assessment outcomes).	• Limit area of disturbance by declaring areas of Very High and High sensitivity as No-go areas. • Limit indigenous vegetation clearing. • Implement surface / sub-surface and stormwater management • Regular maintenance and immediate repair of vehicles. • Develop and implement spill management plan and ensure availability of spill kits. • Develop and implement Fire management plan. • Develop and implement Alien vegetation and pest control management plan • Include soil protection of soils and management of spills in Environmental Awareness Training • Re-vegetation of denuded areas and rehabilitation of infrastructure footprints. • Implement appropriate underground mining engineering and practice; subsidence risk assessment, avoidance of high-risk areas, post

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	POSSIBLE MITIGATION MEASURES
		closure and subsidence monitoring; management plan should subsidence occur; implementation of guidelines and mitigations stipulated by rock engineers and in the groundwater report.
Fauna	• Loss of habitat. • Displacement and fragmentation of faunal community. • Potential subsidence resulting in impacts on habitats and associated fauna (low probability based on stability assessment outcomes).	• Prevent movement into very high and highly sensitive areas. • Minimal noise in evenings and at night. • Enforce no trapping, killing or poisoning of wildlife. • Secure conservation areas for mammal SCCs within the larger mining area. • Direct lighting away from highly sensitive areas. • Environmental inductions and Environmental Awareness Training. • Implement appropriate waste management measures. • Shortest construction duration possible.
Surface water	• Pollution of surface water quality resources due to discharge of contaminated water, poor quality runoff of infrastructure surfaces and spillage of contaminated water and coal particulates • Reduction in catchment yield due to containment of runoff from the site • Potential subsidence impact on surface water availability (low probability based on stability assessment outcomes).	• Minimise disturbed areas and 'no-go' areas • Diversion of clean upslope runoff away from mining and infrastructure area • Develop and implement storm water management measures • Surface water management measures implemented • Implement erosion protection measures • Develop and implement a waste management plan • Continue with current surface water quality monitoring • Mine impacted water storage or reuse in mining operations • Compilation of integrated mine water balance to guide the management of mine impacted water and to ensure that sufficient storage and/or treatment capacity is available • Employment of suitable pillar safety factors to reduce risk of subsidence • Manage water level in workings to remain below decant elevation
Wetlands	• Loss of flow to and from wetlands. • Possible surface subsidence in wetlands (low probability based on stability assessment outcomes).	• Implementation of the revised mine strategy and implementation of measures according to the stability assessment.

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	POSSIBLE MITIGATION MEASURES
	• Water quality deterioration due to discharge of contaminated mine water. • Water quality deterioration due to decant of contaminated mine water.	• Clean and dirty water systems should be separated to avoid further pollution. • Contaminated water that is pumped out of the mining areas must be contained in lined pollution control dams and re-used in the mining operation or treated and released. Storage spaces (reservoirs) are allocated to specific areas to avoid seepage of polluted water as far as possible. • The pumping capacity of the underground water into the storage dams should be maintained to avoid water quality deterioration. • All possible sources of contaminated water should be identified, and a management plan should be compiled and implemented accordingly. • An appropriate water management strategy during and post operations must be put in place and should address the potential discharge of contaminated water. Treatment and re-use options must be investigated. • Monitoring as stipulated in the EMPr.
Hydropedology	• If the hanging wall remains intact and the deeper fractured aquifer remains delinked from the shallow weathered and perched aquifers, the impact on the wetlands is anticipated to be insignificant. • Should subsidence, sinkholes and cracking occur, the lateral flow within the perched aquifer, will be disrupted and ponding within the subsidence may also occur, both of these scenarios will likely result in a loss of water to the downstream wetlands. The cracking will also result in the three aquifers being linked and the dewatering of the aquifers may then impact on the flow of water within the perched aquifer.	• All impacts to wetlands must be proactively avoided rather than re-actively mitigated (i.e. monitor wetlands for impacts during and after mining and then attempt to mitigate impacts that are picked up). • The mitigation measure recommended and agreed with the client is to remove these areas of isolated limited risk from the mining plan to ensure the risks to the wetland hydropedology is negligible.
Aquatic Ecosystems	• Loss of water to and from wetlands resulting in loss of aquatic biodiversity • Limited impact on aquatic biota as a result of contamination and water quality deterioration • Loss of aquatic biodiversity due to mine affected water decant	• Adherence to the mitigation measures proposed by the wetland specialist • Inclusion of diatom assessment for each pan in the existing biomonitoring programme
Hydrogeology	• Dewatering of the surrounding aquifer during operation. • Groundwater level to rise to an equilibrium that differs from the pre-mining level following mine closure.	• Groundwater monitoring network expansion to include boreholes associated with the proposed development • Separation of clean and dirty water • Minimisation of contaminated areas

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	POSSIBLE MITIGATION MEASURES
	• Groundwater within the mine areas expected to deteriorate due to chemical interactions between geological material and groundwater following mine closure. • Discharge has the potential to occur due to excessive rainfall and run-off water entering the mine following closure. • Polluted water could migrate away from mining areas following closure	• Compensation to affected parties where required • Consideration of clean water discharge if required • Implementation of closure measures during operation • Post-closure groundwater management • Limited roadways development through discontinuities
Heritage resources	• Construction and operational activities may cause damage to the historical structures identified (i.e., ruins, game board engraving), artefacts (i.e., a few Late Stone Age miscellaneous flakes) and graves.	• Engagement with local community to determine grave sites in study area. • Implement a chance finds procedure as part of the EMPr.
Palaeontology	• Surface activities may impact upon fossil heritage.	• Once construction and mining activities commence, a Fossil Chance Find Protocol must be implemented.
Socio-economic	• Inflow of workers and jobseekers • Employment opportunities and local procurement • Socio-economic impacts • Capacity building and socio-economic development • Changes to daily living and movement patterns • Proximity to residential areas • Disturbance to farming activities • Changes to sense of place • Changes in safety and security • Health disturbance • Noise disturbance	• Minimise potential negative impacts associated with inflow of workers and jobseekers • Maximise employment opportunities and limit skills inequities associated with construction • Maximise local economic contribution to ensure continued positive economic spin-offs for communities • Increase development of skills of workforce and ensure socio-economic development within area • Limit environmental pollution and social intrusions on neighbouring property owners and local community • Limit negative impacts on neighbouring farms and agricultural activities • Limit negative impact on sense of place • Limit health, safety and security risks • Limit noise pollution during construction
Air quality	• Construction activities, including vehicle movement, have the potential to emit fine (PM10) and settleable (TSP) dust. • Vehicle-entrained dust emissions during operation potentially represent a significant source of fugitive dust. • Dust emissions due to erosion of open storage piles and exposed areas	• Installation of a network of dust fall monitoring units during the construction period. • Implementation of a dust suppression programme on construction sites for unpaved roads and used for construction vehicles. • Dust generated from offloading, loading and tipping can be minimised using wet suppression (water sprays).

ENVIRONMENTAL ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	POSSIBLE MITIGATION MEASURES
		• Loading, transfer and discharge of materials should take place with a minimum height of fall and be shielded against wind. • Vehicle restrictions, surface improvements and surface treatments can be implemented for unpaved roads. • Wind erosion from stockpiles and open areas can be minimised by water sprays, wind breaks, vegetation and enclosures • Implementation of a PM10 monitoring programme.
Noise	• Construction phase activities may generate noise • Increased noise levels during operational phase activities on a temporary and/or permanent noise basis • Rehabilitation phase activities may generate noise	• Equipment / machinery must comply with manufacturer's specifications • Acoustic screening for noise above 85 dB within the footprint boundaries • Must not exceed ambient noise level along mine boundaries • Environmental noise monitoring • Implement noise management plan • Vibration signal for vehicles in reverse • Road surfaces to be maintained • Rehabilitation activities during day time • Implementation of the Environmental, Health and Safety Guidelines of the IFC throughout the project phases
Visual	• Observers will be exposed to visibility of construction equipment, site clearance and construction of infrastructure areas. • During operation, observers may be exposed to the surface development. • Positive impact during closure, as infrastructure areas will be cleared and revegetated. • Equipment for closure will be visible.	• Dust suppression measures • Avoid material / waste being visible on site • Limit area of disturbance to what is necessary • Use of existing access roads as far as possible • Concurrent rehabilitation during operation • Restrict waste burning on site • Implement rehabilitation measures as provided in the EMPr • Implement monitoring as per the EMPr

15. MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Not applicable. Alternatives were considered.

16. STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE

MMS is an existing operational mine, and the Dispatch Rider project has been identified as the area that will most likely extend the operation life to continue to supply Eskom's Duvha Power Station until 2034.

In 2007, a portion of opencast mining within the Dispatch Rider project area was approved in the amended EMPr, however this current application includes a proposed change in the mining method from opencast mining to underground mining. The mine layout and the required infrastructure to support the underground mining has been optimised through a pre-feasibility investigation. The infrastructure layout will be determined during the Feasibility investigation.

Since the mining method is proposed to change from opencast to underground, it is expected that there will be a significantly reduced impact to the surface area and consequently to the receiving environment. Furthermore, infrastructure to support the underground mine will largely be located within areas that have already been disturbed by mining activities, thereby limiting the natural areas to be disturbed.

17. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE (IN RESPECT OF THE FINAL SITE LAYOUT PLAN) THROUGH THE LIFE OF THE ACTIVITY.

The proposed infrastructure development is anticipated to impact on various biophysical aspects, and to a lesser extent on socio-economic aspects. The impacts identified during the Impact Assessment Phase are summarised in **Section 11.** Several specialist studies were conducted to investigate and assess the potential impacts in detail. A detailed impact assessment was conducted by each specialist where the significance, extent, duration and probability of the impacts were determined. The methodology for assessing the impacts is described in detail in **Section 12**.

The following information sources were used in the assessment process:

- Observations made on site;
- Outcome of specialist studies;
- Review of the pre-feasibility studies;
- Review of existing approved EMPrs, water use licences and environmental authorisations;
- Input obtained from stakeholders during the public participation process;
- Review of engineering designs and reports compiled by the design engineers for the project; and
- Discussions with specialists, where required, regarding assessment and ranking of impacts.

18. ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

The main impacts associated with the proposed Dispatch Rider underground mine are described below and the impact rating according to the methodology described in **Section 12.** The impact rating for each development phase is provided in **Table 18-6** to **Table 18-8**.

In the case where specialist assessments were not updated, the EAP has adjusted the ratings where appropriate.

18.1 Wetlands

Potential impacts for underground mining are summarised in this section. It should be noted that no impacts are anticipated for the proposed surface infrastructure. This is due to most of the proposed infrastructure lying completely outside the wetland areas. Based on current information, there are no anticipated impacts. However, if the feasibility phase reveals direct or indirect impacts, particularly for linear infrastructure, where no information is currently available, a wetland impact assessment may be required.

18.1.1 Operational phase

The following impacts on wetlands were considered based on the operation of the surface infrastructure and mining activities:

- During the operational phase of the mine, groundwater will enter the mine workings and, where excess water is encountered, will need to be pumped to the surface and managed in an appropriate manner. Such water could potentially become contaminated within the mine workings and lead to water quality impacts to receiving watercourses on the surface if the mine impacted water is discharged into the environment. However, due to the establishment of the infrastructure described in **Section 4.2.2**, the opportunities of discharging mine impacted water to the environment as a result of operating this mine are limited and therefore potentially impacts of contamination and deterioration of water quality to receiving watercourses and to the environment is low. In an event where contamination does take place, all possible sources of contaminated water should be identified, and a management plan should be compiled accordingly.
- Underground mining will be undertaken using the bord-and-pillar method, which seeks to ensure the structural stability of the overlying rock strata. However, undermining of wetlands raises the risk of subsidence within the wetlands where pillars fail or underground workings collapse, depending on the pillar safety factor. Subsidence below the wetlands does not only alter the surface topography of the wetlands and impact on the flow characteristics of wetlands, leading to knock-on changes in wetland vegetation, increased risk of erosion and general habitat degradation but can also lead to the creation of preferential flow paths from surface water in the wetlands into the underground mining voids, increasing the loss of water from the wetlands. Shallow underground coal mining can potentially result in surface subsidence. While the risk of subsidence cannot be completely eliminated (moderate probability), a robust framework has been proposed to manage and significantly reduce the risk to an acceptable level (Seriti, 2023; Saxum Mining, 2024). The environmental risks associated with mining underneath wetland areas have been assessed as low, provided that mining follows the revised and optimized designs. The strategy of avoiding high-risk areas (11.7%) and implementing robust support systems further mitigates potential impacts.
- Decreased flow within wetlands due to groundwater drawdown.

18.1.2 Decommissioning and post-closure phase

The following impacts on wetlands were considered based on the decommissioning of the surface infrastructure and closure of the mine:

- Decreased flow within wetlands due to groundwater drawdown.
- The revised mining strategy will avoid or minimize impacts to the wetlands stemming from a loss of flow within wetlands due to loss of groundwater inputs and increased loss of surface water to groundwater, and the risk of subsidence.
- The most significant water quality impact, however, is likely to occur only several years or decades after mine closure. Following the completion of mining, the underground mine workings will fill with water and eventually start decanting. The hydrogeological report (J&W, 2022) indicates that Dispatch Rider Underground is expected to rebound within 25 years. Decant from this mine is expected to take place at the adit access in the opencast mining void and the volume is likely to be 160 m^3/d. Due to the proximity of the adit access point, where decant is expected, to the wetlands and watercourses in the Dispatch Rider area, the risk of decant affecting these specifically assessed wetlands is assessed as low. However, it may be necessary to develop a management strategy for other receiving watercourses, possibly integrating with the existing decant management strategy from the Boschmanskrans Section adjacent to the Dispatch Rider Project clean and dirty water management system.

18.2 Hydropedology

Two hydropedological responses for underground mining were assessed:

18.2.1 Scenario 1: Hanging Wall Intact

The identified wetlands in the area (depressions and seeps) are fed by interflow (perched aquifer), surface runoff and rainfall (in particular the depressions) which, according to the hydrological modelling performed, is unlikely to be impacted by mining if the hanging wall does not subside.

Assuming that the hanging wall remains intact, and there is no subsidence, sinkholes or cracking, the impermeable soft plinthic clay layer (ferricrete layer where Glencoe soils are present) underlying the wetlands should remain intact. This impermeable layer holds water in the soil profile and creates a perched aquifer that will continue to sustain the seep wetlands. The same will apply to the depressions, assuming there is no subsidence, sinkholes or cracking and the impermeable layer below the depression remains remain intact.

If the hanging wall remains intact there will also be no impact on the wetlands from the dewatering of the underground mine as the deeper fractured aquifer is disconnected from the shallower aquifers (weathered and perched aquifers).

18.2.2 Scenario 2: Sinkhole, Subsidence and Cracking

The updated Third-Party Review of the Rock Engineering Design Aspects (May 2024) concluded that there is unlikely to be an interaction between the underground workings and the wetlands, except for a few very small areas with limited risk. Seriti have committed to exclude these from the mining plan.

For underground mining, the potential consequences of the failures of the underground mine workings would be subsidence of the surface profile overlying the undermined area and associated cracking of the rock. The type of subsidence that can potentially be expected at Dispatch Rider would be sinkhole subsidence leading to progressive roof collapse. The potential impacts of subsidence, sinkholes and cracking on the wetlands at Dispatch Rider are discussed below.

18.2.2.1 Cracking/sinkholes

In the perched aquifer, cracking/sinkholes may result in a disruption to lateral flow along this aquifer. If water is able to percolate into the deeper fractured rock aquifer, through the cracks/sinkhole, then interflow beneath the subsidence will be reduced and water will be removed from the surface landscape. The water which sustains both the seep and depression wetlands originates from outside the boundary of the delineated wetland. The water lost into the deeper fractured rock aquifer will therefore potentially result in a reduced input into the seep and depression wetlands. This reduction in water input will result in changes in the wetland vegetation on site and potential increase in erosion. As discussed by WCS (2022) this potential loss of surface water and shallow groundwater supporting the wetlands on site into the mined-out voids underground is one of the biggest concerns from a wetland perspective. This impact is likely to be most significant in areas of shallow under mining, specifically also where alluvial aquifers associated with watercourses are undermined.

If the hanging wall is no longer intact and the perched aquifer is linked to the fractured aquifer, due to cracking/sinkholes, the dewatering of the underground working would also potentially result in a loss of water to the wetlands. The significance of the dewatering is unknown as the dewatering at the adjacent Bank Colliery has, to a large extent, already drawn down the hydraulic head to the No.2 Seam floor.

18.2.2.2 Subsidence (roof collapse)

The impacts of the subsidence will likely differ between areas depending on the hydropedological characteristics of the soils and depending on whether the subsidence is linked to the perched aquifer.

In the clay soils, the responsive soils, water is likely to pond in the subsidence depression and only percolate slowly through the soil. The expansion of the clays, when wet, forms a seal preventing the water ingress into the underlying cracks or fractured rock. In this scenario the subsidence water is de-linked from the perched aquifer and the weathered aquifer, with the source of water being surface run-off and direct rainfall.

In the sandier soils, areas with the recharge soils, the depressions caused by subsidence will likely be characterised by vertical seepage through the depression. Whether this water is lost to the deeper fractured aquifer or whether it would move laterally along the shallow weathered fractured aquifer is unknown however the hydrological modelling would assume that the cracking would link all three aquifers.

If the subsidence forms in areas where there are interflow soils, the lateral flow within this area will be disrupted. If the subsidence is associated with cracks that have not sealed, it is likely that the water will be lost to the deeper fractured aquifer resulting in a loss of water to the seep wetlands and the depressions further downstream.

Should the sinkholes, subsidence and/or cracking occur, WCS (2022) have rated the impacts on the water balance and flow drivers of the wetlands on site as High. The subsequent stability assessment results indicated that there is no fatal flaw associated with the mine plan with a few isolated areas of limited risk.

As a mitigation, Seriti have committed to exclude the isolated areas of limited risk from the mine plan to ensure the potential for sinkholes and subsidence is negligible and no residual impact to the wetland hydropedology is realised. It is recommended that the wetlands within the mining area be monitored for a period of 2 years post-mining to confirm no changes in PES due to mining impacts.

18.2.3 Infrastructure

All of the infrastructure, excluding the powerline, are to be located within previously mined opencast areas. Sections of the existing highwall area will be backfilled through the normal opencast rehabilitation procedure, to create a portal area where infrastructure will be established for the underground mine. No new haul roads will be developed since existing haul roads will be used. The exact position of the infrastructure components and the service roads will be determined during the feasibility phase but will be limited to the infrastructure area highlighted in the report.

A hydropedological assessment is not possible here as the soils, subsoils and underlying rocks are disturbed and the original conditions are no longer in place. Any water reporting to this area is likely to infiltrate the backfill material of the mined pit and collect in the groundwater. No hydropedological impacts to the wetlands have been identified related to the infrastructure development.

18.3 Biodiversity

18.3.1 Construction phase

The following potential impacts on biodiversity (including fauna and flora) were considered based on the clearance for infrastructure development as well as disturbances such as dust and noise.

- Loss of habitat;
- Degradation of, and fragmentation of, portions of the vegetation community (VU vegetation types); and
- Displacement of faunal community (including any threatened or protected species which may occur) due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities.

18.3.2 Operational phase

The following potential impacts on biodiversity (fauna and flora) were considered during operational phase:

- Continued disturbance of vegetation communities (including portions of an ESA and VU vegetation types);
- Encroachment by alien invasive plant species;
- Continued displacement and fragmentation of the faunal community (including any threatened or protected species which may occur) due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation/loss (litter, road mortalities and/or poaching);
- Potential subsidence: negative impacts on availability of surface water for fauna. Catchment morphology and resultant modification to surface water baseflow and wetland habitat (low probability based on stability assessment outcomes).
- Potential subsidence: detrimental effects to habitat composition (including wetlands) and floral distribution due to changing groundwater dynamics (low probability based on stability assessment outcomes).

- Potential subsidence: physical alteration of surface-level environment leading to negative impacts on habitats (including ESAs) and associated fauna (low probability based on stability assessment outcomes).

18.3.3 Decommissioning phase

The following potential impacts were considered on biodiversity (fauna and flora) during closure-decommission phase:

- Continued encroachment of an indigenous and VU vegetation community by alien invasive plant species as well as erosion due to disturbed soils;
- Temporary displacement and potential fragmentation of the faunal community (including any threatened or protected species which may occur) due to anthropogenic disturbances (noise, dust and vibrations) associated with decommissioning activities and potential habitat degradation/loss as areas are rehabilitated (litter, road mortalities and/or poaching).
- Potential subsidence: negative impacts on availability of surface water for fauna (low probability based on stability assessment outcomes);
- Potential subsidence: detrimental effects to habitat composition and floral distribution due to changing groundwater dynamics (low probability based on stability assessment outcomes); and
- Potential subsidence: physical alteration of surface-level environment leading to negative impacts on habitats (including ESAs) and associated fauna (low probability based on stability assessment outcomes).

18.4 Aquatic ecosystems

18.4.1 Construction phase

18.4.1.1 Pipeline routes

It is important to note that existing pipeline routes will be used as far as it is practical, to connect the mine impacted water tank to the existing water infrastructure. If new linkages to these existing pipelines are needed this may need to form part of a separate application. The location of the existing pipeline routes and potential linkages were not assessed. As the specialist assessment indicated construction impacts from the proposed new pipelines only (now removed from the required project infrastructure), there are no other construction impacts for the proposed project.

18.4.2 Operational phase

18.4.2.1 Loss of flow to and from wetlands as a result of surface subsidence in wetlands

The specialist report was not updated to include the stability assessment (Saxum Mining, 2024) and therefore assessed the impacts based on a conservative approach that assumed subsidence may occur. This would result in both perched aquifers being disrupted and ponding within the subsidence potentially occurring. Both of these scenarios would likely result in a loss of water to and from wetlands. However, the outcome of the stability assessment indicating that no clear fatal flaw was identified in the latest mine design and layouts, with the exception of a few, isolated areas that have a possible, limited risk. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk. Therefore, impacts due to subsidence as assessed by the specialist have been adjusted by the EAP, and to align with the wetland specialist findings (where appropriate).

18.4.2.2 Discharge of contaminated mine water

Given the closed systems operational scenario, the opportunities of discharging contaminated water to the environment as a result of operating this mine are limited and therefore potential impacts of contamination and deterioration of water quality to receiving watercourses and to the environment is low. In an event where the contamination took place, all possible sources of contaminated water should be identified and a management plan should be compiled accordingly (WCS, 2022). Accordingly, the impact of contamination and deterioration of water quality to the associated aquatic biota is limited, although inclusion of the associated pans into the routine biomonitoring programme is recommended to identify any areas of possible concern.

18.4.3 Post-closure phase

18.4.3.1 Decant of contaminated mine water

Studies have shown that acid mine drainage has a negative effect on the hatching success of branchiopod egg banks from endorheic wetlands. In addition, recovery rates after exposure to mine affected water upon first inundation are low and support the concern that affected wetlands will suffer a loss of biodiversity. In the event of mine affected water decanting into the associated depressional pan systems, a loss of intrinsic biodiversity is therefore expected. As such, every effort should be made to divert such water to appropriate water management infrastructure for treatment (such as the Middelburg Water Reclamation Plant).

18.5 Soil, land use, land capability and agricultural potential

18.5.1 Construction phase

The construction phase will require:

- The creation of dust and loss of materials to wind and water erosion, and
- The possible contamination of the soils by dirty water, chemicals and hydrocarbons spills (dust and dirty water runoff).

18.5.1.1 Residual impact

The proposed management procedures will likely reduce the significance of the impacts to moderate in the medium term.

18.5.2 Operational phase

In summary, the operation will potentially result in:

- The creation of dust and the possible loss (erosion) of utilisable soil down-wind and/or downstream, and the potential for contamination of the soils from dust fallout and dirty water runoff;
- The contamination of the soils by dirty water run-off and or spillage of hydrocarbons from vehicle and machinery during the operational phase;
- Contamination of soils by use of mine impacted water for road wetting (dust suppression); and

- Potential contamination of soils by chemical spills of reagents being transported to or from site.

18.5.2.1 Impact Significance

The agricultural potential study conducted found that:

- The areas that are proposed to be undermined using the bord and pillar method of mining on the Dispatch Rider mining project are unlikely to impact on the surface soils and related agricultural operations. The considered and calculated risk is low to negligible.
- If the mining method is restricted to Bord and Pillar mining and the depth to mining is greater than 40 m below surface, then the risk of impact at surface is considered to be low and additional and more intensive studies of the agricultural potential of the site are not considered necessary.

18.5.2.2 Residual impact

In the long term (Life of the operation) and if implemented correctly, mitigation measures will reduce the impact on the utilisable soil reserves (erosion, contamination, and sterilisation) to a significance rating of low.

18.5.3 Post-closure phase

The impacts on the soil resource during the decommissioning and closure phase will have both positive and negative effects. These could include:

- Contamination of replaced soils by use of dirty water for plant watering and dust suppression on roadways;
- Hydrocarbon or chemical spillage from contractor and supply vehicles;
- Positive impacts of reduction in areas of disturbance and return of soil utilisation potential, uncovering of areas of storage and rehabilitation of compacted materials;
- Erosion due to slope stabilization and re-vegetation of disturbed areas.

18.5.3.1 Impact Significance

Dust will potentially be generated, and soil will possibly be contaminated, compacted and eroded to differing extents depending on the degree of management implemented.

The positive impacts of rehabilitation on the area are the reduction in the footprint of disturbance, the amelioration of the affected soils and oxygenation of the growing medium, the stabilising of slopes and the re-vegetation of disturbed areas.

18.5.3.2 Residual impacts

On closure of the mining operation the long-term negative impact on the soils will be reduced from a risk rating of low if the management plan set out in the Environmental Management Plan is effectively implemented.

Decant of groundwater onto the soils will potentially contaminate the materials with both low pH water and sulphides if the rehabilitation is not undertaken correctly.

The excess water will however need to be managed and made to be free draining if ponding is to be minimised.

In the unmanaged state, the impacts will be high and long term. However, if the concerns are well managed as part of the mining plan, and monitored, then the impacts should be low at closure.

18.5.4 Cumulative impact

The Dispatch Rider mining area is considered to be of a brownfields nature, with varying degrees of existing impacts by either coal mining or intensive commercial agriculture. The cultivation for commercial food production and associated ecosystem services renders these areas as impacted and affected in terms of their natural grassland status. All of these aspects will potentially add to the cumulative impacts for the area in question.

The effects of these developments and activities are evident, with both erosion and compaction having impacted the soil resource and the capability of the land, with sedimentation of the water course.

18.6 Groundwater

18.6.1 Operational phase

The operational phase is interpreted as the active mining of the Dispatch Rider underground mining complex. It is inevitable that these effects will impact on the groundwater regime. The potential impacts that will be considered are groundwater quantity and quality.

During the operational phase, it is expected that the main impact on the groundwater environment will be dewatering of the surrounding aquifer. Water entering the mining areas will have to be pumped out to enable mining activities. This will cause a lowering in the groundwater table in- and adjacent to the mine. The dewatering of the aquifer has been calculated for the proposed underground mining areas using the calibrated numerical model as described above. The mining sequence was also incorporated in the calculation. The calculated drawdown of this scenario is depicted in **Figure 18-1** as contours of drawdown.

The computed inflow into the mine was calculated as tabled below in **Table 18-1** and **Table 18-2**. The actual inflow will depend on the area being mined at any one moment in time. It should be noted that geological structures such as dykes and faults will have a notable influence on inflows into the mine. Dewatering at Bankfontein Colliery is also likely to influence inflows into the underground and must be incorporated into future modelling. Direct recharge from rainfall will in turn add to these volumes. The amount of direct recharge will depend on the season as well as the mining layout and storm water management.

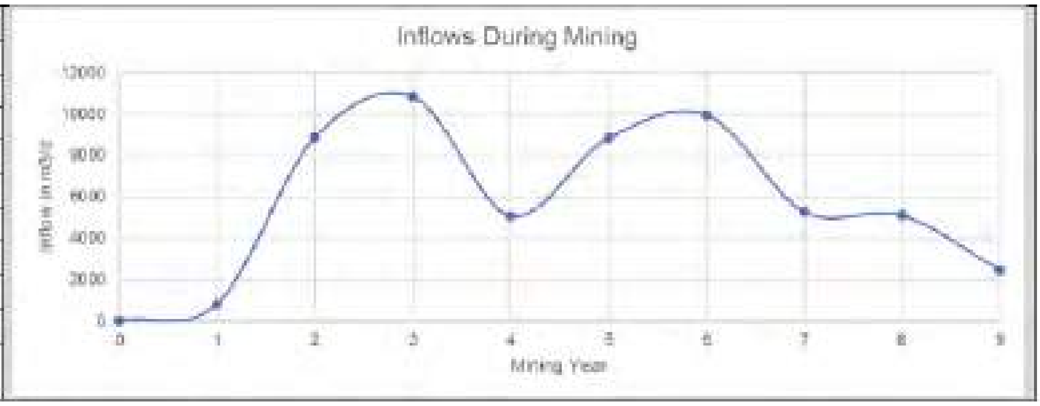
The flow in the aquifer will be directed towards the mine at this stage and very little groundwater pollution affecting private users is thus expected. Most of the potential contamination is likely to be directed towards the mining areas – see **Figure 18-2.** Although positions of the infrastructure were assumed for the purpose of the model, the position may change during the feasibility investigation, but will remain within the infrastructure area designated. The modelled impact remains representative of what could be expected.

Table 18-1: Summary of potential impacts on groundwater level during operation – dewatering (J&W, 2024a)

MINING AREA	MINING SEAM	MAXIMUM DRAWDOWN (m)	CONE OF DEPRESSION FROM EDGE OF MINE (m)	ESTIMATED MINE INFLOW (M3/DAY)	LIKELY IMPACTED RECEPTOR	EXPECTED WATER LEVEL DECLINE (m)
Dispatch Rider Underground	4 Seam 2 Seam 1 Seam	30 (20 m directly above the underground)	800 (more extensive where linkages exist to backfilled opencast mines)	30-11 000. Please note that these volumes are progressive as the mining operation expands. 11 ML/d is the maximum expected inflow during the LoM.	The tributary of the Boesmankransspruit; monitoring boreholes HBB1, HBB2, MBH15-4W, MBH15-4F, MBH15-4W, PIZ14; private boreholes Mr Allen Main Borehole, Mr Allen Second Borehole.	5 - 10

Table 18-2: Summary of potential inflows during operation (J&W, 2024a)

Mining Year	Inflow in m³/d
0	34
1	833
2	8871
3	10862
4	5097
5	8825
6	9930
7	5297
8	5121
9	2476



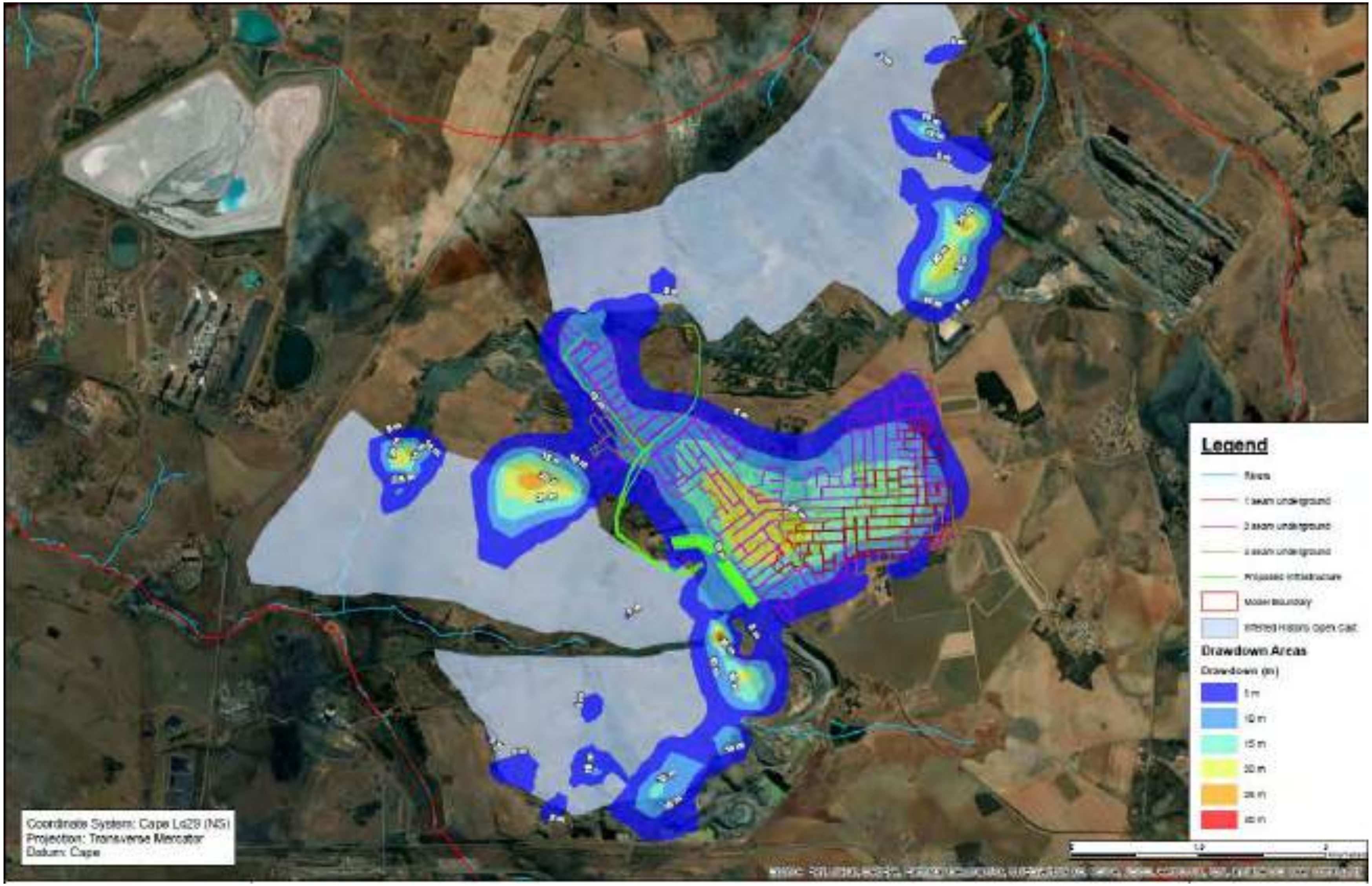


Figure 18-1: Drawdown during mining (J&W, 2024a)

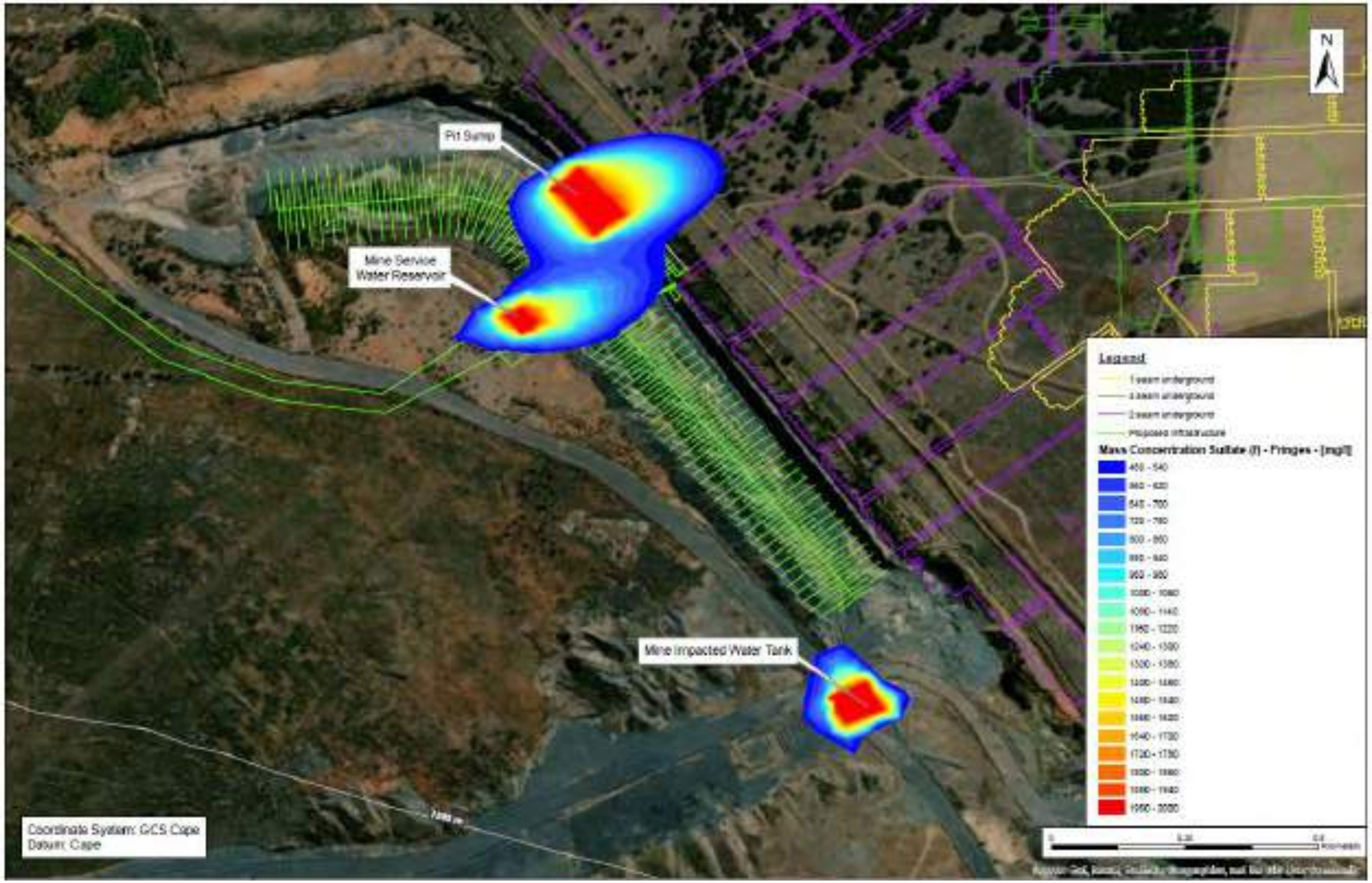


Figure 18-2 : Contamination movement during mining using assumed position of pollution sources (J&W, 2024a)

18.6.2 Decommissioning phase

During this phase it is assumed that dewatering of the Dispatch Rider underground mine will cease, and it will be allowed to flood. The groundwater regime will return to a state of equilibrium once mining has stopped and the removal of water from the mining void has been discontinued.

The groundwater level is expected to recover in about 25 years. The following possible impacts were identified at this stage:

- Following closure of the mine, the groundwater level will rise to an equilibrium that will differ from the pre-mining level due to the disturbance of the bedrock.
- Groundwater within the mined areas is expected to deteriorate due to chemical interactions between the geological material and the groundwater. The resulting groundwater pollution plume is expected to commence with downstream movement.

A summary of the potential impacts during the closure of the mine is shown in **Table 18-3.**

18.6.3 Post-Mining phase

After closure, the water table will rise in the mine to reinstate equilibrium with the surrounding groundwater systems. However, the mined areas will have a large hydraulic conductivity compared to the pre-mining situation.

18.6.3.1 Groundwater Quantity

Following the closure of the underground and the cessation of dewatering, groundwater rebound will occur.

After rebound has reached equilibrium, discharge has the potential to occur due to excessive rainfall and surface water run-off water entering the mine. The percentage of the rainfall/run-off that is recharged into the underground and potential discharge depends on:

- The thickness and composition of the topsoil. i.e. clay content and compaction.
- The amount rainfall and intensity of the rainfall events.
- The size of the accesses and underground voids.
- The geometry of the mine relative to surface topography.

The predicted discharge area is shown in **Figure 18-3.** Please note that predicted discharge areas may vary from exact real discharge areas due to sub-surface heterogeneity, however the general areas of predicted discharge should be consistent. A discharge volume of 160 m^3/d can be expected. Discharge is likely as the flooding of the 2 seam and 4 seam will likely have a direct connection to the adit in the reshaped highwall which will be used to enter the mine. Groundwater has already accumulated in this area and sealing the adit is unlikely to completely prevent discharge from occurring. Therefore, the current void must be left in place after cessation of mining if discharge to surface is to be avoided, to act as an evaporative sink. The adit can also be sealed to minimise decant and a decant management plan can be compiled to minimise decant impacts.

18.6.3.2 Groundwater Quality

Once the normal groundwater flow conditions have been re-instated, polluted water could potentially migrate away from the mining areas.

As some discards and exposed reactive mineral surfaces will remain in the mine, this outflow could be contaminated as a result of geochemical reactions. As sulfate is normally a significant solute in drainage from mines, sulfate concentration from the mine has been modelled as a conservative (non-reacting) indicator of mine drainage pollution. A starting concentration of 2 000 mg/L sulfate was assumed for the mine, as an average of the monitoring data for the existing mining voids left by opencast mining in the area. It was assumed that this concentration would be present in the mine during flooding and be diluted over time.

The migration of contaminated water from the mining area has been modelled as described, and the results are presented in **Figure 18-4** and in terms of the extent of the pollution plume 10, 25, 50 and 100 years after the operations have ceased.

Within the limitations of the abovementioned assumptions, impacts have been estimated as listed in **Table 18-3**.

18.6.3.3 Acid Mine Drainage

J&W conducted a geochemical assessment for the site (Report No: JW145/16/E812) in May 2016. The key objective of this assessment was to determine the geochemical characteristics of the various geological materials that will be exposed, disturbed and/or deposited as it is imperative that the potential contaminant sources are well understood.

In 2016 a total of 10 samples were taken from boreholes MBH15-01 and MBH15-04, located within the proposed Dispatch Rider mining area. Distilled water shake flask test was performed on the samples to determine which soluble constituents are present in the material. The sulfate concentrations were found to be elevated within the coal samples in MBH15-04, as well as in the hanging wall sample, S1, at MBH15-01. Major elements detected in most of the samples include calcium, potassium, magnesium and sodium. The trace element concentrations detected in the water leach were, however, generally below detection limits. Additionally, acid-base accounting indicated likely acid generation from the samples collected in the coal seam with acid neutralising material in the hanging wall and footwall of the proposed underground. The coal samples in MBH15-04 (S2 and S5) also had high sulfur concentrations along with the carbonaceous sample MBH15-01 (S1) and MBH15-04 (S6). The high sulfur percentages (ranging between 0.85% and 1.55%) and low Neutralising Potential Ratios, ranging between 0.16 and 0.065 resulted in a rock classification of Rock Type I (potentially acid forming). Most of the hanging wall and footwall samples taken at MBH15-01 and MBH15-04 had lower sulfur contents and higher Neutralising Potential Ratios than the coal and carbonaceous samples and they therefore classified as Rock Type III (non-acid forming).

The hanging wall of the mine is unlikely to undergo any subsidence as discussed in the hydrogeological impact assessment report. Therefore, contaminant transport to the overlying and surrounding aquifers will be limited and contamination in the mine will effectively be encapsulated, relative to potential receptors. The dissolved contaminants are likely to precipitate and dilute over time due to the chemically reducing environment formed in the mine after flooding. This is especially relevant if the adit is sealed and decant is averted, at least partially, by the adit seal. Therefore, as illustrated in the hydrogeological impact assessment report, no impacts to sensitive receptors are expected after mine closure. The above-mentioned report also recommends accelerated flooding of the underground to minimise acid generation and contaminant generation and -release, while monitoring groundwater quality for a set period post-closure.

Table 18-3: Summary of potential impacts on groundwater level post operations (J&W, 2024a)

MINING AREA	LIKELY IMPACTED RECEPTOR	ESTIMATED INCREASE IN CONCENTRATIONS DURING CLOSURE **(MG/ℓ)**	CONTAMINANT	REBOUND TIME IN YEARS	POTENTIAL DISCHARGE (YES/NO)	POTENTIAL DISCHARGE AREA
Dispatch Rider Underground	None as the discharge will be contained by the mining void at the mine access	N/A	SO_4	25 Years	Yes	The opencast mining void where the adit access is located

Figure 18-3: Discharge post-mining (J&W, 2024a)

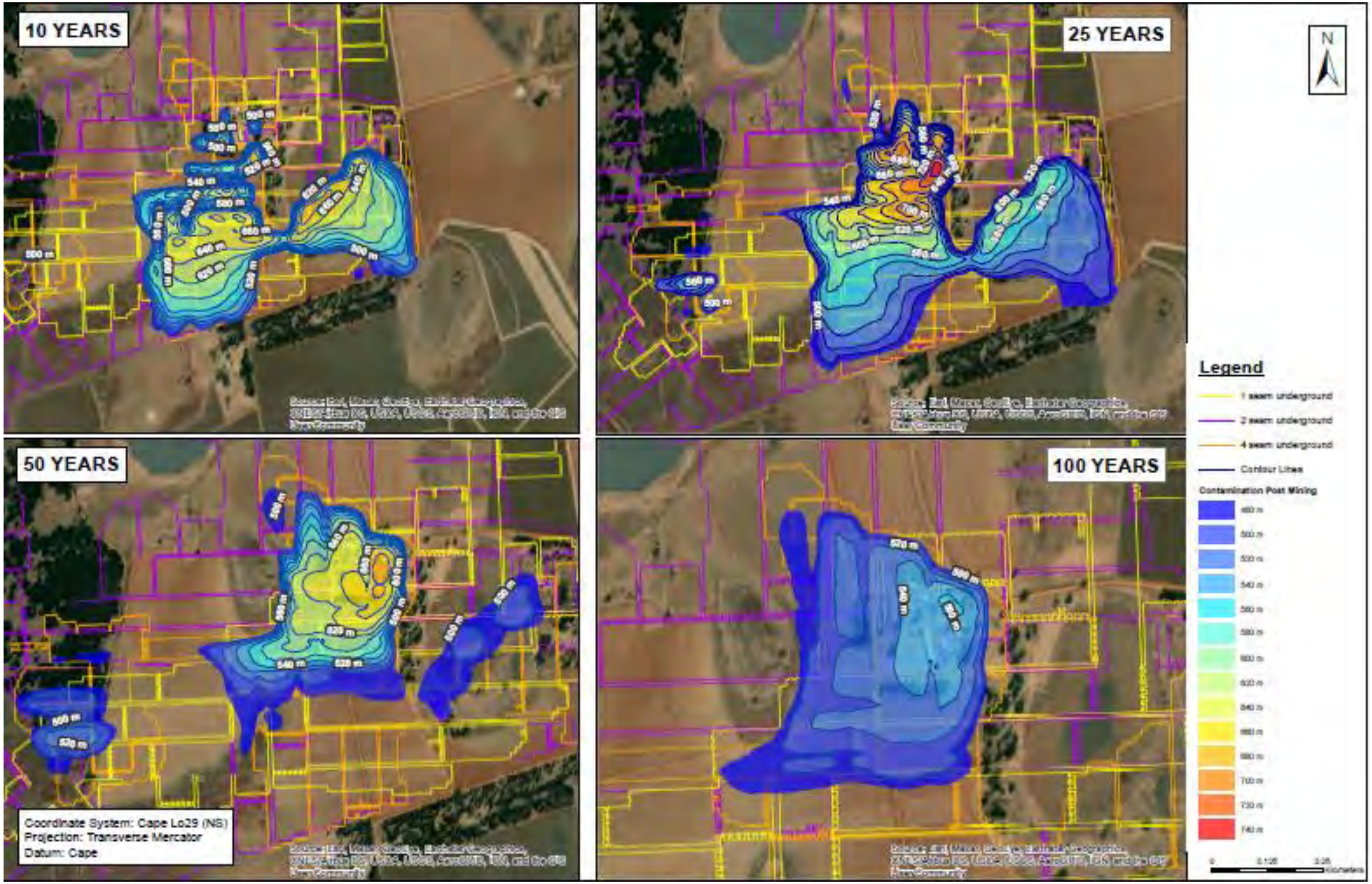


Figure 18-4: Calculated spread of contamination post-mining (J&W, 2024a)

18.7 Surface water

18.7.1 Construction phase

18.7.1.1 Surface water quality

General Mine Development

During the construction phase topsoil will be stripped from previously rehabilitated mining areas and civil works, in the form of earthworks will be undertaken as part of the preparation of the area for the mine development.

Impacts may arise from:

- Erosion of soils during rainfall events, with elevated suspended solids in the runoff water.
- Resultant elevated suspended solids in the watercourses, as well as sedimentation in the watercourses.
- Hydrocarbon spillages from fuel storage, servicing areas or construction equipment itself, with resultant elevated hydrocarbon concentrations in runoff water and watercourses.

The surrounding and downstream surface water resources, namely the Olifants River, are considered stressed water resources in terms of both the quantity of water in the system and the quality of the water. The Olifants River also forms part of the water supply for irrigation water further downstream (from the Loskop Dam). Any impact on the quantity or quality of water in the system has the potential to affect the quality and assurance of supply to the community and agriculture.

Linear Infrastructure

During the construction phase for any linear infrastructure, topsoil will be stripped and civil works, in the form of earthworks and terracing will be undertaken as part of the preparation of the area for the relocation and construction of infrastructure.

Impacts may arise from:

- Resultant elevated suspended solids in the watercourses, as well as sedimentation in the watercourses.
- Hydrocarbon spillages from fuel storage, servicing areas or construction equipment itself, with resultant elevated hydrocarbon concentrations in runoff water and watercourses.

Adit

Water that enters the adit, both from groundwater seepage and direct rainfall, is expected to be largely clean. However, there is a possibility that this water will come into contact with carbonaceous and pyritic materials. The water quality from the adit is therefore likely to be slightly to moderately impacted in terms of sulfate, TDS and suspended solids.

Impacts may arise from:

- Discharge of the potentially impacted water to the environment, with a resultant increase in sulfate and TDS concentrations in the natural watercourses.

18.7.1.2 Catchment yield

Mine Surface Infrastructure

During construction, surface runoff will be released to the catchment once sediment has settled out. All runoff and rainfall in the adit will be contained in the dirty water system and will therefore be lost to the catchment.

The loss in yield during the construction phase will be significantly lower than during the operational phase and is therefore not quantified individually here, given that the construction of the adit will take place while the rest of the mine is operational.

Impacts may arise from:

- Containment of contaminated runoff water emanating from the site, with no release to the catchment.

Although runoff from dirty areas will be contained and the probability of impact is definite, its significance has still been assessed as very low on the basis of the very small volumes of water that will be contained.

18.7.2 Operational phase

18.7.2.1 Surface water quality

Mine Water Discharge

It is important to note that a mine water balance assessment should be undertaken to ensure that the mine does not spill water during the operational phase, except for extreme events related to rainfall with a risk of recurrence of 2% or less in any one year.

However, to merely indicate that the mine will not spill dirty water does not allow an assessment of the potential impact of non-compliance with the mitigation measures proposed. In order to assess the impact without mitigation, this impact assessment assumes that all dirty water is discharged to the catchment, where after detail is provided on how this will be prevented, and the impact after management is then assessed.

Impacts are as a result of runoff entering the mine affected areas and coming into contact with carbonaceous material, with resultant high salinity, particularly sulfate content.

The potential impact on aquatic life or downstream users of water within the rivers is highly dependent on the pH of the water discharged. This is because acidic conditions will result in mobilisation of metals, and this would be a major contributing factor to the potential toxicity of the water.

Utilisation and management of linear infrastructure

No new haul roads will be developed since existing haul roads will be used. The exact position of the infrastructure components and the service roads will be determined during the feasibility phase but will be limited to the infrastructure area.

All runoff from these roads will be contained by draining into the dirty water system and managed along with the existing mine water make. Positions of service roads were not available at the time of writing and are not assessed. However, the potential impacts and mitigation are given below:

Impacts may arise from:

- Storm water may be contaminated by hydrocarbon drips/spills from vehicles trafficking the road.
- Leakage of dirty water, with a resultant deterioration in water quality, with increased salinity, particularly sulfate.

Mine Development Area

The required surface infrastructure at the underground area will be constructed at the start of mining and will remain in place for the duration of mining.

The coal transfer area has the potential to generate poor quality runoff due to contact of the water with carbonaceous material. At the infrastructure area, impacts are associated with runoff generated at dirty areas such as washbays, coal transfer areas etc. entering the clean system.

Impacts may arise from:

- Contaminated storm water runoff, that discharges from the site, with resultant deterioration in water quality within the Olifants River, associated with increased suspended solids, hydrocarbons (oils and greases), siltation of carbonaceous materials, and an increase in salinity and potential decrease in pH in the watercourses.
- Contaminated seepage from the coal stockpile, with potentially elevated sulfate and TDS.
- Leakage of contaminated water, poorly maintained storm water channels, sumps, sediment traps and oil skimmers, etc.
- Erosion at the clean canal discharge points could result in the formation of erosion gullies on surface, with elevated suspended solids in the runoff water, potentially impacting on the water quality in the watercourses in terms of suspended solids and deposition of silt.
- Increase in sulfate, turbidity, suspended solids and TDS due to runoff entering the pits and becoming contaminated.

Dust Suppression

Dust suppression will be provided on surface along haul roads and potentially at the coal transfer area. This water will become contaminated once it comes into contact with the dirty surface.

Impacts may arise from:

- Spillage of dust suppression water to the watercourses or associated watercourses or pans, with resultant deterioration in water quality, in terms of elevated salinity, particularly sulfate.

Transportation of Coal

Transport of coal by road has the potential to impact on watercourses and general runoff quality, primarily due to spillage of coal from overloaded trucks, as well as contaminated water from the load boxes of the trucks on inclines.

Existing haul roads will be used to transport coal from the Dispatch Rider area. The coal from the transfer areas will be loaded into trucks via FELs. If the raw coal is of acceptable quality and no washing is required, it will be transported to the existing South Eskom Plant which feeds directly to the Duvha Power Station. If, however, the coal does not meet the required quality and requires washing, it will be trucked to the existing North Middlings Plant Tip. Here the coal will be washed and processed and then transported via an internal rail line to the South Eskom Plant feeding Duvha Power Station or the existing loadout area for export if required.

No new haul roads will be developed since existing haul roads will be used. The exact position of the infrastructure components and the service roads will be determined during the feasibility phase but will be limited to the infrastructure area. Therefore, routes to be used during operations were not available at the time of writing and are not assessed. However, the potential impacts and mitigation are given below:

Impacts may arise from:

- Coal spillage, or spillage of water transported from the Dispatch Rider area from the haul trucks onto the haul roads, with resultant contamination of storm water, particularly with elevated salinity and sulfate.

18.7.2.2 Catchment yield

Mining Operation

The loss in yield associated with mining at the Dispatch Rider project will be primarily due to the infrastructure areas, which will be isolated from the catchment. Loss in yield is assessed for Loskop Dam and Pans in the area.

The impact in surface water yield to the most downstream watercourse as well as the affected pans, is very high, with the impact on yield at Loskop Dam being very low.

However, the 2023 stability analysis showed that there are no fatal flaws, however it does indicate there are “a few, isolated areas that have a possible, limited risk.” These areas are on the edges of the planned workings. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk. Therefore, the impact in surface water yield on the affected pans, is moderate.

18.7.3 Decommissioning, closure and post-closure phase

18.7.3.1 Surface water quality

General decommissioning and rehabilitation

Impacts resulting from general rehabilitation and decommissioning works will be similar to those during the construction phase, with earthworks related to rehabilitation and the movement of construction equipment on the site.

The water management berms and canals isolate active areas from the catchment by diverting upslope clean runoff around the active areas and containing runoff generated on the active areas. These can only be removed once the area has been rehabilitated but may result in increased erosion if not properly planned.

Impacts may arise from:

- Erosion of soils during rainfall events, with elevated suspended solids in the runoff water.
- Resultant elevated suspended solids in the watercourses, as well as sedimentation in the watercourses.

- Hydrocarbon spillages from fuel storage, servicing areas or construction equipment itself, with resultant elevated hydrocarbon concentrations in runoff water, watercourses and the adjacent pans.

These impacts are expected to be relatively small, with the resultant impact post decommissioning being positive in comparison with the operational phase.

Post-Closure

Post closure the site will be rehabilitated, grassed and made free draining. All of the contaminated materials will have been removed from the site. An integrated water balance is required in order to assess the potential impacts on water quality.

Potential for AMD decant

From the hydrogeological report, which assesses the mine water make from Dispatch Rider alone, the predicted decant rate is approximately 160 m^3/day and the location of this decant is at the adit. This impact cannot be assessed as an integrated water balance model is yet to be compiled for the project.

18.7.3.2 Catchment yield

During decommissioning and closure the affected areas will be rehabilitated to generate clean runoff and will be restored to free draining conditions. Until the water management infrastructure is decommissioned the impact on catchment yield will remain as per the operational phase.

Post closure all areas, including the adit area, will be rehabilitated and made free draining. There will therefore be no long-term impact on catchment yield.

18.7.4 Cumulative impact

The MMS North and South form a large portion of surface disturbance in relation to the other activities in the area that could potentially impact on surface water. The Dispatch Rider project area is small in relation to the existing MMS North and South mining areas, however adds to the surface disturbance of MMS area as a whole.

There are other existing coal mining operations in the region, namely Goedehoop Colliery to the east, Black Wattle Colliery to the north, as well as Mavela Colliery and Muhanga Mine on the banks of the Spookspruit downstream of the Middelburg Water Reclamation Plant (MWRP) but are small in relation to MMS.

Therefore, there are numerous coal mines in the Olifants River catchment, both upstream and downstream of the mine, as well as surrounding agricultural activities, power stations and industrial areas that also potentially impact on the water quality and quantity in the catchment. MMS does form a large portion of this area.

The cumulative impact of the Dispatch Rider project, with the mitigation measures described in the impact assessment, is considered to be medium to high in relation to the current and anticipated future activities in the area, as the catchment is already impacted by mining activities. This rating is due to the uncertainty with regard to the water management and water balance aspects for the project and would need to be reassessed once this information is available.

The cumulative impact of all of the coal mines in the area has resulted in a regional crisis in terms of water quality and quantity. Every new mine contributes to the further reduction and / or deterioration of the water resources in the Mpumalanga region and it is essential that good water management be implemented at MMS and Dispatch Rider to prevent further contributions to the existing impacts in the catchment.

18.8 Noise

18.8.1 Construction phase

The clearing and stripping of topsoil and vegetation at the Dispatch Rider infrastructure section, construction activities at the adit, construction activities at the infrastructure section and construction activities at the ROM could result in noise increases in excess of the threshold value for a noise disturbance of 70.0 dBA above the ambient noise level at the boundary of the mine footprint and the abutting residential areas.

18.8.2 Operational phase

During operation, the activities at the adit, the mechanical ventilation at the adit, activities at the infrastructure section and ROM activities could result in noise increases in excess of the permissible value of 70.0 dBa before a noise disturbance is created at the footprint of the shaft complex, other mining activities and / or the mining right boundary of the mine.

18.8.3 Decommissioning phase

Removal of infrastructure, earthworks and vegetation planting could result in a noise increase in excess of the threshold value for a noise disturbance of 70.0 dBA above the ambient noise level at the boundary of the mine footprint and the abutting residential areas.

18.8.4 Cumulative impact

The proposed Dispatch Rider mine project will take place in an area where there are other mining activities and feeder roads with a continuous flow of traffic during the day and intermittent traffic flow during the night. The prevailing ambient noise level in the vicinity of the proposed mining area was made up out of traffic, domestic, distant mining activities, agricultural activities, birds, and insect noises.

The cumulative noise level of the machinery and equipment will be 64.9 dBA at 60 m and 40.8 dBA at 960 m from the construction area if all the machinery operates in a radius of 30 m at one time. This will seldom happen, and the cumulative noise level will therefore be lower.

18.9 Visual

18.9.1 Initial Impact

The current visual baseline is impacted by existing mining operations within the study area, farming operations, informal settlements and small commercial centres. Visual exposure is quite high as the terrain is relatively flat and the vegetation cover is mostly grasses and grains. Isolated patches of Blue Gum and Black Wattle trees provide localised screening. Mining, especially opencast mining has altered the visual landscape significantly.

The baseline or initial impact is rated as a **High Impact.**

18.9.2 Additional Impact

For the additional impact of the development both static and dynamic observers are taken into consideration.

The visual impact from the proposed Dispatch Rider Infrastructure was modelled as shown in **Figure 18-5** below. As visual impact is related to distance as well as visibility, the maps show a colour range representing the visual impact. The closer an observer is to the proposed development, the higher the anticipated impact. On the maps the red colour indicates high impact ranging to yellow and then blue indicating low impact.

Static observers were identified using Google Earth imagery and then the results were verified on site. The main static observers were in the form of farmsteads, informal settlements, working housing, commercial centres and other mining operations.

The visual impact to static observers is rated as a High impact both during construction and operations. Post closure there is a potential positive impact if the site is rehabilitated successfully. It should be noted that the impact ratings represent observers within the red zone indicated in **Figure 18-5**. Observers located within the yellow will rate as a Moderate impact during construction and High during operations, while the green areas will rate as a Moderate impact during both phases.

Dynamic observers represent the people travelling along local roads and then observing the anticipated impact from the development. In the case of the proposed mining extension, the impacts are mostly related to traffic on the R35, R575 and the N4.

The impact significance was determined using the time a person would be able to view the proposed development. For a person travelling on the R35 at the speed limit of 100 km/h the exposure would be 21 km long, calculating to a view for 10.5 minutes and hence an incidental significance.

The impact to dynamic observers is rated as a Moderate impact during construction and operations, with a potential Low positive impact post-closure.

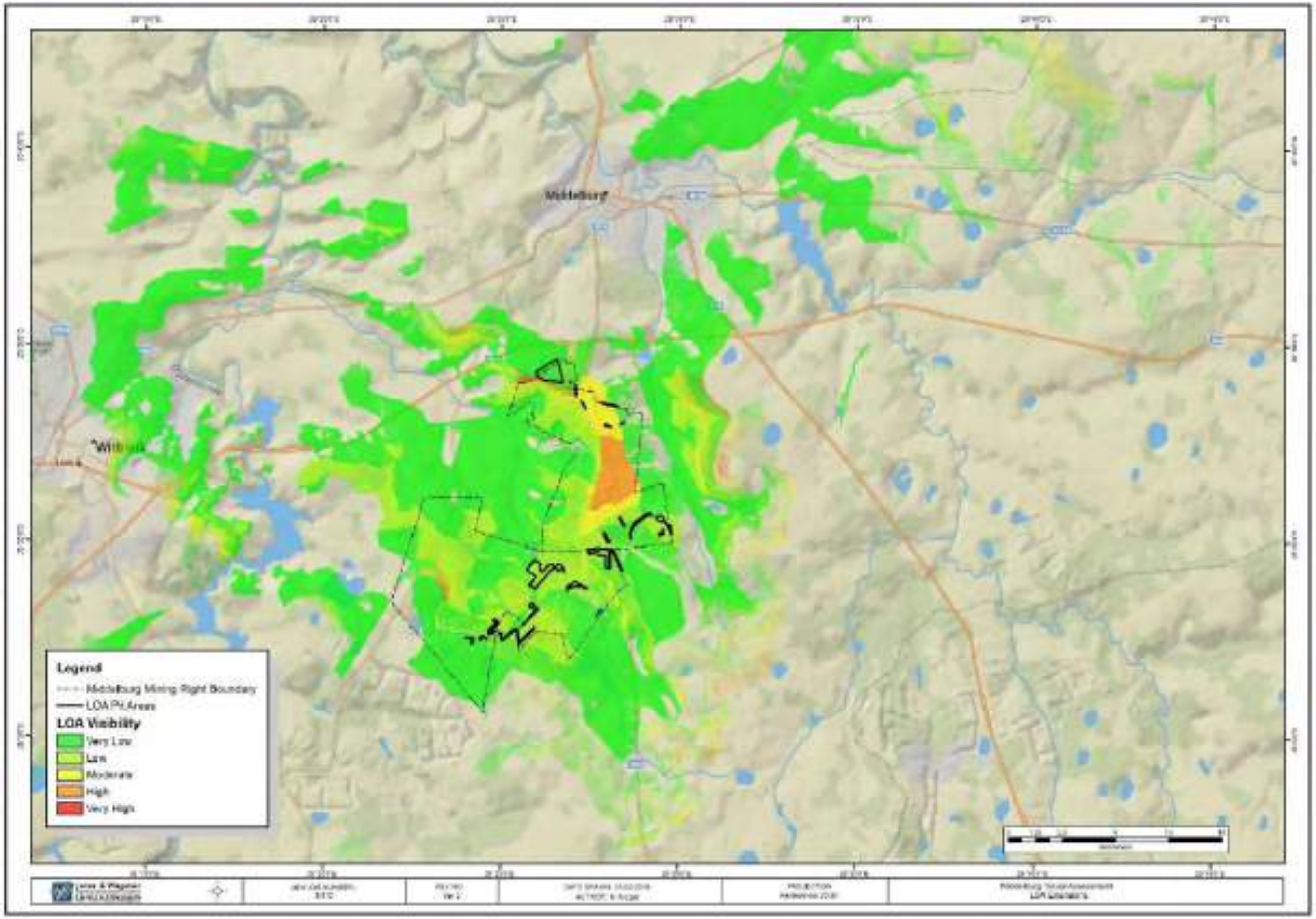


Figure 18-5: Visual Impact of Life of Asset Extension (J&W, 2016)

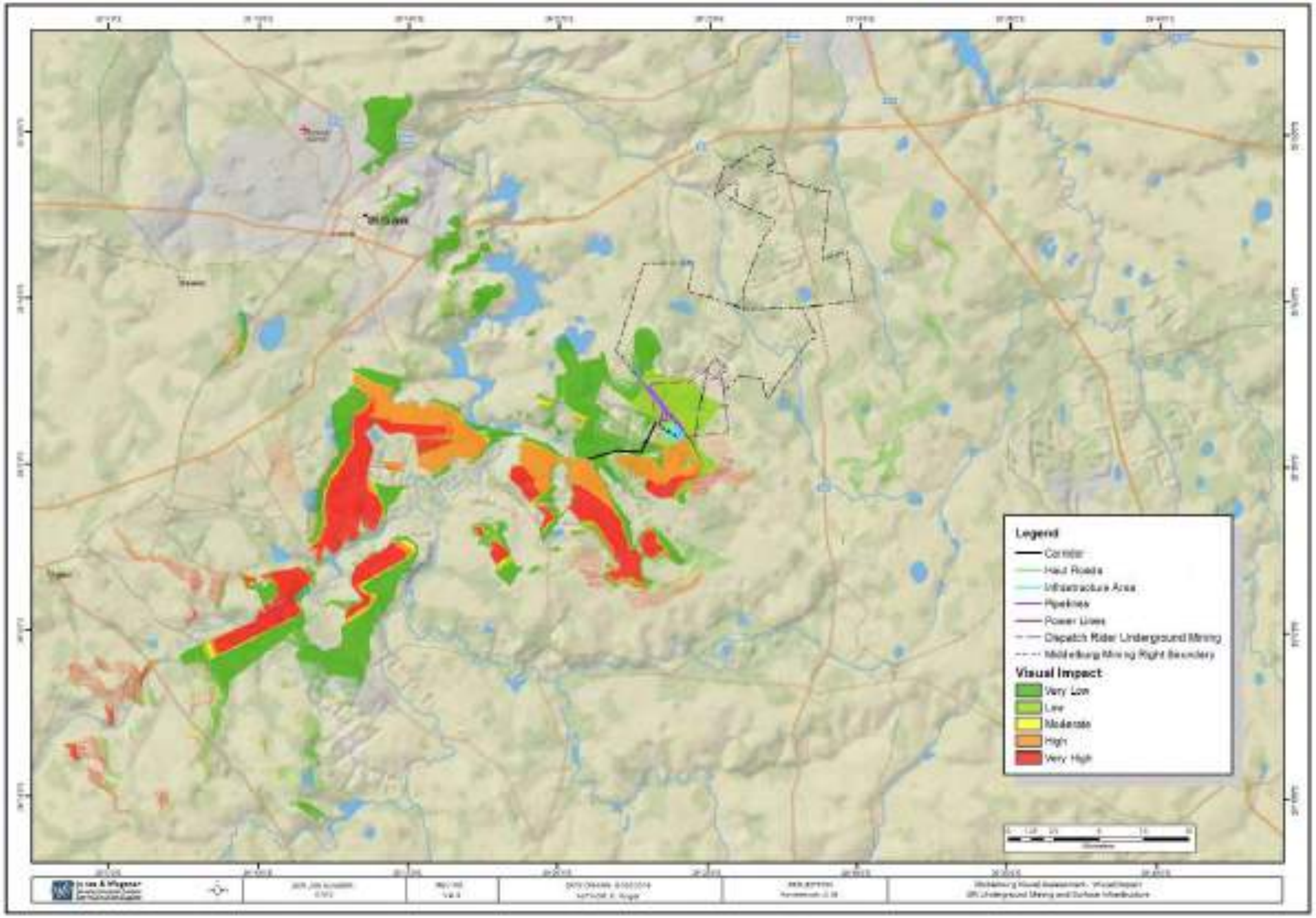


Figure 18-6: Visual impact of Dispatch Rider infrastructure (J&W, 2022)

18.9.2.1 Construction phase

During the construction phase observers will be exposed to the visibility of the construction equipment, site clearance and the construction of the infrastructure areas.

18.9.2.2 Operational phase

During operation the visual impacts identified will continue as stockpiles expand.

18.9.2.3 Closure Phase

During closure, the infrastructure areas will be cleared and revegetated. The activities during this phase will be identically rated as the construction phase. After closure has been successfully completed and rehabilitation has taken effect, the site should resemble the current landscape with grasses dominating the visual environment.

18.9.3 Cumulative impact

The cumulative impact adds the baseline impact to the additional impact that the new development could have. In the case of the visual impact both the baseline and the additional impact were individually rated as High. With the two impacts combined the rating will not change and remains a High negative impact as shown below. Note that this impact refers to both static and dynamic observers, as the baseline impact for both are high.

18.9.4 Residual impact

The residual impact with the successful implementation of the mitigation measures mentioned unfortunately remains a High impact. Due to the elevation of the site infrastructure, the very limited natural vegetative cover and the flat topography surrounding the site, the impact cannot be avoided.

18.10 Air quality

18.10.1 Construction phase

Construction of the unpaved ramp, coal transfer area and infrastructure will require clearing and excavations to be carried out. Such construction activities include movement of vehicles on unpaved roads, which emits both fine (PM10) and settleable (TSP) dust additional to background values. The rate of dust emission and the impact thereof will be determined by the material properties and construction schedule. At this stage, it is not possible to quantify the effects, however any effects will be of a temporary nature.

Emissions generated from mining activities are associated mainly with fugitive dust sources. Dust emissions will arise from excavations, materials handling operations and wind erosion from exposed areas. The movement of trucks along unpaved haul roads is also a substantial source of dust.

18.10.2 Operational phase

The following sources of emission are associated with operations:

18.10.2.1 Vehicle entrainment on unpaved roads

Vehicle-entrained dust emissions from the proposed unpaved void, ramp and existing haul roads within MMS mining area potentially represent a significant source of fugitive dust. The quantity of dust emissions varies with the volume of traffic. In addition to this, emissions also depend on source parameters which characterise the condition of a road and the associated vehicle traffic. Although vehicle entrainment on unpaved roads have been found to result in high fugitive dust emissions, these impacts are often limited close to the source.

18.10.2.2 Wind erosion from exposed areas

Dust emissions due to the erosion of exposed areas occur when the threshold wind speed is exceeded. Significant amounts of dust will be eroded from the coal transfer area under wind speeds greater than 5.4 m/s. Fugitive dust generation resulting from wind erosion under high winds (i.e., 5.4 m/s) is directly proportional to the wind speed.

18.10.3 Cumulative impact

Due to the fact that the project area is located within the High Priority Area (HPA) and further situated within an identified hotspot for PM10, NO_2 and SO_2 pollutants, additional care should be taken to mitigate impacts from the proposed activities, aligning the mitigation measures with adopted HPA Air Quality Management Plan.

In determining the cumulative impacts, predicted incremental off-site (as determined beyond the mind boundary) concentrations should be added to measured concentrations for the applicable pollutant averaging periods.

18.11 Socio-Economic

18.11.1 Construction and operational phase

18.11.1.1 Inflow of workers

This variable refers to the inflow of temporary workers as well as potential conflict between locals and this ‘outside’ workforce during the construction phase, but also to the possibility of outsiders being permanently employed.

As the aim of the project is to sustain the existing production capacity, it is not anticipated that large numbers of additional employees would be sourced for the construction or the operational period. No significant additional inflow of workers is thus expected. Limited socio-economic benefits would further accrue to the local residents of the STLM.

For certain periods of time, however, there could be some inflow of temporary workers to the mining area e.g., for the construction of the new infrastructure. Detailed information regarding the demographic profile and number of construction workers to be employed is not available at this stage, but it is expected that the process will be phased and that all construction workers would not be on site simultaneously. It is also unsure how many locals (unskilled, semi-skilled) could be involved in the construction process as it is a highly technical process.

Considering the existing mining activities, this intermittent inflow of workers is, at this stage, not anticipated to have a marked impact on the social environment.

Once the mine is operational, highly skilled specialists could be temporarily employed to assist with specific mining operations. This limited number of individuals and temporary influx would not have any specific influences on the social environment.

18.11.1.2 Inflow of job seekers

The municipal area already experiences an increase in the male population between the ages of 20 and 64 as they are attracted by the manufacturing and mining industry in the municipal area. According to the Census 2016 migration data, the STLM attracts people, particularly from Limpopo (8%), Gauteng (5%), and Kwa-Zulu Natal (3%). The councillors consulted in 2016 indicated that an inflow of outsiders to the study area was then already a cause for concern, as well as sub-letting to jobseekers in the local settlements in the study area, as well as on some farms. This creates existing social problems.

Construction related projects often attract jobseekers. The inflow of such jobseekers could include unemployed individuals from the nearby settlements within the Middelburg area, but can even be more widespread, as an existing inflow from other provinces are experienced. The extent of the inflow can be increased by exaggerated rumours of possible employment opportunities. It can further result in an associated influx of people from the informal sector selling goods and services to these jobseekers, due to the distance of the settlements from the proposed mining sections.

As mining activities, irrespective of the extent thereof, are perceived as an employment creator, jobseekers in search of temporary or permanent employment can materialise during the construction and operational phases of the project.

It is anticipated that an inflow to the project area would be difficult to monitor and to prevent. At this stage the employment of locals is the only pro-active mitigating factor that could limit an inflow of an additional number of jobseekers and avoid possible long-term negative impacts (e.g., sub-letting) in this regard.

18.11.1.3 Employment Opportunities and Local Employment

Some limited additional temporary workers could be required for specific tasks associated with the proposed project. At this stage, however, it is anticipated that existing employees would continue to be responsible for the overall mining activities or that these new mining activities would be the responsibility of appointed specialised contractors.

As the area is characterised by a wide range of mining activities, it is likely that the lower skilled positions could be filled from the local labour pool. The opportunity for locals or additional specialised contractors to be employed as part of this proposed development though, (e.g., contractors for haul roads) remains minimal.

Expenditure during the construction and operational phase, however, could result in business opportunities for the local and regional economy, especially with regards to the local service industry.

This variable is still regarded as having a positive impact, due to the indirect impacts of the mining activity on the local economy through local procurement of material, services and equipment.

The rating prior to and after mitigation remains similar as mitigation is focused on employing locals and therefore the change from a regional or provincial spatial scale to a local spatial scale forms part of the mitigation measures.

18.11.1.4 Socio-Economic Impacts

Although it is not anticipated that the Dispatch Rider underground project would significantly benefit low-income groups by creating supplementary job opportunities and stimulating local economic growth, it should be noted that the proposed activities would sustain the existing mining operations which does have significant positive economic impacts on the local economy.

The economic impact would thus be based on the mine's continued contribution to the Gross Geographical Product (GGP) and the number of direct (continued employment at the actual mine) and indirect jobs (e.g. in the trade and transport sectors) that would be created. Therefore, except for direct employment, that would generate income and increase local spending, people living in the vicinity of the study area are also expected to benefit by the earnings of those employed by the mine and the local buying power in the area. This could further lead to subsequent indirect spin-offs for local businesses.

Through employment and income generation during the mining processes, some economic benefits to the region and local communities therefore accrue. The mine would continue to contribute to the local economy through its employee wages, procurement of local contractors and services, purchasing of water and electricity and through payment of taxes to the STLM.

Seriti, through their mining activities, is involved in various Local Economic Development Initiatives. This is done to coincide with the Integrated Development Plans (IDP) of the NDM and STLM, as well as other government initiatives. These activities would thus continue uninterrupted, and the constant positive socio-economic impacts thereof would continue to benefit the local communities.

18.11.1.5 Capacity building and Socio-Economic Development

Although education and training are mainly the responsibility of government, there is increased pressure on the business sector in South Africa to increase the development and skills of their workforce.

Seriti is involved in education, health programmes, capacity building and training. Further to these focus areas, the company also concentrate on local employment creation and poverty alleviation, as well as environmental management, rural development and the provision of infrastructure.

The above-mentioned inputs would continue if Seriti is successful in sustaining their mining operations in the area. The mine has thus played an important role in the area in this regard and commits to continue with these efforts which would benefit the local communities within the STLM area.

18.11.1.6 Impact on Daily Living and Movement Patterns

The proposed project and the associated infrastructure are proposed to sustain the mining activities of MMS and to extend the life of mine.

During the construction phase for the Dispatch Rider Project the contractor will be responsible to transport construction workers which will result in some additional trips for a short duration. The transportation of material and equipment is not expected to create substantial traffic movements. This will result in limited short-term impacts on the daily living and movement patterns in the area.

During the operational phase, the transportation of coal from the coal transfer area at the Dispatch Rider underground mine would take place within the mining area. Heavy vehicle loading from the mine on public roads is minimal as the transportation of coal by means of trucks is restricted to internal gravel roads from the coal resource areas to the coal processing areas. Coal will be transported via trucks to the existing South Eskom Plant which feeds directly to the Duvha Power Station. If the coal requires washing it will be trucked to the North Middlings Plant. Export coal is transported via a Transnet railway line to the Richards Bay harbour.

Operational related movement could increase for a while if the existing operations and the new operations overlap. Heavy vehicles transporting material for the Dispatch Rider

Project will be limited to a few material trucks per week (WSP: Parsons Brinckerhoff: 2016). As the production capacity would remain the same, it is not anticipated that the transportation of material to and from the site would escalate. The same number of trucks is thus expected to transport the product from the active mining area to the coal processing areas on the gravel haul roads within the mining right boundary. No significant increase in the traffic movement and thus on the daily living and movement patterns of residents within the study area is foreseen.

Transportation routes are in a westerly direction away from the railway line and the dwellings of the property owner of the farm Hartbeesfontein 339 JS, Portion 2. In this regard no negative impacts are thus anticipated on the property owner's daily movement or the farming activities, either during the construction and operational phase.

The impact on the social environment could increase for a period of time, but as these activities would be within the existing mining right boundary, the long-term impacts on the daily living and movement patterns are deemed similar to the existing impacts. In this regard, the impacts on the social environment would thus remain constant.

18.11.1.7 Residential Proximity

Various existing mining infrastructure is present, and mining activities are undertaken, in close proximity to the farm Hartbeesfontein 339 JS, portion 2, owned by G & M Farming Enterprises CC. The Dispatch Rider underground mining activity proposes to mine the No. 1, No. 2 and No. 4 seam coal using underground mining located in the south of the Hartbeesfontein section.

Below is an indication of the location of the residence and office of G & M Farming Enterprises. The farm dwelling is approximately 2 km to the east of the proposed infrastructure, with the labourers' accommodation facility another 500 m further to the east. The Dispatch Rider prospecting rights area is indicated by the section outlined in yellow (Refer to **Figure 18-7** below).

Figure 18-7: Office and residence of G & M farming (Batho Earth, 2022)

The existing mining activities that developed over time already have some impact on the daily living and movement patterns of the residents and possibly on others within the study area.

The proposed coal transfer area and infrastructure area would be in close proximity to the dwellings of G & M Farming Enterprises, (approximately 2 km), the surface rights owner of the Dispatch Rider prospecting area (farm Hartbeesfontein 339 JS, portion 2). Worker accommodation on the farm is situated further to the east of the property.

Taking the existing mining infrastructure and activities into account, there would be limited additional impacts (visual, increased noise) on the farm dwellings and office. The proposed infrastructure would not impact on this property owner's resource use. One could further note that the railway line would form some barrier between the coal transfer area and mine related infrastructure, and the dwellings.

Blasting and the possible impact on structures was noted as a concern by the landowner, but no blasting will be undertaken as underground mining will involve the use of continuous miners where a mechanical process is used to break the rock.

No shafts will be sunk for the Dispatch Rider project. An adit will be used to gain access to the underground. This will be constructed at an existing highwall. As mine related infrastructure and activities is common in the area, the visual intrusiveness is regarded as of a low impact.

Overall, the underground mining referred to as the Dispatch Rider Project is thus expected to have some additional adverse influences on these property owners and residents, although limited.

18.11.1.8 Impact on Farming Activities

The main agricultural activities practiced in the larger area involve maize production and cattle farming. G & M Farming Enterprises' farming activities (farm Hartbeesfontein 339 JS, Portion 2) includes the cultivation of maize and soya beans, together with livestock production (cattle). The entire farm (Portion 2) comprises 383 ha. The agricultural activities and land-uses are indicated below (**Table 18-4**).

Table 18-4: Farming activities and land uses on Portion 2 of the Farm Hartbeesfontein 339 JS

ACTIVITY	HECTARES	AVERAGE YIELD
Crop Production	226	-
Maize	-	10 ton / ha
Soya Beans	-	3.4 ton / ha
Pasture	8	-
Cattle grazing	±132	-
Labour area	10	-
Living areas (dwellings / buildings)	7.4	-

G & M Farming Enterprises has nine (9) permanent employees, and one office assistant. The farm supports two (2) families. Temporary employment usually includes an additional four (4) labourers for four months per year.

The farming activities are reliant on the main and second boreholes. Water from the two boreholes is used for the cattle, the main homestead, labourers households and homesteads, and for the use of insecticides and pesticides on the crops.

Water Sources

The G & M Farming Enterprises' Main borehole is at a depth of 100 m. The yield is approximately 5000 litres/hour. The Second borehole is at a depth of 45 m. The yield is approximately 5000 litres/hour. The Hydrogeological Study indicated that drawdown from the Dispatch Rider underground mine is expected to influence water levels in a tributary of the Boesmankransspruit and some boreholes including the Main and Second borehole of G & M Farming Enterprises. The report further indicated that the expected water level decline at these receptors (various boreholes in the area that can be affected) is anticipated to range between 5 – 10 m. Any drop in the water levels (quantity) would have significant long-term negative impacts on the farming activities and can in a worst-case scenario result in the termination of farming activities, job losses and subsequent economic impacts.

The (STLM IDP: 2015) indicated that land for agricultural activities are relatively scarce and impacts on agricultural land could in future limit the performance of this sector. This poses a serious threat to the future of existing and emerging farmers in the area and with regards to local food security. Considering the possible negative impacts on the property owner's farming activities, their economic well-being and sustainability, possible job losses and the scarcity of agricultural land, it is critical that the water sources of the farm Hartbeesfontein 339 JS not be affected by the mining activities.

During the operational phase, the flow in the aquifer will be directed towards the mine. No impacts are therefore anticipated on the water quality of the boreholes of private users as a result of possible contamination due to the mining activities.

It was recommended that: "I*f it can be proven that the mine is indeed affecting the quantity of groundwater available to specific users, the affected parties should be compensated. This may be done through the installation of additional boreholes for water supply purposes or an alternative water supply"* (Jones & Wagener: 2022). Discussions with the property owners indicated that previous drilling for alternative boreholes, to lessen the dependency on the main and second boreholes, was undertaken by the property owner without any success of finding additional boreholes with sustainable yield.

The impact on the water sources and on the farming activities are of concern and was rated as a high significance prior to and after mitigation. The overall impact risk class were calculated at a moderate rating.

Infrastructure

Existing infrastructure will be used as far as possible, such as the use of existing haul roads and the existing high wall for underground access. New, but limited, above ground infrastructure will be established as part of the Dispatch Rider Project on land owned by Ingwe Surface Holdings.

During the construction phase, the adjacent property owner can experience short term intrusion impacts as a result of the civil works, and the movement of materials and equipment. Possible dust and noise intrusions will be of a short duration and are considered to be of a low significance on the farming activities.

During the operational phase of the mine, the adjacent farming activities are not anticipated to be directly affected by the infrastructure of the Dispatch Rider Project, as the infrastructure would have been established within the existing mining right area (area already disturbed by mining activities) with limited footprint disturbances.

18.11.1.9 Impact on Sense of Place

The social impact associated with the impact on the sense of place relates to the change in the landscape character and visual impact associated with the proposed development.

Mining activities, stockpiles and associated infrastructure are usually perceived to be visually unsightly. Infrastructure associated with the underground mining activities is anticipated to result in additional visual intrusions.

The location of the proposed underground mining activities and associated infrastructure is within an area characterised by long term historical mining activities, with various different infrastructural developments nearby such as roads, mining activities, conveyor belts, transmission lines, a railway line and so forth.

With regards to the overall impact on the sense of place, there would thus be an additional impact associated with the project, although it would not significantly scar the existing visual characteristics of the environment. Even though some infrastructure will be visible at certain areas, and the mining infrastructure could create a sense of encroachment, the direct impact on the property owner to the east is considered to be low. This is based on the already impacted environment in which farming takes place, limited intrusion impacts on activities undertaken by the property owner and the distance (approximately 2 km) of the farm dwelling from the infrastructure.

18.11.1.10 Safety and Security Related Impacts

Safety and security issues relate to the inflow of workers (contractors) during the construction phase, as well as operation and maintenance activities undertaken for the life of the project.

During the construction phase the following could impact on the safety of workers, pedestrians and members of the surrounding communities:

- Movement of construction vehicles transporting goods and materials on the local roads (e.g. heavy machinery, heavy vehicles, and earthmoving equipment required for the construction of the new section of haul road);
- Movement of vehicles transporting construction personnel;
- Influx of an outside workforce (even if limited) and potential jobseekers which could lead to an increase in the local population and/or which could impact on the crime levels in the area;
- Trespassing of workers on private properties, mainly to access areas of work;
- Trespassing of criminals on mining areas to access private properties resulting in crop theft;
- Increased risk of veld fires due to the presence of construction workers and construction related activities on site that in turn pose a threat to livestock, crops, residents and houses in the area.
- As limited additional employees are foreseen for short periods, and as the majority of the activities would take place within the mining right area, few added safety and security risks are foreseen in the long term. Neighbouring residents however would remain concerned about the possible indirect impact of the increase in crime and

trespassing on the surrounding private properties due to a possible increase in people movement.

- Increased criminal activity (due to mining activities in the area and in general) could have increased negative impacts on livestock farming and maize production due to increased security costs such as electric fencing, guards, cost to safeguard pumps and so forth, as well as possible increased insurance premiums.
- Concerns have been raised that individuals involved with mining activities (e.g. casual labour) and/or jobseekers do remain in the area. In select instances these individuals seek accommodation with the farm workers or nearby settlements. Such practices result in sub-letting which, if not contained, could not only become an indirect intensifying safety and security problem but also cause additional environmental pollution.
- There would not be an escalation in the movement of heavy vehicles, but the presence of these vehicles within the mining area and their movement on the local roads still poses accident risks. Warning signs would have to be posted to alert residents and road users to possible dangers.

18.11.1.11 Health Related Impacts

During the construction and operational phases dust impacts are anticipated due to general construction activities, and vehicles travelling on the haul roads. Emissions would include vehicle emissions; emissions from large construction equipment; carbon monoxide, and particulates. Fugitive dust would be caused by the disturbance and moving of soils (clearing, excavating, trenching, backfilling, and dumping). These are discussed in more detail in section 18.10.

Industrial, solid and hazardous waste would be created during the mining operations. As is currently the case, these different types of waste should continue to be responsibly disposed of to avoid any health related impacts in this regard.

The proposed project is located within the HPA. Various heavy industrial, mining and coal power plants are located within this area. It is anticipated that residents in close proximity to the mining activities have a high level of awareness of the existing air quality impacts, monitoring processes and possible negative impact on community health.

Should there be a possible increase in the air pollution (dust), these sensitivities should be adequately dealt with and be taken into account in the monitoring processes stipulated as part of the EMPr.

According to the 2012 Antenatal Care Survey[2], the STLM has the highest HIV prevalence in Mpumalanga. The presence of migrant workers and the large number of young male mineworkers, that could be classified as those in the 'high risk' categories, possibly assist in increasing the HIV/Aids prevalence. All possible precautions should thus be in place to limit the spread of HIV/Aids among employees.

Further concerns would revolve around the anticipated public health impact of the mining activities due to the potential impact on the water quality and noise pollution.

18.11.1.12 Noise Related Impacts

The study area is characterised by mining related noise, and vehicular traffic on the public roads. Overall, the area could, from a social perspective, still be classified as an area with low ambient noise levels.

Primary sources of noise during mining would include noise emanating from equipment used, vehicular traffic and other transport systems (e.g., rail or conveyor systems).

Noise created by mining activities outside normal working hours would be even more intrusive than those created during daytime due to the low night time ambient noise levels.

The Noise Impact Assessment indicated that, during the operational phase, a low-level distant mine activity noise would be possible at the G & M Farming Enterprises' dwelling, as well as the dwellings of the labourers. It further indicated that the overall potential noise at residential areas within the study area would be low during all the phases of the project.

18.11.2 Decommissioning, closure and post-closure phase

Decommissioning refers to the actual closure of the mine, the dismantling of the infrastructure and/or replacement of the infrastructure with newer technology. At this stage, the life of mine is anticipated to be extended with approximately seven years if Dispatch Rider Project is implemented. After this period, Seriti might have secured other resources and could again extend the life of the mine depending on future decisions. The mining activities can thus continue or the entire facility will be completely decommissioned. This would depend on the economic feasibility of the various options.

Possible social impacts to be experienced during decommissioning (closure of the mine) could include the following:

- Job losses due to mine closure;
- Decline in the sustainability of the local economy as a result of the loss of employment, household income and capital investments;
- Reduced economic activities within the area with subsequent negative impacts on smaller businesses;
- A decline in the local economy would also have a direct impact on the financial status of the affected local municipalities. This, and the fact that one of the key role players, such as the mine, falls away, would seriously impede the municipality in exercising its functions in terms of strengthening the Local Economic Development (LED) process;
- Negative impact on the revenue base of the local municipalities;
- Population changes and 'outflux' of people from the area;
- Negative impact on the social fabric and social networks;
- A new class of jobseekers targeting other mines in the area;
- Decrease in the quality of life of the surrounding communities due to the discontinuation of social development support and local economic development programmes;
- Possible relocation of families;
- Negative impacts on the local schools;
- Skilled workers moving out of the area in search of employment elsewhere;
- Negative impact on infrastructure development and maintenance;
- A change in community infrastructure;
- A change in the industrial focus of the area;
- Disruptions and nuisance factors associated with the actual decommissioning such as noise, visual and traffic related impacts;
- Increased safety risks associated with the decommissioning of the infrastructure;

- Possible negative impact on the crime levels due to increased unemployment rate;
- Possibility of additional temporary job creation during the decommissioning phase;
- Remnants of possible environmental impacts; and
- Remaining visual impact as a result of mining.

As decommissioning or the replacement of the infrastructure is likely to not take place within the foreseeable future, it is recommended that a detailed Social Impact Assessment be undertaken then to determine the actual impacts on the changing social environment at that stage.

Possible social impacts to be experienced during the replacement of infrastructure with newer technology options would be similar to the impacts described as part of the construction process although more limited.

In the event of downscaling and subsequent retrenchments, plans should be developed to put measures in place to assist the affected employees to find alternative forms of employment to limit the negative socio-economic impacts in this regard.

18.12 Heritage and Palaeontology

A heritage and palaeontological assessment was conducted by Prism (2016). Following a request from the SAHRA, a site-specific report was compiled confirming the findings of the Prism (2016) study (Beyond Heritage, 2024).

18.12.1 Palaeontology

Table 18-5: Palaeontology Impact Assessment – Planning Phase

SEVERITY / NATURE	Dolerites, coarse sandstones and coals do not preserve plant fossils; only the shales between the coal seams are likely to preserve fossils. So far there are no records from the Vryheid formation of plant or animal fossils in this mined site so it is very unlikely that fossils occur on the site. The impact would be very unlikely.
DURATION	Where manifested, the impact will be permanent.
SPATIAL SCALE	Since only the possible fossils within the area would be fossil plants from the Glossopteris flora in the shales, the spatial scale will be localised within the site boundary.
PROBABILITY	It is unlikely that any fossils would be found in the loose coal and carbonaceous shales that have been mined and exposed to weathering. There might be fossils in the partings between the coal seams far below ground. Therefore, a Fossil Chance Find Protocol should be added to the eventual EMPr.

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The surface is already very disturbed from previous and current mining activities and the coals and carbonaceous shales exposed will have weathered rapidly. There is a small chance that fossil plant impressions of the *Glossopteris* flora in the Vryheid Formation may be found below ground in un-weathered shales. Taking account of the defined criteria, the potential impact to fossil heritage resources is **low**. Once any fossils have been removed there will be no impact on any further stages (operational, closure).

18.12.2 Heritage

The impacts to heritage resources by the proposed development are not considered to be highly significant and the impact on the recorded features can be very easily mitigated. Based on the results of the study, there are no significant archaeological risks associated with the proposed project if the recommendations given in Prism (2016) are followed.

18.12.2.1 Construction Phase

During the construction phase, there will be no direct impact on heritage resources identified in the Dispatch Rider project area since infrastructure development will be on areas that have been previously mined.

18.12.2.2 Operational phase

During the operational phase, there will be no direct impact on heritage resources identified in the Dispatch Rider project area since infrastructure development will be on areas that have been previously mined.

18.12.2.3 Decommissioning, closure and post-closure phase

During the decommissioning phase, there will be no direct impact on heritage resources identified in the Dispatch Rider project area since infrastructure development will be on areas that have been previously mined.

18.13 Impact Rating

The impact rating as well as proposed mitigation, is provided in **Table 18-6** (Construction Phase), **Table 18-7** (Operational Phase) and **Table 18-8** (Decommissioning, Closure and Post-closure Phase).

The ratings and mitigation measures have been supplied by the specialists and have been supplemented at the EAP's discretion.

Table 18-6: Impact rating: Construction Phase

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
FLORA & FAUNA											
Development of surface infrastructure associated with underground mining	Vegetation and habitat quality	Loss of habitat	Through out project area	Significance	3	2.13	All Very High and High sensitivity areas must be avoided and declared "No-go" areas. The areas to be developed must be demarcated to prevent movement into sensitive surrounding environments. Areas to be developed must be demarcated so that only the demarcated areas be impacted upon. All working areas must be clearly demarcated from surrounding areas	Control by limiting disturbed area	Significance	2	1.40
				Magnitude - Spatial	2		Where possible, existing access routes and walking paths must used, and the development of new routes limited. Access to adjacent (non-mining related) areas must be controlled		Magnitude - Spatial	2	
							All livestock must be kept out of the project area at all times.				
							The footprint area of the construction should be kept to a minimum.				
							All laydown areas, chemical toilets etc. should be restricted to previously mined (low sensitivity) areas. Construction materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded.				
							Divert storm water run off from any stockpiles away from the low laying areas, such as drainage lines as well as the surrounding areas, and prevent runoff from leaving the project area in an uncontrolled manner.				
							Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.				
				Magnitude - Temporal	3		A hydrocarbon spill management plan must be put in place to ensure that should there be any spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	Control with procedures and training	Magnitude - Temporal	3	
							A fire management plan needs to be compiled and implemented to restrict the impact fire might have on the surrounding mining areas that have already been rehabilitated				
							Compilation of and implementation of an alien vegetation management plan.				
							Waste management must be a priority and all waste must be collected and managed in accordance with the mine's current waste management plan.				
							A pest control plan must be developed and implemented; it is imperative that poisons not be used due to the likely presence of SCCs				
							Any topsoil that is removed during construction must be appropriately removed and stored according to the national and provincial guidelines. This includes on-going maintenance of such topsoil piles so that they can be utilised during decommissioning phases and re-vegetation. All removed soil and material must not be stockpiled within the wetland/watercourse buffer as well as the Mesic Grassland habitat. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds.				
							All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.				

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Probability	4		It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Control with regulations	Probability	3	
							Mitre drains must be constructed along access roads (every three metres of elevation) to slow the flow of water run-off from the road surface, if this does not already exist.				
							Appropriate signs to enforce speed limit and speed bumps to force slow speeds should be erected if not already in place. Compliance with mine driving rules must be maintained.				
							Reducing the dust generated by activities, especially the earth moving machinery, through wetting the soil surface.	Control with dust suppression			
							Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.	Remedy with re-vegetation			
Development of surface infrastructure associated with underground mining	Fauna	Displacement of faunal community (including possible threatened or protected species) due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities.	Local disturbance	Significance	4	2.93	The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into very high and highly sensitive areas and the surrounding environments. Signs must be put up to enforce this.	Control by limiting disturbed area	Significance	3	1.80
							Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals				
							No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this				
							Suitable conservation areas need to be secured within the larger mining area for the mammal SCCs recorded on site, in this case Serval. This needs to be accompanied by a specialised conservation plan, the wetland and natural grassland areas are suitable candidate areas for these areas, the degraded grassland above the underground mining should also be considered.	Control with regulations			
				Magnitude - Spatial	4		Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible		Magnitude - Spatial	3	
							Driving on access roads close to very high and highly sensitive areas at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period				
				Magnitude - Temporal	3		All construction motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited	Control with regulations and training	Magnitude - Temporal	3	
							All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.				
				Probability	4		Waste management must be a priority and all waste must be collected and stored effectively. Waste management must be aligned with current mine practice	Control with procedures	Probability	3	
							The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna	Control with restrictions			
Development of surface infrastructure	Habitat quality	Destruction of, and fragmentation of, portions of		Significance	4	2.93	All Very High and High sensitivity areas must be avoided and declared "No-go" areas. The areas to be developed/mined must be demarcated to prevent movement into highly sensitive surrounding environments. Areas to be developed be demarcated so that only the demarcated areas be impacted upon. All working areas must be clearly demarcated from surrounding areas	Control by limiting disturbed area	Significance	2	1.40

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
associated with underground mining		the vegetation community (VU vegetation type and an ESA)					Areas of indigenous vegetation should not be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible				
							All laydown, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded.				
				Magnitude - Spatial	3		Keep the surface & sub-surface water as well as storm water away that may run off from the stockpiles from the low laying areas, such as drainage lines as well as the surrounding areas, from leaving the project area in an uncontrolled manner.		Magnitude - Spatial	2	
							Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.				
							A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	Control by procedures with training			
				Magnitude - Temporal	4		Compilation of and implementation of an alien vegetation management plan.		Magnitude - Temporal	3	
							Waste management must be a priority and all waste must be collected and managed in accordance with the mine's current waste management plan.				
							A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs				
							All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.				
				Probability	4		It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Control with regulations	Probability	3	
							Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.	Remedy with re-vegetation			
SOILS, LAND CAPABILITY AND LAND USE											
Site preparation and construction	Soils, Land Capability and Land Use	Loss of utilisation potential for infrastructure development	Local, depending on size of disturbance	Significance	4	0.67	Removal and storage of all utilisable soil. Protect from impacts of erosion, compaction and contamination by vegetating and/or covering with rock rap	Control with procedures and maintenance	Significance	3	0.53
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	1				Probability	1	
		Loss of vegetation		Significance	4	1.33	Minimisation of footprint of impact	Control by limiting disturbed area	Significance	3	1.07

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		cover and topsoil protection - possible erosion, permanent loss of resource downslope and impact of sedimentary load on streams and river systems		Magnitude - Spatial	3		Use of high floatation tires on all construction vehicles	Control with regulations	Magnitude - Spatial	2	
				Magnitude - Temporal	3		Removal of utilisable soil and the re-vegetation and/or rock cover of stored materials	Control with procedures Remedy with re-vegetation	Magnitude - Temporal	3	
				Probability	2		Concurrent rehabilitation where possible Use of Vetiver grass as erosion prevention ahead of clearing where erosion is considered a risk	Remedy with re-vegetation	Probability	2	
		Loss of soil resource and utilisation potential due to contamination by reagents and hydrocarbon spills and/or dirty water		Significance	3	2.13	Restriction/minimisation of movement and servicing of vehicles, spillage from haulage systems and vehicles and the bunding of all service areas	Control with restrictions and maintenance Control by limiting disturbed area	Significance	2	1.87
				Magnitude - Spatial	2				Magnitude - Spatial	2	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	4				Probability	4	
		Loss of resource and its utilisation potential due to compaction over unprotected ground/soil		Significance	3	2.13	Minimisation of footprint impact	Control by limiting disturbed area	Significance	2	1.87
				Magnitude - Spatial	2		Restrict vehicle movement to areas of need	Control with restrictions	Magnitude - Spatial	2	
				Magnitude - Temporal	3		Construction activities within natural areas: remove usable soil to recommended depth (top 500 - 750 mm depending on activity), stockpile and then construct facilities.	Control with procedures	Magnitude - Temporal	3	
				Probability	4		Rehabilitate areas once construction is completed.	Remedy with rehabilitation	Probability	4	
		Loss of soil and land capability due to reduction in nutrient status - de-nutrification and leaching due to stripping and stockpiling of resource		Significance	3	2.67	Strip soils with vegetative cover intact	Control with procedures	Significance	2	1.87
				Magnitude - Spatial	2				Magnitude - Spatial	2	
				Magnitude - Temporal	3		Vegetate stores of soil.	Control with vegetation	Magnitude - Temporal	3	
							Stockpile usable soils separately from subsoils. Restrict stockpiles and berms to less than 1.5 m high for utilisable soil and 15 m for the soft overburden	Control with regulations			
				Probability	5		Manage ingress of dirty water and erosion	Control with regulations and maintenance	Probability	4	
HERITAGE											

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
Ground works, Civil construction activities, building activities and hauling of material to and from the specific area	Historical structures/Graves	Damage to the historical identified artefacts (i.e., a few Late Stone Age miscellaneous flakes) and graves due to construction activities if construction activities encroach on these heritage resources	Mine footprint	Significance	3	2.93	Should any construction activities encroach on the cemeteries, these should be fenced off with an access gate for family members with a 30 m buffer zone around the grave site. A grave management plan must be compiled and implemented for the cemeteries in the project area.	Control by limiting disturbed area or remedy by relocating	Significance	2	1.33
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	5		The chance find procedure provided in the specialist report should be implemented as part of the EMP. If any employee finds any heritage resources during any developmental activity, all work at the site must be stopped and kept on hold. Chance finds must be reported to supervisors and through supervisors to the senior manager on site.	Stop and control with procedures & training	Magnitude - Temporal	5	
				Probability	4				Probability	2	
PALAEONTOLOGY											
Excavations for infrastructure development	Palaeontology	Loss of fossils and other palaeontological significant artefacts	Mine footprint	Significance	2	0.53	Very unlikely that any fossils would be impacted upon by the excavations for the proposed infrastructure since the fossils would occur in the shales associated with the coal seams at greater depth. No mitigation required.	No mitigation required	Significance	2	0.53
				Magnitude - Spatial	1				Magnitude - Spatial	1	
				Magnitude - Temporal	5				Magnitude - Temporal	5	
				Probability	1				Probability	1	
SURFACE WATER											
General mine development: Construction camps, construction works, movement of materials and construction equipment	Water Quality	Elevated suspended solids in the runoff water and resultant elevated suspended solids in watercourses; sedimentation in watercourses; elevated hydrocarbon concentrations in runoff water and watercourses due to hydrocarbon spillages from	Local	Significance	2	1.87	Footprint of disturbed areas must be minimised	Control by limiting disturbed area	Significance	1	1.00
							"No-go" zones around watercourses must be delineated for construction plant and personnel				
							Diversion of clean upslope runoff away from proposed mine infrastructure area to be constructed first	Control by diverting runoff			
				Magnitude - Spatial	3		Appropriate stormwater management measures must be implemented, including temporary diversion of upstream runoff around the construction and laydown areas	Control with stormwater management	Magnitude - Spatial	2	
							Surface water management infrastructure, such as storm water canals, sediment traps and sumps are to be constructed first at the infrastructure area to ensure runoff and dirty water spills are contained	Control with surface water management			
							Servicing of construction vehicles must take place in dedicated areas that are equipped with drip trays	Control by limiting disturbed area			
				Magnitude - Temporal	2		Bunded containment and settlement facilities must be provided for hazardous materials such as fuel and oil		Magnitude - Temporal	2	
							Spill-sorb or a similar product will be kept on site, and used to clean up hydrocarbon spills in the event that they should occur.	Control with procedure			
							Erosion protection measures must be implemented at steep areas	Stop erosion with protection measures			
				Probability	4		A waste management plan will be developed and implemented for the construction phase	Control with waste management	Probability	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		fuel storage, servicing areas or construction equipment itself					Appropriate sewage management must be implemented during the construction phase that would tie into the existing sewage management strategy at Dispatch Rider which will entail portable chemical toilets				
							Water quality monitoring must be undertaken downstream of the construction areas, before and during construction where practical, in order to detect any increase in suspended solids or turbidity	Control with monitoring			
							If erosion is evident, or the water quality monitoring indicates an increase in suspended solids, water management around the construction areas must be reviewed	Control with management adaptation			
Linear Infrastructure: Construction camps, construction works, movement of materials and construction equipment	Water Quality	Pollution of surface water resources	Local	Significance	2	1.87	Mitigation measures as given above in 'General mine development: Construction camps, construction works, movement of materials and construction equipment'	Control and stop	Significance	1	1.00
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	2				Magnitude - Temporal	2	
				Probability	4				Probability	3	
Dewatering of water ingress to adit	Water Quality	Discharge of potentially impacted mine water to the environment with a resultant increase in sulphate and TDS concentrations in natural watercourses	Local	Significance	3	2.40	Surface water management measures, such as clean upslope diversion canals and berms to divert clean catchment away from mine workings are required.	Control with surface water management	Significance	2	0.93
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	3		A Water Use Licence for the dewatering of groundwater encountered during mining must be applied for, including the reuse of mine water for dust suppression during construction	Control with licensing	Magnitude - Temporal	2	
				Probability	4				Probability	2	
Mine surface infrastructure: Construction camps, construction works, movement of materials and construction equipment,	Water Quantity	Containment of contaminated runoff water emanating from the site, with no release to the catchment	Local	Significance	1	2.00	The aerial extent of the disturbed and potentially contaminated areas must be kept to a minimum	Control by limiting disturbed area	Significance	1	1.67
				Magnitude - Spatial	2		Areas where dirty construction activities are carried out (e.g. servicing areas and waste storage areas) must be minimised and surrounded by bunds		Magnitude - Spatial	2	
				Magnitude - Temporal	3		Upslope runoff must be diverted around construction activities to minimise the volume of dirty water generated and contained	Control with diversion	Magnitude - Temporal	2	
				Probability	5				Probability	5	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
excavation of adit											
NOISE											
Clearing and stripping of soil, construction activities at the adit, infrastructure sections and coal transfer area	Noise	Noise increase in excess of the threshold value for a noise disturbance of 70.0 dBA above the ambient noise level at the boundary of the mine footprint and at the abutting residential areas	Local	Significance	3	2.13	Earthwork activities to be done during the day and/or night-time provided that the prevailing ambient noise level at the mine right area will not be exceeded	Control and stop if exceeded	Significance	2	1.20
				Magnitude - Spatial	3		Construction activities at the adit to be one during the day and/or night-time provided that the prevailing ambient noise level at the mine right area will not be exceeded		Magnitude - Spatial	2	
							Construction activities at the infrastructure section to be one during the day and/or night-time provided that the prevailing ambient noise level at the mine right area will not be exceeded				
							Construction activities at the coal transfer area to be one during the day and/or night-time provided that the prevailing ambient noise level at the mine right area will not be exceeded				
				Magnitude - Temporal	2		Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels and any noise sources above 85.0dBA to be acoustically screened off.	Control with regulations and/or screening	Magnitude - Temporal	2	
				Probability	4		Environmental noise monitoring on a quarterly basis	Control with monitoring programme	Probability	3	
VISUAL											
Site clearance, construction equipment, development of infrastructure	Visual	Visual disturbance to static observers due to dust generated from construction activities, as well as views of the activities themselves	Local	Significance	3	3.33	Dust control on all dirt roads, especially coal transport corridors	Control with dust suppression	Significance	4	3.33
							Avoid leaving any building material or waste on site that could create a visual impact	Control by limiting disturbed area			
				Magnitude - Spatial	3		Only the area of the proposed infrastructure should be exposed. In all other areas, the natural vegetation should be retained		Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	3	
				Probability	5		Access road construction should be minimised to prevent unnecessary dust, i.e. use existing roads as far as possible	Control by limiting disturbed area	Probability	5	
		Visual disturbance to dynamic observers due to dust generated from construction activities, as well as views		Significance	3	3.33			Significance	3	2.13
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4		Utilise non-reflective structures for the hard park and toilets, i.e. avoid unpainted roofs.	Control with building materials	Magnitude - Temporal	2	
				Probability	5				Probability	4	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		of the activities themselves									
AIR QUALITY											
Clearing of vegetation, stripping to topsoil and development of infrastructure	Air quality	Increased particulate matter (PM10) and TSPs as a result of construction activities	Local	Significance	2	1.40	Implementation of a PM10 monitoring programme along the eastern portions of the mine boundary using continuous monitoring equipment.	Control with monitoring programme	Significance	2	1.20
				Magnitude - Spatial	3		Additional measures, such as increased watering levels should be implemented on unpaved haul roads to increase dust control efficiency.	Control by limiting dust generation	Magnitude - Spatial	2	
				Magnitude - Temporal	2		Vehicle restrictions which limit the speed, weight and number of vehicles on the road	Control with restrictions	Magnitude - Temporal	2	
				Probability	3		Surface improvements (paving or adding gravel to the road) and surface treatments.	Modify with surface improvements and treatments	Probability	3	
		Increased dust generation as a result of construction activities		Significance	2	1.00	Introduction of a network of dustfall monitoring units.	Control with monitoring programme	Significance	1	0.80
				Magnitude - Spatial	1				Magnitude - Spatial	1	
				Magnitude - Temporal	2		Implementation of a dust suppression programme (spraying programme) on construction sites for unpaved roads and used for construction vehicles..	Control with dust suppression	Magnitude - Temporal	2	
				Probability	3		Vehicle restrictions which limit the speed, weight and number of vehicles on the road	Control with restrictions	Probability	3	
							Surface improvements (paving or adding gravel to the road) and surface treatments.	Modify with surface improvements and treatments			
SOCIAL ENVIRONMENT											
Construction of infrastructure	Socio-economic environment	Inflow of workers	Local impact	Significance	2	1.40	Where possible, the movement of workers should be confined to the work site and mining area to avoid any potential for impact due to the increase in people movement (although only slight increase) in proximate settlements or on privately owned farms.	Control by limiting disturbed area	Significance	2	1.00
							Should construction workers be required, those falling within the semi-skilled to unskilled category should be sourced from the local population where possible. This would avoid conflict arising between locals and the 'outsiders', but also to limit the need for additional accommodation facilities for these individuals.	Remedy using local labour			
				Magnitude - Spatial	3		Contractual obligations for contractors (if required) should be introduced to use local labour as far as possible where applicable.		Magnitude - Spatial	2	
							Contractors, if required, should ensure that workers reside in suitable facilities and not establish informal houses.	Control with suitable facilities			
				Magnitude - Temporal	2		Construction workers should be supervised at all times.	Control with supervision	Magnitude - Temporal	1	
							Construction activities should be kept to normal working hours e.g. from 7 am until 5 pm during weekdays.	Control by limiting hours of disturbance			
				Probability	3		Property owners surrounding the construction areas should be informed of the construction schedules and activities	Remedy with notification	Probability	3	
		Inflow of jobseekers		Significance	4	2.40	Maximise the use of local labour and contractors where possible by developing a strategy to involve local labour in the construction process	Remedy using local labour	Significance	3	2.13

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
							The development, publication and widespread dissemination of a recruitment policy could serve to encourage local employment and reduce the potential influx of jobseekers to the area.	Control with local employment policy			
				Magnitude - Spatial	3		The communication strategy should ensure that unrealistic employment expectations are not created.	Control with communication	Magnitude - Spatial	3	
				Magnitude - Temporal	2		A representative of the mine could liaise with the local leaders and local councillors to either attend key community meetings to discuss the employment and recruitment process; or liaise with the local leaders and local councillors to ensure that the correct information regarding this issue is portrayed to the communities.		Magnitude - Temporal	2	
				Probability	4		The mine to support efforts by STLM to limit squatting and sub-letting in the area	Control with collaboration	Probability	4	
		Employment opportunities and local procurement		Significance	2	1.60	The procurement of locals should receive preference if there is any need for additional procurement.	Remedy using local labour	Significance	3	1.60
				Magnitude - Spatial	4		Targets for the procurement of capital goods, consumer goods and services should be set and the mine should develop an action plan to meet these targets. These plans could include, but are not limited to, the development of Economic Empowerment (EE) policies, procedures and guidelines, as well as the development of a database of local small businesses (entrepreneurs and SMME's)	Control with targets and plans	Magnitude - Spatial	3	
				Magnitude - Temporal	2		The procurement process should be based on competitive business principles and the quality of services to be rendered, to ensure adherence to standards and to maximise overall welfare.	Control with adherence to standards	Magnitude - Temporal	2	
							Should SMMEs be appointed for the procurement of goods or the provision of services, the contract executions should be strictly monitored on a monthly basis.	Control with monitoring			
				Probability	3		Enterprise development is a key enhancement measure in this regard. The proponent should assist small businesses and/or SMME's to develop to a certain level where they can become involved in the process. Such measures recommended could include the following: • The establishment of joint ventures between small businesses and established companies with relevant experiences with regards to tender processes. Such joint ventures could assist SMMEs with regards to general business principles, financial management, management of stock, competitive costing (pricing), and marketing of their business, where applicable; • Locals can be considered for tenders, for e.g. less cumbersome work, providing that these locals would have some form of experience and credibility to ensure that the quality of work is not compromised; • Payment systems should be flexible, but strictly controlled, to assist smaller businesses in terms of expenditure; • An audit of existing local enterprises that could provide services, goods and material should be undertaken with the assistance of local leaders and community representatives, as well as local business structures.	Remedy with SMME development	Probability	3	
		Socio-economic impacts		Significance	2	1.60	Local goods and services should be used as far as possible.	Remedy using local goods and services	Significance	2	2.13
				Magnitude - Spatial	4		Contractual requirement should be implemented for contractors to use local goods and services as far as possible		Magnitude - Spatial	4	
				Magnitude - Temporal	2		Local Economic Development initiatives of the mine should continue	Remedy with initiatives	Magnitude - Temporal	2	
				Probability	3				Probability	4	
		Capacity building and socio-		Significance	2	1.40	Enterprise development is a key enhancement measure in this regard. Seriti should assist small businesses and/or SMME's to develop to a certain level where they can become involved in the procurement process and the provision of goods, materials and services	Remedy with SMME development	Significance	2	1.87
				Magnitude - Spatial	3				Magnitude - Spatial	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		economic development		Magnitude - Temporal	2		Local goods and services should be used as far as possible and therefore contractual requirements for contractors to use local goods and services should be implemented as far as possible	Remedy using local goods and services	Magnitude - Temporal	2	
				Probability	3				Probability	4	
		Daily living and movement patterns		Significance	2	1.40	Speed limits on the local roads surrounding the mining site should be enforced.	Control with regulations	Significance	2	0.93
				Magnitude - Spatial	3		Speeding of mine related vehicles must be strictly monitored	Control with monitoring	Magnitude - Spatial	3	
				Magnitude - Temporal	2		Dust management on the internal gravel roads to continue to be implemented.	Control with dust suppression	Magnitude - Temporal	2	
				Probability	3		Seriti should pro-actively inform the municipality and local residents of any possible roads closures and diversions if required	Control with communication	Probability	2	
							Seriti should ensure that access points comply with standards and are well marked and indicated	Control with compliance			
		Residential proximity		Significance	2	1.60	Monitoring of the air quality and water quality and quantity should continue to limit any possible negative impacts on the human environment thereby ensuring that human health and the environment are protected.	Control with monitoring	Significance	2	1.20
				Magnitude - Spatial	2		Intrusion impacts should be mitigated through sound environmental practices.	Control with sound environmental practices	Magnitude - Spatial	2	
				Magnitude - Temporal	2		Dust suppression methods should be implemented.	Control with dust suppression	Magnitude - Temporal	2	
				Probability	4		Speeding of mine related vehicles must be strictly monitored	Control with monitoring	Probability	3	
		Farming activities		Significance	2	1.00	Appropriate site management (during construction of the infrastructure) as stipulated in the EMPr should be undertaken to ensure that the mining area is properly managed and that no pollution of natural resources occurs and that crop production is not negatively affected	Control with pollution management	Significance	1	0.80
							Effective management of the mining activities should be undertaken to avoid any environmental pollution focusing on water, waste and sanitation infrastructure and services, and limiting any increase in noise levels.				
				Magnitude - Spatial	2		Site rehabilitation of areas impacted on by the construction of infrastructure must be undertaken as soon as possible and as soon as the construction schedule allows	Control with rehabilitation	Magnitude - Spatial	2	
							Suitable safety measures (e.g., suitable size pillars) should be implemented to avoid subsidence	Control with safety measures			
				Magnitude - Temporal	1		Dust suppression management should continue.	Control with dust suppression	Magnitude - Temporal	1	
							The mine must be responsible for safeguarding the economic potential of the natural resource and to find a balance between agriculture and mining activities.	Control with responsible actions			
				Probability	3		Borehole water levels to be monitored regularly by a qualified independent specialist (e.g. quarterly).	Control with monitoring	Probability	3	
		Sense of place		Significance	3	1.40	The construction site should be kept litter free	Control with pollution management	Significance	2	1.20
				Magnitude - Spatial	2		Infrastructure should be designed to limit the intrusiveness as far as possible	Control by limiting disturbed area	Magnitude - Spatial	2	
				Magnitude - Temporal	2		Site rehabilitation on certain sections of the site should occur as soon as the construction process allows	Control with rehabilitation	Magnitude - Temporal	2	
				Probability	3		The recommendations made by the Visual Impact Assessment should be adhered to	Control by following recommendations	Probability	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		Safety and security		Significance	3	2.13	A Fire/Emergency Management Plan should be developed and implemented, if not yet in place. It would be important to regularly review the functionality and efficiency of such a plan in conjunction with the local emergency teams, mine management and affected communities as well as neighbouring landowners.	Control with procedures	Significance	2	1.40
							Open fires for cooking and related purposes should not be allowed on site.	Control with restrictions			
							Appropriate firefighting equipment should be on site and workers should be appropriately trained for firefighting.	Control with training and appropriate equipment			
				Magnitude - Spatial	3		Seriti and the contractors should discuss the safety and security issues, as well as construction schedule with the local community leaders and local police service.	Control with communication	Magnitude - Spatial	3	
							The mining area should be fenced or access to the area should be controlled to avoid animals or people entering the area without authorisation.	Control by limiting access			
							The mining sites should be clearly marked and 'danger' and 'no entry' signs should be erected.				
				Magnitude - Temporal	2		Speed limits on the local roads surrounding the mining areas should be enforced.	Control with restrictions	Magnitude - Temporal	2	
							Speeding of construction vehicles must be strictly monitored.	Control with monitoring			
							Workers should make use of protective clothing and equipment that would effectively prevent bodily injuries.	Control with appropriate equipment			
				Probability	4		Workers should make use of formal approved access roads when travelling to work.	Control with restrictions	Probability	3	
							Mine security focused on property borders/fencing must be improved to avoid criminals using mining areas to access privately owned properties thereby assisting in limiting crop theft.	Control by limiting access			
		Health		Significance	3	1.40	Seriti should continue to distribute information with regards to health matters and nutrition to its workers and surrounding communities.	Control with communication	Significance	1	1.00
				Magnitude - Spatial	2		Dust suppression methods along haul roads should be continued to be implemented	Control with dust suppression	Magnitude - Spatial	2	
				Magnitude - Temporal	2		Seriti should continue to assist the communities in terms of health care infrastructure and services provision as e.g. the construction of the Rockdale Community Healthcare Clinic by Seriti (formerly known as South 32/SAEC) that has been listed as a project as part of the 2020/2021 IDP list of projects.	Remedy with health care services	Magnitude - Temporal	2	
				Probability	3		Mining activities should adhere to all the relevant environmental and health guidelines and should be undertaken in accordance with the EMPr.	Control with adherence to guidelines	Probability	3	
		Noise	As per noise	Significance	3	1.87	Noise generating activities should be kept to normal working hours (e.g. 7 am until 5 pm) where possible	Control with restrictions	Significance	2	1.20
				Magnitude - Spatial	2				Magnitude - Spatial	2	
				Magnitude - Temporal	2		Vehicles should comply with noise abatement regulations		Magnitude - Temporal	2	
				Probability	4		The mitigation measures of the Noise Impact Assessment should be implemented	Control by implementing recommendations	Probability	3	

Table 18-7: Impact rating: Operational Phase

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
WETLANDS											
Underground mining	Wetland water balance/flow drivers due to underground mining resulting in subsidence if appropriate mine design is not implemented	Loss of wetland habitat Decreased flow to and from wetlands resulting in disruption of flow drivers	Local, depending on size of disturbance	Significance	5	3.20	Mining depth at >40m and implementation of required safety factors as per rock engineering/stability assessment recommendations. Where this is not achieved, rock bolts will be utilised to improve the critical beam thickness of the hanging wall, as per Seriti standard practice. The mining layout has been revised to effectively manage and mitigate the risk of subsidence based on the maps provided in the stability assessment.	Control by design	Significance	3	2.00
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	4	
				Probability	4				Probability	3	
				Significance	5	3.20			Significance	3	2.00
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	4	
				Probability	4				Probability	3	
	Water quality in and around watercourses	Water quality deterioration due to discharge of operational mine water	Regional	Significance	4	3.20	Clean and dirty water systems should be separated as planned to avoid pollution.		Significance	2	1.40
				Magnitude - Spatial	4		Storage spaces (reservoirs) are allocated to specific areas to avoid seepage of polluted water as far as possible.		Magnitude - Spatial	3	
							The pumping capacity of the underground water into the storage dams should be maintained to avoid water quality deterioration	Control by maintenance			
				Magnitude - Temporal	4		All possible sources of contaminated water should be identified, and a management plan should be compiled accordingly.	Control by management	Magnitude - Temporal	2	
				Probability	4		Contaminated water that is pumped out of the mining areas must be contained in lined pollution control dams and re-used in the mining operation or treated and released	Control by design	Probability	3	
		Water quality deterioration due to decanting of operational mine water		Significance	4	3.20	An appropriate water management strategy during and post-operation must be put in place and possibly linked to the management of the discharge of contaminated water	Control with management	Significance	2	1.60
				Magnitude - Spatial	4				Magnitude - Spatial	3	
				Magnitude - Temporal	4		Treatment options of mine impacted water that will be decanted must be investigated during the operational phase of the mine	Remedy with research	Magnitude - Temporal	3	
				Probability	4				Probability	3	
AQUATIC ECOSYSTEM											
Underground mining	Wetland water balance/flow drivers due to underground mining resulting in subsidence if appropriate mine design	Loss of inherent species richness of pans due to loss of periodic inundation	Local, depending on size of disturbance	Significance	5	3.47	Refer to wetland specialist mitigation measures.	Control by implementing recommendations	Significance	3	2.00
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	5				Magnitude - Temporal	4	
				Probability	4				Probability	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
	is not implemented										
Discharge and management of operational mine water	Water quality in and around watercourses	Reduced egg hatching success due to water quality deterioration		Significance	4	2.93			Significance	4	1.80
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	4				Magnitude - Temporal	3	
				Probability	4				Probability	3	
FLORA & FAUNA											
Operation of surface infrastructure associated with underground mining	Vegetation and habitat quality	Continued disturbance of vegetation communities (including portions of an ESA and VU vegetation types) Encroachment by alien invasive plant species	Through out project area	Significance	4	2.93	All Very High and High sensitivity areas must be avoided and declared “No-go” areas. The areas to be developed/mined must be demarcated to prevent movement into highly sensitive surrounding environments. Areas to be developed be demarcated so that only the demarcated areas be impacted upon. All working areas must be clearly demarcated from surrounding areas	Control by limiting disturbed area	Significance	2	1.40
							Where possible, existing access routes and walking paths must used. Access to adjacent (non-mining related) areas must be controlled				
							All livestock must be kept out of the project area at all times.				
							Divert storm water run off from any stockpiles away from the low laying areas, such as drainage lines as well as the surrounding areas, and prevent runoff from leaving the project area in an uncontrolled manner.				
				Magnitude - Spatial	3		Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.		Magnitude - Spatial	2	
							A hydrocarbon spill management plan must be put in place to ensure that should that any spill is prevented from entering the surrounding areas. An emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	Control with procedures and training			
							A fire management plan needs to be complied and implemented to restrict the impact fire might have on the surrounding rehabilitated mining areas				
							Compilation of and implementation of an alien vegetation management plan.				
							Waste management must be a priority and all waste must be collected and managed in accordance with the mine’s current waste management plan.				
				Magnitude - Temporal	4		A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs		Magnitude - Temporal	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
							All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.				
							Storm Water run-off & Discharge Water Quality monitoring as per surface water specialist recommendation	Control with monitoring			
							It should be made an offence for any staff to take/bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Control with regulations			
				Probability	4		Signs should be put up to enforce speed limit and speed bumps to force slow speeds. Mine driving rules should be complied with.		Probability	3	
							Adequate sanitation should be provided based on the expected workforce. Appropriate management measures to be implemented based on the system installed				
							Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads especially. This includes wetting of exposed soft rad soil surfaces.	Control with dust suppression			
							Reducing the dust generated by activities, especially due to the transport of coal by trucks, through wetting the soil surface (with "dirty water").				
Underground mining activities		Subsidence - detrimental effects to habitat composition (including wetlands) and floral distribution due to changing groundwater dynamics		Significance	4	4.00	Appropriate underground mining engineering and mining practice	Control with regulations	Significance	3	1.80
				Magnitude - Spatial	3		Subsidence risk assessment, avoidance of high-risk areas and post-closure subsidence monitoring should be implemented	Control with limiting disturbed areas and monitoring	Magnitude - Spatial	3	
				Magnitude - Temporal	5		Should subsidence occur, a suitable management plan must be investigated which may include construction of a water diversion around subsidence areas to avoid surface water loss	Control with procedure	Magnitude - Temporal	3	
				Probability	5		Guidelines stipulated in the rock engineer and groundwater reports must be implemented to mitigate subsidence (including pillar requirements)	Control with regulations and procedure	Probability	3	
Operation of surface infrastructure associated with underground mining	Fauna	Continued displacement and fragmentation of the faunal community due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation/loss (litter, road mortalities and/or poaching).	Local disturbance	Significance	4	2.93	Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals	Control by limiting disturbed area	Significance	2	1.40
				Magnitude - Spatial	3		No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this		Magnitude - Spatial	2	
							Suitable conservation areas need to be secured within the larger mining area for the mammal SCCs recorded on site, in this case Serval. This needs to be accompanied by a specialised conservation plan, the wetland and natural grassland areas are suitable candidate areas for these areas, the degraded grassland above the underground mining should also be considered.	Control with regulations			
							Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible				

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Magnitude - Temporal	4		Driving on access roads close to very high and highly sensitive areas at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period		Magnitude - Temporal	3	
							Adequate sanitation should be provided based on the expected workforce. Appropriate management measures to be implemented based on the system installed				
							All maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited	Control with regulations and training			
				Probability	4		All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.		Probability	3	
							Waste management must be a priority and all waste must be collected and stored effectively. Waste management must be aligned with current mine practice	Control with procedures			
							Water sources must be monitored according to the recommendation of the surface water specialist	Control with monitoring			
Underground mining activities	Fauna and wetlands / water sources	Subsidence - negative impacts on availability of surface water for fauna. Catchment morphology and resultant modification to surface water baseflow and wetland habitat.		Significance	5	4.67	Appropriate underground mining engineering and mining practice	Control with regulations	Significance	3	2.00
				Magnitude - Spatial	4		Subsidence risk assessment, avoidance of high-risk areas and post-closure subsidence monitoring should be implemented	Control with limiting disturbed areas and monitoring	Magnitude - Spatial	3	
				Magnitude - Temporal	5		Should subsidence occur, a suitable management plan must be investigated which may include construction of a water diversion around subsidence areas to avoid surface water loss	Control with procedure	Magnitude - Temporal	4	
				Probability	5		Guidelines stipulated in the rock engineer and groundwater reports must be implemented to mitigate subsidence (including pillar requirements)	Control with regulations and procedure	Probability	3	
Underground mining activities	Habitat Quality and Fauna	Subsidence - physical alteration of surface-level environment leading to negative impacts on habitats (including ESAs) and associated fauna.		Significance	4	3.67	Appropriate underground mining engineering and mining practice	Control with regulations	Significance	3	1.80
				Magnitude - Spatial	3		Subsidence risk assessment, avoidance of high-risk areas and post-closure subsidence monitoring should be implemented	Control with limiting disturbed areas and monitoring	Magnitude - Spatial	3	
				Magnitude - Temporal	4		Should subsidence occur, a suitable management plan must be investigated which may include construction of a water diversion around subsidence areas to avoid surface water loss	Control with procedure	Magnitude - Temporal	3	
				Probability	5		Guidelines stipulated in the rock engineer and groundwater reports must be implemented to mitigate subsidence (including pillar requirements)	Control with regulations and procedure	Probability	3	
SOILS, LAND CAPABILITY AND LAND USE											
				Significance	4	0.67	Restrict area of impact to as small an area as practical		Significance	2	0.47

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
Operational activities	Soils, Land Capability and Land Use	Continued loss of soil resource and utilisation potential over infrastructural sites and operational areas	Local, depending on size of disturbance	Magnitude - Spatial	3			Control by limiting disturbed area	Magnitude - Spatial	2	
				Magnitude - Temporal	3			Control by limiting erosion	Magnitude - Temporal	3	
				Probability	1				Probability	1	
		Loss of resource due to unprotected overland flow of water (suspended solids) and erosion of soil due to wind - potential off site dust issues		Significance	3	1.33	Manage berms by controlling vegetative cover and ingress of dirty water		Significance	2	0.93
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	4		Maintain stormwater control system and erosion due to unprotected soil cover		Magnitude - Temporal	3	
				Probability	2				Probability	2	
		Continued loss of soil utilisation due to contamination from spillage of raw product, reagents and hydrocarbons from vehicles and mechanised infrastructure and from storage facilities (soil stockpiles and coal transfer area)		Significance	3	3.00	On-going management and control of vehicle maintenance, movements and cover to loads of raw materials	Control with regulations	Significance	2	1.87
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	3		Spillage from haulage ways and vehicles to be cleaned regularly and placed back into the processing system	Control with procedures	Magnitude - Temporal	3	
				Probability	5				Probability	4	
		Loss of soil utilisation potential due to operation of haulage route, service corridors and stormwater controls and the loss of nutrient stores and organic carbon from the coal transfer area and in-situ contamination on sites		Significance	3	3.00			Significance	2	1.87
				Magnitude - Spatial	3		Cultivation and emplacement of stormwater and erosion control features	Control by limiting erosion	Magnitude - Spatial	2	
				Magnitude - Temporal	3		Restriction of ingress of dirty water	Control by limiting dirty water ingress	Magnitude - Temporal	3	
				Probability	5				Probability	4	
HERITAGE											
Additional traffic to and from sites; hauling of material to and from mining area	Historical structures/Graves	Damage to the historical structures identified artefacts (i.e., a few Late Stone Age miscellaneous flakes) and graves due to operational activities.	Mine footprint	Significance	3	0.73	It is preferable that cemeteries be fenced off with an access gate for family members with a 30 m buffer zone around the grave site. If not feasible, the cemeteries could be relocated adhering to existing legislation with extensive social consultation. A grave management plan must be compiled and implemented for the cemeteries in the project area.	Control by limiting disturbed area or remedy by relocating	Significance	2	0.67
				Magnitude - Spatial	3		Should operational activities be changed to encroach on any identified heritage resources, a suitably qualified specialist should be consulted on mitigation measures to be implemented and any assessments that may be required.	Control with specialist appointment	Magnitude - Spatial	3	
				Magnitude - Temporal	5				Magnitude - Temporal	5	
				Probability	1				Probability	1	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
PALAEONTOLOGY											
Underground mining	Palaeontology	Loss of fossils and other palaeontological significant artefacts	Underground mining footprint (not yet approved)	Significance	2	1.60	Implement Chance Find Protocol as included in the EMPr. If fossils are found, these should be rescued and a palaeontologist called to assess and collect a representative sample	Stop and control with procedures & training	Significance	2	1.60
				Magnitude - Spatial	1				Magnitude - Spatial	1	
				Magnitude - Temporal	5				Magnitude - Temporal	5	
				Probability	3				Probability	3	
GROUNDWATER											
Underground Mining at Dispatch Rider	Lowering of water levels during mining	Dewatering of the aquifer. Surrounding water users may experience a decrease in available volumes.	Local	Significance	3	2.40	Clean and dirty water systems should be separated as planned to avoid further pollution.	Stop and control with water management	Significance	1	1.40
							Minimisation of contaminated areas, reuse of dirty water, and planning to ensure that clean areas are not lost to the catchment.	Stop and control by limiting contamination			
							Groundwater monitoring boreholes should be sited at designated positions based on the mining area and infrastructure layout as discussed in the specialist report, to comply with the design requirements of a groundwater monitoring system, as recommended.	Control with groundwater monitoring system			
				Magnitude - Spatial	3		Monitor static groundwater levels on a quarterly basis in all boreholes within a zone of one kilometre surrounding the mine to ensure that any deviation of the groundwater flow from the idealised predictions is detected in time and can be reacted on appropriately.		Magnitude - Spatial	3	
							If it can be proven that the mine is indeed affecting the quantity of groundwater available to certain users, the affected parties should be compensated. This may be done through the installation of additional boreholes for water supply purposes, or an alternative water supply.	Remedy with compensation			
				Magnitude - Temporal	3		If surface water monitoring shows that the tributary of the Boesmanskransspruit is affected by mine dewatering, discharge of clean water into this stream should be considered. Timing and volumes should be determined by a surface water specialist.	Remedy with clean water discharge	Magnitude - Temporal	3	
							The monitoring results must be interpreted annually by a qualified hydrogeologist and the monitoring network should be audited annually to ensure compliance with regulations.	Control with groundwater monitoring system			
				Probability	4		The numerical model should be updated annually during operation of the underground mine by using the measured inflows, water levels and drilling and pump test information to re-calibrate and refine the impact prediction.		Probability	3	
							Dewatering and groundwater abstraction for mining purposes should be monitored so as to prevent negative impacts on the aquifer.				
	Contamination during mining	Surrounding water users may experience a decline in water quality		Significance	1	1.07	Contaminated water that is pumped out of the mining areas must be contained and re-used in the mining operation or treated and released.	Control through containment and remedy through re-use or treatment	Significance	1	1.07
				Magnitude - Spatial	1				Magnitude - Spatial	1	
				Magnitude - Temporal	2		Storage space (reservoirs) are allocated to specific areas to avoid seepage of polluted water as far as possible.	Control through limiting disturbed area	Magnitude - Temporal	2	
							The pumping capacity of the underground water into the storage dams should be maintained to avoid water quality deterioration.	Control through pump management			

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Probability	4		All possible sources of contaminated water should be identified and a management plan should be compiled accordingly.	Control through implementation of a management plan	Probability	4	
SURFACE WATER											
Discharge of mine water to the natural watercourses	Water Quality	Pollution of surface water resources due to discharge of contaminated water	Regional	Significance	4	3.20	Compilation of an integrated mine water balance	Control with mine water balance	Significance	3	2.67
				Magnitude - Spatial	4		Reuse of dirty water in the operations at Dispatch Rider	Remedy with reuse	Magnitude - Spatial	4	
							Management of excess dirty water that cannot be stored in the existing voids to be managed as part of the MMS water management system	Control with treatment			
				Magnitude - Temporal	4		Provision of water management facilities with a risk of spill that is lower than 2% in any one year	Control with design	Magnitude - Temporal	3	
							A surface water quality monitoring programme must be implemented to detect any impacts	Control with monitoring			
				Probability	4		A monitoring programme will be implemented to enable calibration of the water balance once compiled	Control with mine water balance	Probability	4	
Utilisation and management of linear infrastructure: Operation and maintenance of roads	Water Quality	Pollution of surface water resources due to hydrocarbon drips / spills from vehicles trafficking the road	Local	Significance	3	2.40	Water quality monitoring should be undertaken in order to detect any deterioration in water quality.	Control with monitoring	Significance	2	1.40
				Magnitude - Spatial	3		If erosion is evident or the water quality monitoring indicates a deterioration in water quality, water management around the linear infrastructure should be reviewed	Stop erosion and control with review of water management	Magnitude - Spatial	3	
				Magnitude - Temporal	3				Magnitude - Temporal	2	
				Probability	4				Probability	3	
Mine development area: Adit and related infrastructure	Water Quality	Pollution of surface water resources due to contaminated storm water runoff, poorly maintained storm water channels, sumps, sediment traps and oil skimmers etc., erosion at clean canal discharge points; increase in sulphate, turbidity, suspended solids and TDS due to runoff entering adit and becoming contaminated	Regional	Significance	5	3.20	Ensure adequate erosion protection is provided at the clean canal discharge locations.	Stop with erosion protection	Significance	3	1.33
				Magnitude - Spatial	4		All spills must be contained within dedicated bunded areas.	Control by limiting disturbed area	Magnitude - Spatial	4	
							A waste management plan for operations must be implemented, which must include the appropriate storage of general and hazardous wastes until removal from the site. Containers used for the storage of waste must be located under cover, in bunded areas, to prevent ingress of direct rainfall. In addition, waste oil must be stored in drums in a bunded storage area.	Control with waste management			
				Magnitude - Temporal	3		Bunded containment and settlement facilities will be provided for hazardous materials, such as fuel and oil	Control by limiting disturbed area	Magnitude - Temporal	3	
				Probability	4		An inspection and maintenance plan must be implemented on the storm water system to ensure that all sediment handling facilities are maintained and that storm water canals remain unblocked and free flowing – monthly inspections must be carried out	Control with inspections & maintenance	Probability	2	
							Spill-sorb or a similar type product must be kept on site and used to clean up hydrocarbon spills in the event that they should occur	Control with procedure			

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
							A surface water quality monitoring programme will be implemented to detect any impacts	Control with monitoring			
Dust suppression with contaminated water on haul roads	Water Quality	Pollution of surface water resources due to spillage of dust suppression water	Local and site if mitigated	Significance	3	2.40	A formal procedure for dust suppression must be implemented. This will ensure that dust suppression application rates are carefully controlled to prevent the application of excessive water and to prevent ponding and runoff of dust suppression water into the watercourses/ pans	Control with procedure	Significance	2	0.80
				Magnitude - Spatial	3				Magnitude - Spatial	1	
				Magnitude - Temporal	3		Dust suppression with contaminated water should be confined to isolated dirty water management areas	Control by limiting disturbed area	Magnitude - Temporal	3	
				Probability	4				Probability	2	
Transportation of coal via haul roads for processing	Water Quality	Pollution of surface water resources due to coal spillage or spillage of water transported from haul trucks onto haul roads	Local and site if mitigated	Significance	3	2.40	All dirty water containment facilities should be designed, operated and maintained to have a risk of spill of 2% or less (1:50 year recurrence interval) in any one year	Control with design	Significance	2	0.80
				Magnitude - Spatial	3		Loading of trucks must be carefully controlled to ensure that overloading does not take place	Control with restrictions	Magnitude - Spatial	1	
				Magnitude - Temporal	3		Monitoring will be implemented downstream of all watercourse crossings	Control with monitoring	Magnitude - Temporal	3	
				Probability	4				Probability	2	
Isolation of dirty catchment	Water Quantity	Reduction in catchment yield - Local scale (Immediately downstream of site)	Local	Significance	5	2.20	The site layout has been designed to minimise the dirty footprint, and therefore to minimise the impact on the catchment yield. No further mitigation is considered necessary	Control with design	Significance	4	1.33
				Magnitude - Spatial	3		The stability assessment conducted in 2023 concluded that there are no fatal flaws, however it does indicate there are "a few, isolated areas that have a possible, limited risk." These areas are on the edges of the planned workings. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk.		Magnitude - Spatial	3	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	3				Probability	2	
Isolation of dirty catchment	Water Quantity	Reduction in catchment yield - Regional scale (Loskop Dam)	Regional	Significance	1	2.67	The site layout has been designed to minimise the dirty footprint, and therefore to minimise the impact on the catchment yield. No further mitigation is considered necessary	Control with design	Significance	1	2.67
				Magnitude - Spatial	4		The stability assessment conducted in 2023 concluded that there are no fatal flaws, however it does indicate there are "a few, isolated areas that have a possible, limited risk." These areas are on the edges of the planned workings. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk.		Magnitude - Spatial	4	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	5				Probability	5	
All activities	Flooding of mine or mine infrastructure during extreme floods	Impact on mining operation	Site	Significance	N/A	N/A	The mine infrastructure area is located away from adjacent watercourses and therefore not within the 1:50 or 1:100 year floodlines.	N/A	Significance	N/A	N/A
				Magnitude - Spatial					Magnitude - Spatial		
				Magnitude - Temporal					Magnitude - Temporal		
				Probability					Probability		
NOISE											
Underground mining operations	Noise	Noise increase in excess of the permissible threshold value of 70.0dBA before a noise disturbance is created at the footprint of the infrastructure area, other mining activities	Local	Significance	3	2.40	All noise sources within the footprint boundaries in excess of 85.0dBA must be acoustically screened off	Control with screening	Significance	2	1.40
							Noise monitoring to be done on an annual basis along the mining right boundary and at sensitive receptors. Should the threshold level of 70.0dBA be exceeded, appropriate noise mitigation measures should be implemented	Control with monitoring programmes			
				Magnitude - Spatial	3		Noise monitoring to be done on an annual basis along the mechanical ventilation at the Adit footprint boundaries and threshold level of 70.0dBA must not be exceeded.		Magnitude - Spatial	2	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		and/or the mining right boundary					Noise monitoring to be done on an annual basis at the infrastructure section and threshold level of 70.0dBA must not be exceeded.				
				Magnitude - Temporal	3		Noise monitoring at residential areas and mine boundary to be done on a quarterly basis.		Magnitude - Temporal	3	
				Probability	4		Actively manage the process and the noise management plan must be used to ensure compliance to regulations and/or standards	Control with procedures	Probability	3	
							Road surfaces along haul roads to be maintained in good order and free from potholes	Control with maintenance			
VISUAL											
Operational activities	Visual	Visual disturbance to static observers due to ROM transfer area and vehicle movements	Local	Significance	3	3.33	If a certain area becomes a problem from a visual exposure viewpoint during operations, additional measures that could be implemented include the planting of vegetative screening, although the effectiveness thereof on the Highveld is limited. Another alternative would be to place soil berms along the edge of the mining area to limit visual exposure. This should however be considered with the stormwater plan, ecology and soil reports in mind.	Remedy with visual screening	Significance	2	2.67
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4		Dumps not to exceed designed height	Control with height restrictions	Magnitude - Temporal	3	
				Probability	5				Probability	5	
		Visual disturbance to dynamic observers due to ROM transfer area and vehicle movements		Significance	3	2.13	Infrastructure area at Dispatch Rider to be kept neat and tidy with regular waste collection	Control with site management	Significance	3	2.13
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	2		No burning of waste allowed on site	Control with restrictions	Magnitude - Temporal	2	
				Probability	4				Probability	4	
AIR QUALITY											
Operation of surface infrastructure associated with underground mining e.g. coal transfer area and driving on unpaved roads.	Air quality	Increased particulate matter (PM10) and dust as a result of operational activities	Local	Significance	3	2.40	Implementation of a PM10 monitoring programme along the eastern portions of the mine boundary using continuous monitoring equipment or once-off measurements.	Control with monitoring programmes	Significance	2	1.40
				Magnitude - Spatial	3		Introduction of a network of dustfall monitoring units		Magnitude - Spatial	2	
				Magnitude - Temporal	3		Wet suppression using water sprays during offloading, loading and tipping	Control by limiting dust generation	Magnitude - Temporal	3	
				Probability	4		Loading, transfer and discharge of materials should take place with a minimum height of fall and be shielded against the wind		Probability	3	
		Vehicle entrainment on unpaved roads		Significance	3	2.13	Vehicle restrictions which limit the speed, weight and number of vehicles on the road		Significance	1	1.20
				Magnitude - Spatial	2		Surface improvements (paving or adding gravel to the road) and surface treatments.		Magnitude - Spatial	2	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	4		Additional measures, such as increased watering levels should be implemented on unpaved haul roads to increase dust control efficiency.		Probability	3	
		Wind erosion from exposed areas (coal transfer area, etc.)		Significance	3	2.40	Wet suppression using water sprays, wind breaks, vegetation and/or enclosures	Control by limiting wind erosion	Significance	2	1.40
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	3				Magnitude - Temporal	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Probability	4				Probability	3	
SOCIAL ENVIRONMENT											
Opencast mining operations	Social environment	Inflow of workers	Local	Significance	1	1.20	Mine security focused on property borders/fencing must be improved to avoid criminals using mining areas to access privately owned properties thereby assisting in limiting crop theft.	Control by limiting disturbed area	Significance	1	1.00
				Magnitude - Spatial	2				Magnitude - Spatial	1	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	3				Probability	3	
		Inflow of jobseekers		Significance	2	1.60	Mine security focused on property borders/fencing must be improved to avoid criminals using mining areas to access privately owned properties thereby assisting in limiting crop theft.		Significance	2	1.07
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	3				Probability	2	
		Employment opportunities		Significance	2	1.80	The procurement of locals should receive preference if there is any need for additional procurement.	Remedy using local labour	Significance	3	1.80
				Magnitude - Spatial	4		Targets for the procurement of capital goods, consumer goods and services should be set and the mine should develop an action plan to meet these targets. These plans could include, but are not limited to, the development of Economic Empowerment (EE) policies, procedures and guidelines, as well as the development of a database of local small businesses (entrepreneurs and SMME's)	Control with targets and plans	Magnitude - Spatial	3	
				Magnitude - Temporal	3		Enterprise development is a key enhancement measure in this regard. The proponent should assist small businesses and/or SMME's to develop to a certain level where they can become involved in the process. Such measures recommended could include the following: • The establishment of joint ventures between small businesses and established companies with relevant experiences with regards to tender processes. Such joint ventures could assist SMMEs with regards to general business principles, financial management, management of stock, competitive costing (pricing), and marketing of their business, where applicable; • Locals can be considered for tenders, for e.g. less cumbersome work, providing that these locals would have some form of experience and credibility to ensure that the quality of work is not compromised; • Payment systems should be flexible, but strictly controlled, to assist smaller businesses in terms of expenditure; • An audit of existing local enterprises that could provide services, goods and material should be undertaken with the assistance of local leaders and community representatives, as well as local business structures.	Remedy with SMME development	Magnitude - Temporal	3	
				Probability	3		Should SMMEs be appointed for the procurement of goods or the provision of services, the contract executions should be strictly monitored on a monthly basis.	Control with monitoring	Probability	3	
		Socio-Economic Impacts		Significance	3	2.67	Local goods and services should be used as far as possible.	Remedy using local goods and services	Significance	3	3.33
				Magnitude - Spatial	4				Magnitude - Spatial	4	
				Magnitude - Temporal	3		Local Economic Development initiatives of the mine should continue	Remedy with initiatives	Magnitude - Temporal	3	
				Probability	4				Probability	5	
		Capacity Building and Skills Development		Significance	3	2.40	Enterprise development is a key enhancement measure in this regard. Seriti should assist small businesses and/or SMME's to develop to a certain level where they can become involved in the procurement process and the provision of goods, materials and services	Remedy with SMME development	Significance	3	2.67
				Magnitude - Spatial	3		The Human Resources Development (HRD) strategy as outlined in the Social and Labour Plan (SLP) should continue to be implemented. The focus should remain of career development programmes, bursaries, learnership programmes, skills development and training and so forth.	Remedy with SLP	Magnitude - Spatial	4	
				Magnitude - Temporal	3		Learnership programmes should preferably focus on individuals from the core and affected areas to maximise the long-term employment opportunities of these local community members.	Remedy with learnership programmes	Magnitude - Temporal	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Probability	4		Local goods and services should be used as far as possible and therefore contractual requirements for contractors to use local goods and services should be implemented as far as possible	Remedy using local goods and services	Probability	4	
							Local Economic Development initiatives of Seriti should continue	Remedy with initiatives			
		Daily Living and Movement Patterns		Significance	2	1.60	Speed limits on the local roads surrounding the mining site should be enforced.	Control with regulations	Significance	2	1.07
				Magnitude - Spatial	3		Speeding of mine related vehicles must be strictly monitored	Control with monitoring	Magnitude - Spatial	3	
				Magnitude - Temporal	3		Dust management on the internal gravel roads to continue to be implemented.	Control with dust suppression	Magnitude - Temporal	3	
				Probability	3		Seriti should pro-actively inform the municipality and local residents of any possible roads closures and diversions if required	Control with communicatio n	Probability	2	
							Seriti should ensure that access points comply with standards and are well marked and indicated	Control with compliance			
		Residential Proximity		Significance	3	1.80	Monitoring of the air quality and water quality and quantity should continue to limit any possible negative impacts on the human environment thereby ensuring that human health and the environment are protected.	Control with monitoring	Significance	3	1.80
				Magnitude - Spatial	3		Intrusion impacts should be mitigated through sound environmental practices.	Control with sound environmental practices	Magnitude - Spatial	3	
							Dust suppression methods should be implemented.	Control with dust suppression			
				Magnitude - Temporal	3		Speeding of mine related vehicles must be strictly monitored	Control with monitoring	Magnitude - Temporal	3	
				Probability	3		Should it be scientifically proven that blasting did impact on structures, the mine has to compensate the affected parties accordingly.	Remedy with compensation	Probability	3	
		Farming Activities		Significance	4	2.93	Appropriate site management should be undertaken to ensure that the mining area is properly managed, and that no pollution of natural resources occurs and that crop production is not negatively affected.	Control with pollution management	Significance	4	2.20
							Effective management of the mining activities should be undertaken to avoid any environmental pollution focusing on water, waste and sanitation infrastructure and services, and limiting any increase in noise levels.				
							Dust suppression methods should continue.	Control with dust suppression			
							Suitable safety measures (e.g., suitable size pillars) should be implemented to avoid subsidence	Control with safety measures			
				Magnitude - Spatial	3		The mine must be responsible for safeguarding the economic potential of the natural resource and to find a balance between agriculture and mining activities.	Control with responsible actions	Magnitude - Spatial	3	
							Borehole water levels to be monitored regularly by a qualified independent specialist (e.g. quarterly).	Control with monitoring			
				Magnitude - Temporal	4		The recommendation/mitigation of the Hydrogeological Report is supported, namely: "If it can be proven that the mine is indeed affecting the quantity of groundwater available to specific users, the affected parties should be compensated. This may be done through the installation of additional boreholes for water supply purposes or an alternative water supply." This would be applicable to the possible impact on the boreholes G & M Farming Enterprises.	Remedy with compensation	Magnitude - Temporal	4	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
				Probability	4		Should an alternative borehole with sufficient yield not be feasible as off-set, alternative water sources and/or providing the property owner with water must be investigated. The provision of such water would have to continue indefinitely after the life of mine (LoM estimated at 7 years).		Probability	3	
							If alternative water sources with the same quality and quantity cannot be realised, the mining plan should be re-assessed to implement mitigation to avoid any possible negative impacts on the water quantity and/or quality of the affected boreholes. This can include e.g. re-assessment of the mining areas or mining extent taking the environmental and economic considerations into account.				
		Sense of Place		Significance	3	2.00	The mining area should be kept litter free	Control with pollution management	Significance	3	2.00
				Magnitude - Spatial	3		The recommendations made by the Visual Impact Assessment should be adhered to	Control by following recommendations	Magnitude - Spatial	3	
				Magnitude - Temporal	4		The possible synergy between the mining companies in the area and joint ventures with regards to infrastructure development could limit the visual impacts	Remedy with collaboration	Magnitude - Temporal	4	
				Probability	3				Probability	3	
		Safety and Security		Significance	3	2.67	The mining area should be fenced or access to the area should be controlled to avoid animals or people entering the area without authorisation.	Control by limiting access	Significance	3	2.00
				Magnitude - Spatial	3		The mining areas should be clearly marked and 'danger' and 'no entry' signs should be erected.		Magnitude - Spatial	3	
				Magnitude - Temporal	4		Workers should make use of protective clothing and equipment that would effectively prevent bodily injuries.	Control with appropriate equipment	Magnitude - Temporal	4	
				Probability	4		Workers should make use of formal approved access roads when travelling to work	Control with restrictions	Probability	3	
							Mine security focused on property borders/fencing must be improved to avoid criminals using mining areas to access privately owned properties thereby assisting in limiting crop theft.	Control by limiting access			
		Health Related Impacts		Significance	3	2.67	Seriti should continue to distribute information with regards to health matters and nutrition to its workers and surrounding communities.	Control with communication	Significance	2	1.80
				Magnitude - Spatial	3		Dust suppression methods along haul roads should be continued to be implemented	Control with dust suppression	Magnitude - Spatial	3	
				Magnitude - Temporal	4		Seriti should continue to assist the communities in terms of health care infrastructure and services provision as e.g. the construction of the Rockdale Community Healthcare Clinic by Seriti (formerly known as South 32/SAEC) that has been listed as a project as part of the 2020/2021 IDP list of projects.	Remedy with health care services	Magnitude - Temporal	4	
				Probability	4		Mining activities should adhere to all the relevant environmental and health guidelines and should be undertaken in accordance with the EMPr.	Control with adherence to guidelines	Probability	3	
		Noise Related Impacts		Significance	3	2.00	Noise generating activities should be kept to normal working hours (e.g. 7 am until 5 pm) where possible	Control with restrictions	Significance	2	1.80
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4		Vehicles should comply with noise abatement regulations		Magnitude - Temporal	4	
				Probability	3		The mitigation measures of the Noise Impact Assessment should be implemented	Control by implementing recommendations	Probability	3	

Table 18-8: Impact rating: Decommissioning, closure and post-closure phase

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
WETLANDS											
Surface subsidence within wetlands	Wetland water balance / flow drivers	Loss of wetland habitat Decreased flow to and from wetlands as a result of the disruption to flow drivers	Local disturbance	Significance	5	3.20	Mining depth at >40m and implementation of required safety factors as per rock engineering/stability assessment recommendations. Where this is not achieved, rock bolts will be utilised to improve the critical beam thickness of the hanging wall, as per Seriti standard practice. The mining layout has been revised to effectively manage and mitigate the risk of subsidence based on the maps provided in the stability assessment.	Control by development of mitigation measures	Significance	3	2.00
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	4	
				Probability	4				Probability	3	
Decant of contaminated mine water	Water quality in and around watercourses	Water quality deterioration	Regional	Significance	4	3.20	An appropriate water management strategy post-operation must be put in place and possibly linked to the management of the discharge of contaminated water.	Control with management	Significance	2	1.60
				Magnitude - Spatial	4				Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	3	
				Probability	4				Probability	3	
AQUATIC ECOSYSTEM											
Surface subsidence within wetlands	Wetland water balance / flow drivers	Loss of inherent species richness of pans due to loss of periodic inundation	Local, depending on size of disturbance	Significance	5	3.47	Refer to wetland specialist mitigation measures.	Control by implementing recommendations	Significance	3	1.80
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	5				Magnitude - Temporal	4	
				Probability	4				Probability	3	
Decanting of contaminated mine water	Water quality in and around watercourses	Reduced egg hatching success due to water quality deterioration		Significance	4	2.93			Significance	4	1.80
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	4				Magnitude - Temporal	3	
				Probability	4				Probability	3	
HERITAGE											
Planting of grass and vegetation; removal of infrastructure	Historical structures/Graves	Damage to the historical structures identified artefacts (i.e., a few Late Stone Age miscellaneous flakes)	Mine footprint	Significance	3	2.00	It is preferable that cemeteries be fenced off with an access gate for family members with a 30 m buffer zone around the grave site. If not feasible, the cemeteries could be relocated adhering to existing legislation with extensive social consultation. A grave management plan must be compiled and implemented for the cemeteries in the project area.	Control by limiting disturbed area or remedy by relocating	Significance	1	0.80

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		and graves due to rehabilitation activities.		Magnitude - Spatial	2		Should operational activities be changed to encroach on any identified heritage resources, a suitably qualified specialist should be consulted on mitigation measures to be implemented and any assessments that may be required.	Control with specialist appointment	Magnitude - Spatial	2	
				Magnitude - Temporal	5				Magnitude - Temporal	3	
				Probability	3				Probability	2	
FLORA & FAUNA											
Decommissioning and rehabilitation of surface infrastructure associated with underground mining	Vegetation and habitat quality	Continued encroachment by alien invasive plant species, as well as erosion due to disturbed soils.	To be determined at decommissioning	Significance	4	2.93	All structure footprints, especially roadsides, to be rehabilitated and landscaped after the project is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type	Remedy by re-vegetation and rehabilitation	Significance	3	0.93
				Magnitude - Spatial	3		Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.	Control by maintenance	Magnitude - Spatial	2	
							It should be made an offence for any staff to take/bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Control with regulations			
							Adequate sanitation should be provided based on the expected workforce. Appropriate management measures to be implemented based on the system installed				
				Magnitude - Temporal	4		A fire management plan needs to be implemented to restrict the impact fire might have on the rehabilitated areas.	Control with procedures	Magnitude - Temporal	2	
							Implementation of an alien vegetation management plan.				
							Waste management must be a priority and all waste must be collected and managed in accordance with the mine's current waste management plan.				
				Probability	4		A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the likely presence of SCCs		Probability	2	
							Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and soil stockpiles especially. This includes wetting of exposed soft rad soil surfaces				
							All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.	Control with training and regulations			
Decommissioning of underground mine		Subsidence - detrimental effects to habitat composition and floral distribution due to changing groundwater dynamics		Significance	3	2.40	Post-closure subsidence monitoring should be implemented	Control with limiting disturbed areas and monitoring	Significance	3	1.40
				Magnitude - Spatial	3		Should subsidence occur, a suitable management plan must be investigated which may include construction of a water diversion around subsidence areas to avoid surface water loss	Control with procedure	Magnitude - Spatial	2	
				Magnitude - Temporal	3		Guidelines stipulated in the rock engineer and groundwater reports must be implemented to mitigate subsidence (including pillar requirements)	Control with regulations and procedure	Magnitude - Temporal	2	
				Probability	4				Probability	3	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
Decommissioning and rehabilitation of surface infrastructure associated with underground mining	Faunal habitat quality	Temporary displacement and potential fragmentation of the faunal community (including threatened or protected species) due to anthropogenic disturbances (noise, dust and vibrations) and potential habitat degradation/loss as areas are rehabilitated (litter, road mortalities and/or poaching).		Significance	3	2.40	Develop post-mining environments in conjunction with regional development plans as well as the recreation of habitats where possible or structure altered landscapes to be compatible with regional habitats. As per the Prism (2016) report: suitable conservation areas need to be secured for the mammal SCCs recorded on site, in this case Serval, this needs to be accompanied by a specialised conservation plan, the wetland and natural grassland areas are suitable candidate areas for these areas, the degraded grassland above the underground mining would also work.	Remedy with rehabilitation	Significance	3	0.93
							Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals	Control with training and regulations			
				Magnitude - Spatial	3		No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this All vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.		Magnitude - Spatial	2	
				Magnitude - Temporal	3		Driving on access roads close to very high and highly sensitive areas at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period; All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr. The avoidance and protection of the wetland areas must be included into a site induction. Contractors and employees must all undergo the induction and made aware of the "no-go" to be avoided. If possible, a section needs to be included in the induction video stating that poaching is illegal.		Magnitude - Temporal	2	
				Probability	4		Waste management must be a priority and all waste must be collected and stored effectively. Adequate sanitation should be provided based on the expected workforce. Appropriate management measures to be implemented based on the system installed	Control with procedures	Probability	2	
Decommissioning of underground mine		Subsidence - physical alteration of surface-level environment leading to negative impacts on habitats (including ESAs) and associated fauna.		Probability	3	2.13	Post-closure subsidence monitoring should be implemented	Control with limiting disturbed areas and monitoring	Probability	2	1.4
				Significance	2		Should subsidence occur, a suitable management plan must be investigated which may include construction of a water diversion around subsidence areas to avoid surface water loss	Control with procedure	Significance	2	
				Magnitude - Spatial	3		Guidelines stipulated in the rock engineer and groundwater reports must be implemented to mitigate subsidence (including pillar requirements)	Control with regulations and procedure	Magnitude - Spatial	3	
				Magnitude - Temporal	4				Magnitude - Temporal	3	
SOILS, LAND CAPABILITY AND LAND USE											
Rehabilitation of Dispatch Rider infrastructure area	Soils and land capability	Positive impact: Reduction in disturbance footprint, amelioration of affected soils and oxygenation of the growing medium, stabilising of slopes and	To be determined at decommissioning	Significance	3	3.00	Erosion control measures will be implemented to ensure that the soil is not washed away and that erosion gulleys do not develop prior to vegetation establishment.	Remedy with rehabilitation	Significance	3	2.40
				Magnitude - Spatial	3			Control with testing	Magnitude - Spatial	2	
				Magnitude - Temporal	3			Control with disposal Control with erosion control measures	Magnitude - Temporal	4	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		re-vegetation of disturbed areas		Probability	5		If soil (whether stockpiled or in its undisturbed natural state) is polluted, the first management priority is to treat the pollution by means of in situ bioremediation. The acceptability of this option must be verified by an appropriate soils expert and by the local water authority on a case by case basis, before it is implemented.	Remedy with treatment	Probability	4	
		Loss of soil nutrient store and organic carbon stores while in storage and while being replaced onto rehabilitated areas - leaching of unprotected materials		Significance	3	3.00	Replacement of nutrient and organic carbon needs and requirements at time of rehabilitation	Remedy with rehabilitation	Significance	2	1.40
				Magnitude - Spatial	2		Landscaping of topographic slope		Magnitude - Spatial	2	
				Magnitude - Temporal	4		Cultivation of soils and replacement of vegetative cover as soon after replacement of materials as possible		Magnitude - Temporal	3	
				Probability	5		Monitoring of vegetative growth until self-sustaining	Remedy with monitoring	Probability	3	
		Contamination of in-situ and stored materials by dirty water outwash and use of dirty water for irrigation of rehabilitated sites		Significance	3	3.00	Management of stormwater control system	Control with stormwater management	Significance	2	2.13
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	3		Monitoring of water quality used for water/irrigation of vegetated areas	Remedy with monitoring	Magnitude - Temporal	3	
				Probability	5				Probability	4	
		Hydrocarbon spills from rehabilitation equipment plus potential for compaction of replaced materials, erosion from water and dust and impacts on off site streams and rivers (sedimentary load)		Significance	3	3.00	Maintenance and management of all vehicles	Control with maintenance	Significance	2	1.87
				Magnitude - Spatial	3		Restrictions on access of vehicles and animals/humans to rehabilitated areas and unprotected soil	Control with regulations	Magnitude - Spatial	2	
				Magnitude - Temporal	3				Magnitude - Temporal	3	
				Probability	5				Probability	4	
GROUNDWATER											
Decommissioned Underground Mining at Dispatch Rider Section	Groundwater quantity after mining	Following the closure of the underground and the cessation of dewatering, groundwater rebound will occur. Contaminated water may impact the surrounding water course.	Discharge predicted to commence at adit access, with a discharge volume of approximately 160 m3/d	Significance	4	2.93	Treatment of the discharge may be viable, however all active and passive methods should be investigated first during the operational phase of the mine which should tie in with the management plan for the larger MMS North mining area.	Remedy with treatment	Significance	2	0.53
				Magnitude - Spatial	4		Major underground fractures encountered while mining must be sealed by grouting, both on inflow and outflow areas. Limit roadway development through geological discontinuities.	Modify and control by sealing fractures	Magnitude - Spatial	1	
				Magnitude - Temporal	3		Groundwater monitoring boreholes should be sited at designated positions to comply with the design requirements of a groundwater monitoring system, as recommended.	Control with groundwater monitoring system	Magnitude - Temporal	1	
				Probability	4		The monitoring results must be interpreted annually by a qualified hydrogeologist and the monitoring network should be audited annually to ensure compliance with regulations.		Probability	2	
	Spreading of contamination plume after mining	Surrounding water users may experience a decline in quality of baseflow to rivers and water abstracted from boreholes	To be determined at decommissioning	Significance	4	2.93	The Water Quality Monitoring Plan ensures that the water quality in the vicinity of a mine is regularly monitored and reported upon throughout its life, so that, where necessary, remedial action can be taken. Surface and groundwater quantity and quality monitoring should be continued until a steady state is reached.	Control with groundwater monitoring system	Significance	2	0.53
				Magnitude - Spatial	3		Implement as many closure measures as possible during the operational phase, while conducting appropriate monitoring programmes to demonstrate actual performance of the various management actions during the life of mine.	Control by implementing closure measures	Magnitude - Spatial	1	
				Magnitude - Temporal	4		The post closure groundwater management should be implemented in two phases; phase 1 : Immediately after closure, phase 2: after rapid flooding.		Magnitude - Temporal	1	

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
							All mined areas should be flooded as soon as possible to minimise oxygen from reacting with remaining pyrite.	Control with groundwater management			
				Probability	4		Quarterly groundwater sampling must be conducted to establish a database of groundwater quality to assess plume movement trends.	Control with groundwater monitoring system	Probability	2	
							Audit the monitoring network annually and the numerical and geochemical model need to be updated against monitored data.				
SURFACE WATER											
General decommissioning and rehabilitation including water management infrastructure - Construction camps, demolition works, movement of materials and construction equipment	Water Quality	Pollution of surface water resources due to erosion of soils during rainfall events; resultant elevated suspended solids and sedimentation; hydrocarbon spillages	Local and study area if mitigated	Significance	2	1.87	The footprint of disturbed areas will be minimised	Control by limiting disturbed area	Significance	1	0.67
							"No-go" zones will be delineated for construction plant and personnel				
							The storm water management infrastructure will be decommissioned last, if at all, to ensure adequate storm water management during the rehabilitation phase	Control with stormwater management			
				Magnitude - Spatial	3		Servicing of vehicles will take place only in dedicated areas that are equipped with drip trays	Control by limiting disturbed area	Magnitude - Spatial	2	
							Bunded containment and settlement facilities will be provided for hazardous materials, such as fuel and oil				
							Spill-sorb or a similar type product will be kept on site and used to clean up hydrocarbon spills in the event that they should occur	Control with procedure			
							Erosion protection measures will be implemented at steep areas	Stop with erosion protection			
				Magnitude - Temporal	2		A waste management plan will be developed for the decommissioning phase, which will include the handling of contaminated materials / soils found on site	Control with waste management	Magnitude - Temporal	2	
							All traces of hydrocarbons and residual waste will be removed before infrastructure is demolished	Control with removal			
							Contaminated soils will be excavated and placed on the discard facilities prior to their rehabilitation, or removed from site by an appropriately licensed waste contractor. Contaminated soils will be excavated and placed on the discard facilities prior to their rehabilitation, or removed from site by an appropriately licensed waste contractor				
				Probability	4		An appropriate sewage management strategy will be implemented during the decommissioning phase	Control with waste management	Probability	2	
							Water quality monitoring will be undertaken downstream of the construction areas, before and during construction where practical, in order to detect any increase in suspended solids or turbidity	Control with monitoring			
							If erosion is evident, or the water quality monitoring indicates an increase in suspended solids, water management around the decommissioning areas will be reviewed	Control with management adaptation			
Recovery of water levels and possible decant	Water Quality	Pollution of surface water resources due to discharge of contaminated water (this impact was not assessed as an integrated water balance model is yet to be compiled)	Not assessed	Significance	Not assessed		Monitoring of water levels in the mine and the associated water quality. This will allow both calibration of the post mining water quality and water volumes	Control with monitoring	Significance	Not assessed	
				Magnitude - Spatial					Magnitude - Spatial		
				Magnitude - Temporal					Magnitude - Temporal		
				Probability					Probability		
Potential for decant of AMD	Water Quality	Pollution of surface water resources due to discharge of	Not assessed	Significance	Not assessed		Actively manage the water level in the workings to ensure it remains below the decant elevation.	Control with water management	Significance	Not assessed	
				Magnitude - Spatial					Magnitude - Spatial		

ACTIVITY	ASPECTS AFFECTED	POTENTIAL IMPACT	SIZE & SCALE	PRE-MITIGATION	Score	Rating	MITIGATION	MITIGATION TYPE (modify, remedy, control, or stop)	POST-MITIGATION	Score	Rating
		contaminated water (this impact was not assessed as an integrated water balance model is yet to be compiled)		Magnitude - Temporal					Magnitude - Temporal		
				Probability					Probability		
NOISE											
Removal of infrastructure and earthworks and planting of vegetation	Noise	Noise increase in excess of the threshold value for a noise disturbance of 70.0dBA above the ambient noise level at the boundary of the mine footprint and at the abutting residential areas	To be determined at decommissioning	Significance	3	2.13	Demolition activities to be done during the day and/or night time provided that the prevailing ambient noise level at the mine right area will not be exceeded	Control with regulation	Significance	2	1.20
				Magnitude - Spatial	3				Magnitude - Spatial	2	
				Magnitude - Temporal	2		Earthworks and planting of vegetation activities to be done during the day and/or night time provided that the prevailing ambient noise level at the mine right area will not be exceeded		Magnitude - Temporal	2	
				Probability	4				Probability	3	
VISUAL											
Removal of infrastructure; revegetation	Visual	Positive impact on static observers: Decommissioning/dismantling of infrastructure and replacing stockpiled soils over disturbed areas and returning to a natural mimicking topography that can support an alternative end use	To be determined at decommissioning	Significance	4	3.67	Topsoil and vegetate mine impacted areas	Remedy with rehabilitation	Significance	3	2.00
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	4		Ensure that the final landform is free draining		Magnitude - Temporal	4	
				Probability	5				Probability	3	
		Positive impact on dynamic observers: Decommissioning/dismantling of infrastructure and replacing stockpiled soils over disturbed areas and returning to a natural mimicking topography that can support an alternative end use		Significance	3	2.13	Ensure that erosion is avoided	Control with erosion control measures	Significance	3	1.60
				Magnitude - Spatial	3				Magnitude - Spatial	3	
				Magnitude - Temporal	2		Monitor vegetation establishment for at least 2 seasons to ensure effective rehabilitation	Control with monitoring	Magnitude - Temporal	2	
				Probability	4				Probability	3	

19. SUMMARY OF SPECIALIST REPORTS

The table below summarises the recommendations of the specialist studies conducted for the Dispatch Rider Project.

Table 19-1: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Wetlands (Appendix D. 1)	• Mitigation measures proposed are included in Table 18-6 to Table 18-8. • An impact assessment was undertaken, focusing on the proposed underground mining since there is no detailed information or certainty on the location of any other infrastructure, particularly linear infrastructure, in relation to the wetlands. It is only known that infrastructure will be confined to the area designated for infrastructure below the opencast highwall. Therefore, only the underground mining was assessed. • Given the sensitivity, importance, and functionality of the wetlands onsite, and the overall importance of the water resource that they represent in a water-scarce country such as South Africa, the risk of undermining the wetlands should be avoided and mitigated. The revised mining strategy underscores the effective mitigation of certain wetland impacts through strategic design and continuous monitoring. By adhering to these measures, the project can proceed with minimal environmental risk, safeguarding wetland ecosystems throughout its lifecycle. • For the proposed mining activity to be authorised, it is recommended that the stability assessment controls proposed must be implemented and a detailed water management strategy be developed that will adequately address water quality impacts during the operation and closure of the mine, as well as in the long-term post mine closure. • The findings of this report indicate that wetlands overlying the proposed underground mining footprint range from Low to High importance and sensitivity and with the proposed control from recent stability assessment of the underground mining, the proposed undermining of the wetlands will pose a Moderate to low risks to wetlands with controls put in place, as well as a moderate to low risk in terms of long-term water quality impacts to adjacent and downstream wetlands and water resources with the proposed mitigation measures.	X	Sections 18.1 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• With the implementation of mitigation and subsidence control measures, along with adaptive management of the mine plan and the exclusion of high subsidence risk areas, the project does not pose any fatal flaws from a wetland perspective. • Key mitigation measures that should be implemented before the onset of mining are as follows: ◦ Any dirty water containment infrastructure required to contain and facilitate the treatment of dirty water must be provided with a suitable barrier/containment system and placed outside of any wetland habitat. Sufficient capacity must be ensured to prevent the overflow of dirty water into the environment, even during peak flow events. ◦ No contaminated mine water should be allowed to enter any wetlands or rivers and mechanisms. *Sufficient financial provision must be made to ensure the implementation of the water management strategy post-closure for a sufficient duration to prevent any impacts on wetlands after mine closure*.		
Hydropedology (Appendix D. 12)	• The Dispatch Rider project area is dominated by depressions and seep wetlands. There will be no direct loss of wetlands due to the underground mining or infrastructure placement. The underground stability assessment has confirmed that the areas of potential risk are isolated with limited risk. • The assessment shows that if the hanging wall remains intact and the deeper fractured aquifer remains delinked from the shallower weathered and perched aquifers, the impact on the wetlands is anticipated to be insignificant. • For those areas of limited risk, the assessment of the potential impacts followed a conservative approach and assumed that subsidence, sinkholes and cracking could occur. Should subsidence, sinkholes and cracking occur, the lateral flow within the perched aquifer, will be disrupted and ponding within the subsidence may also occur, both of these scenario's will likely result in a loss of water to the downstream wetlands. The cracking will also result in the three aquifers being linked and the dewatering of the aquifers may then impact on the flow of water within the perched aquifer. • As discussed by the wetland specialist in the absence of high-confidence data the impacts cannot be accurately assessed, and precautionary principle should be applied. All impacts to wetlands must be proactively avoided rather than re-actively mitigated (i.e. monitor wetlands for impacts during and after mining and then attempt to mitigate impacts that are picked up). To this end the mitigation measure recommended and agreed with the client is to	X	Sections 18.1 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	remove these areas of isolated limited risk from the mining plan to ensure the risks to the wetland hydropedology is negligible.		
Flora and Fauna (Appendix D. 2)	• It is clear from the regional ecological overview, as well as the baseline data collected to date that the project area is an assembly of different conditions and some that have been altered both historically and presently. • Despite existing impacts, the remaining natural habitats, which include the pans/depressions, other wetlands and natural grassland, exhibit a moderate healthy ecological functionality, integrity and provide habitat for some generalist species. The area also still hosts several SCCs. During the original Prism (2016) report a higher number of fauna and flora species were observed, this could be as a result of them undertaking a dual season and two-year survey as well as a larger study area. The extent of the project area of the Prism study, was larger than the project area for this study, thus contributing to the difference in results and species recorded. • As the small portions of the habitat in the north of the project area is still in a natural state and does function as suitable habitat for a large number of species including SCCs it is imperative that the mitigations be strictly followed and adhered to. • Based on the findings of this report, and the outcomes of the field surveys, it is the opinion of the specialists that the proposed development can be favourably considered. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr).	X	Sections 18.2 and 23 EMPr
Aquatic Ecology (Appendix D. 3)	• The proposed project has the potential to impact the inherent aquatic macroinvertebrate community of the associated pans in a several ways, most notably through loss of hydroperiod (inundation) through the alteration of catchment features, and decrease in the quality of water entering the pans through improper water management. • All mitigation measures proposed by the wetland specialist are deemed relevant and applicable for the protection of aquatic biota within the depressional wetland ecosystems. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr).	X	Sections 18.4 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Soil, land capability and land use (Appendix D. 4)	• The areas that are proposed to be undermined using the Bord and Pillar method of mining on the Dispatch Rider mining project are unlikely to impact on the surface soils and related agricultural operations. The considered and calculated risk is low to negligible. • If the mining method is restricted to Bord and Pillar mining and the depth to mining is greater than 40m below surface, then the risk of impact at surface is considered to be low and additional and more intensive studies of the agricultural potential of the site are not considered necessary. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr). • The underground mining (bord and pillar methods) can proceed without additional impact studies being undertaken.	X	Sections 18.5 and 23 EMPr
Groundwater (Appendix D. 5)	• The groundwater protection based on the Groundwater Quality management Classification is medium for the study area. Therefore, reasonable and sound groundwater protection measures are recommended to ensure that no cumulative pollution affects the aquifer, even in the long term. • The identified impacts are based on the fact that geological structures such as dykes and faults were not included in the modelling due to data constraints and will have a notable influence on inflows into the mine. Additionally, the presence of high-extraction failures will also have a notable influence. Dewatering at Bankfontein Colliery will also likely influence inflows into the underground and must be incorporated into future modelling. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr).	X	Sections 18.6 and 23 EMPr
Surface Water (Appendix D. 6)	• Surface water impacts from the site can be effectively mitigated by applying best practice water management principles. • It is important to note that an integrated water balance as well as detailed storm water management plan are required in order to assess the water management during operations and post closure. The size of the tank required in order to ensure a 2% risk of spill is yet to be determined.	X	Sections 18.7 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• The storage capacity of the existing system still needs to be assessed as to whether it will be sufficient to handle the Dispatch Rider water make over the LOM and post closure. In addition, if water is required to be treated, then the volumes requiring treatment together with the existing treatment plant capacity at MMS would need to be assessed. • The proposed mitigation measures should be revisited once an integrated mine water balance as well as detailed storm water management plan has been compiled that ensures compliance with legislation in terms of the management of both storm water and water affected by planned activities, necessary in order to achieve compliance. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr).		
Noise (Appendix D. 7)	• The proposed development will take place in an area where there are already mining activities. The risk assessment indicated that the current management system will have to be maintained by implementing the recommended acoustic screening measures. • There will be a shift in the immediate noise levels of the proposed activities on a temporary basis during the construction phase and a permanent basis during the operation phase. • The noise intrusion can be controlled by means of approved acoustic screening measures, state of the art equipment, proper noise management principles and compliance to the local noise by-laws and the International Finance Incorporation's Environmental Health and Safety Guidelines. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr).	X	Sections 18.8 and 23 EMPr
Visual (Appendix D. 8)	• The expansion of the underground mining area will not have a visual impact as the mining will take place underground. However, the associated infrastructure on surface as well as the transport of the coal, electricity and water will have a negative visual impact both during construction and operations. This impact will affect dynamic	X	Sections 18.9 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	and static observers and will range from a High impact close to the proposed extension to a Low impact further away. • The baseline conditions around the study area are already impacted by mining and agricultural activities. The visual exposure is high due to flat topography and low vegetative cover. • Mitigation measures should be implemented to limit the impacts from vehicle movements and dust entrainment, but the visual impact from the mining pit, infrastructure and the power lines cannot be avoided. • It is the recommendation of this scientist that the project be approved as the anticipated impacts, although high, are within the norms for a mining development. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr		
Air Quality (Appendix D. 9)	• Based on the prevailing winds, emissions from the operations will be transported mainly towards the west-northwest and southeast. Moderate to fast winds will result in the effective dispersion and dilution of the pollution. • Based on a qualitative assessment of existing air pollution sources in the area, the closest activities around the project are primarily mining activities (predominantly coal) and some agricultural activities, including cultivation of crops and forestry. These activities are likely to result in particulate emissions at a localised scale. Traffic on the national and main roads as well as minor paved and unpaved roads will add to the particulate emissions whereas windblown dust from exposed tilled land could be a significant source of particulate emissions. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Monitoring requirements have been recommended for construction, operation and closure (as given in the EMPr.	X	Sections 18.10 and 23 EMPr
Social Impact (Appendix D. 10)	• The mining activities and associated infrastructure by itself will not introduce new social risks and hazards, but only increase the probability and scale of those already associated with the existing mining activities. • Safety and security impacts, as well as possible health risks can be successfully mitigated from a moderate impact risk class to a low impact risk class.	X	Sections 18.11 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Direct negative impacts on the social environment refer to the possible negative impact on the water quantity of the two key boreholes, namely Main and Second borehole of G & M Farming Enterprises. Any drop in the water levels (quantity) would have significant long-term negative impacts on the farming activities and can in a worst-case scenario result in the termination of farming activities, job losses and subsequent economic impacts. It is thus critical that this aspect be mitigated. This issue thus has to be discussed and be negotiated between the mine and the affected property owner prior to the project being approved. • The overall socio-economic benefits associated with the continuation of the mining activities remain a high positive impact category. However, the mitigation and enhancement measures proposed should be noted as recommendation measures and should be included as part of the EMPr to limit any possible negative impacts. • The use of local labour, if any additional labour would be required, should be maximised as it could assist in mitigating various other social impacts, but would also enhance the potential benefits of the proposed project to the local community members. • Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other similar environments. • The mine should engage the STLM to develop a culture of cooperative support and accountability in order to continue to facilitate and support a variety of socio-economic needs in the area. • Local residents, with the focus on the surrounding landowners and communities, should receive accurate information with regards to the project status, timeframes for construction and other relevant information about issues that could influence their daily living and movement patterns. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8.		
Heritage and Palaeontology (Appendix D. 11	• The surface infrastructure impact areas of the Project have been transformed through previous mining activities and is considered to be of low heritage potential. The nature of the underground mining project also excludes potential impacts on heritage resources on the surface.	X	Sections 18.12 and 23 EMPr

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (MARK WITH AN X WHERE APPLICABLE)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
)	• From a heritage perspective, the project is considered to be viable as long as the recommendations are adhered to and based on approval from SAHRA. • Based on the experience and lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the exposed and weather shales and carbonaceous shales of the Vryheid formation. From a paleontological perspective, the project may go ahead. • Mitigation measures proposed in the report are included in Table 18-6 to Table 18-8. • Implement a chance finds procedure as given in the EMPr.		

20. ENVIRONMENTAL IMPACT STATEMENT

20.1 Summary of the key findings of the environmental impact assessment

The key findings of the environmental impact assessment are provided in **Table 19-1** above.

20.2 Final Site Map

Refer to **Figure 4-2** for an indication of the final site layout.

20.3 Summary of the positive and negative implications and risks of the proposed activity and identified alternatives

A summary of the positive and negative impacts associated with the alternatives is provided in **Table 13-1**. A summary of the highest anticipated impacts of the proposed project after the proposed mitigation measures have been implemented for the operational phase is outlined in **Table 20-1.**

Table 20-1: Highest negative impacts of the Dispatch Rider project (following mitigation)

ASPECT	MAIN IMPACT	RISK RATING
Wetlands	Potential for loss of wetland habitat due to potential subsidence from underground mining activities, if design measures recommended in the stability assessment are not implemented.	2.00
Flora and Fauna	Negative impacts on availability of surface water for fauna due to potential subsidence from underground mining. A change in catchment morphology and resultant modification to surface water baseflow and wetland habitat may occur.	2.00
Aquatic Ecology	Loss of inherent species richness of pans due to loss of periodic inundation if subsidence occur due to underground mining activities..	2.00
Soil, land capability, land use and agricultural potential	Loss of soil resource and utilisation potential due to unprotected overland flow of water and wind erosion; contamination from raw product spillage, reagents and hydrocarbons and storage facilities; operation of haulage route, service corridors and stormwater controls.	1.87
Groundwater	Dewatering of the aquifer resulting in surrounding water users potentially	1.40

ASPECT	MAIN IMPACT	RISK RATING
	experiencing a decrease in available volumes.	
Surface Water	Pollution of surface water resources due to discharge of contaminated water and isolation of the dirty catchment, resulting in a potential reduction in catchment yield on a local scale (immediately downstream of the site).	2.67
Noise	Noise increase in excess of the permissible threshold value of 70.0dBA before a noise disturbance is created at the footprint of the shaft complex, other mining activities and/or the mining right boundary.	1.40
Visual	Visual disturbance to static observers due to ROM transfer area and vehicle movement.	2.67
Air Quality	PM10 and dust will be generated on site due to mining activities and associated infrastructure. Wind erosion from exposed areas (stockpiles, etc.).	1.40
Social	Potential impacts to farming activities.	2.2
Heritage	Damage to the historical structures identified (i.e., ruins, game board engraving), artefacts (i.e., a few Late Stone Age miscellaneous flakes) and graves.	0.67
Palaeontology	Surface activities may impact upon fossil heritage if preserved in the development footprint.	1.60

21. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

The impact management objectives are based on the following:

- Impacts are to be avoided, where possible;
- Where impacts cannot be avoided, it should be reduced and/or controlled to acceptable levels (i.e. national/international acceptable standards);
- If an impact occurs, it should be remedied;

- If an impact cannot be avoided, investigation into offset initiatives will be required.

The EMPr provides details on the implementation of the management measures (as well as roles and responsibilities) required to meet the objectives.

The monitoring and auditing programme (provided in the EMPr) provide an assessment of the success of mitigation measure implementation as well as compliance and allows for continual improvement and remedy.

22. FINAL PROPOSED ALTERNATIVES

The alternatives were described in detail in **Section 8**. The final preferred alternatives are summarised as follows:

- Development area
  - Along the southern border of MMS North.
- Activity / Technology
  - Underground mining of No. 4L, No. 2 and No. 1 seam.
- Design / layout
  - Existing highwall of an old opencast pit will be used to gain access to the underground.
  - Infrastructure area to be developed next to the existing highwall.

23. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

All relevant recommendations from the specialist assessments have been incorporated into the EMPr and should form part of the conditions of authorisation. As noted in **Section 24**, the studies required to fill the knowledge gaps (and therefore aspects where information may be considered insufficient) also have relevance. Considering this, the following additional conditions of authorisation are proposed:

- The mitigation and management measures, as well as the monitoring programme provided in the EMPr must be considered by the Competent Authority (CA) as conditions for authorisation and must be implemented and adhered to.
- The proposed Dispatch Rider mining project may not proceed until all required authorisations, permits and licences have been granted.
- Seriti may not alter the proposed infrastructure or footprint of the mine plan without obtaining the required environmental authorisation(s).
- Appointment of an Environmental Control Officer (ECO) must occur, to monitor the environmental compliance of construction and operational activities.
- Environmental monitoring must be undertaken as per the monitoring programme included in the EMPr and the reports must be submitted to the CAs as per the EMPr recommendations and the conditions in the EA and WUL.
- If environmental incidents occur, and are deemed significant by a risk assessment, these should be rectified immediately and the CAs be notified.
- The possible groundwater impact on the surrounding boreholes and farming activities should be discussed and be negotiated between the mine and the affected property owner prior to the project being approved.

- All acoustic screening measures must be in place before commissioning the Dispatch Rider mining project.
- All noise sources at the different mining areas to be identified and registered.
- From a heritage perspective the project is considered to be viable as long as the above recommendations are adhered to and based on approval from SAHRA.
- A heritage and palaeontology chance find procedure should be implemented for the project.
- A grave management plan must be compiled and implemented for the cemeteries in the project area.
- The proposed water management measures during operations and closure should be assessed as part of the overall water balance for the mine to confirm if adequate capacity is available for the management and treatment of mine impacted water.
- A detailed storm water management plan should be developed and integrated into the overall stormwater management plan for the mine.
- If water is required to be treated, the volumes requiring treatment and the existing treatment plant capacity at MMS must be assessed.
- Mitigation measures provided in the surface water report should be revisited once an integrated mine water balance as well as detailed storm water management plan has been compiled that ensures compliance with legislation in terms of the management of both storm water and water affected by planned activities, necessary in order to achieve compliance.

24. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The assumptions and limitations as considered by the various specialists and by the EAP are provided in **Table 24-1**.

Table 24-1: Assumptions and limitations of the Dispatch Rider Project

ASPECT	ASSUMPTIONS AND LIMITATIONS
General	• A third-party review of rock engineering design aspects for the Dispatch Rider Project was compiled in May 2024 by Saxum Mining (Saxum Mining, 2024). The outcome of relevance to this report is that no clear fatal flaw was identified in the latest mine design and layouts, with the exception of a few, isolated areas that have a possible, limited risk. Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk. Therefore, impacts due to subsidence are not applicable and have not been assessed in this report. Where specialist reports have not been updated with these findings, the findings within their reports (i.e. impact ratings) related to subsidence have been adjusted by the EAP. Mitigation measures related to subsidence have been included in this report, as good practice must be implemented for the areas that will be mined.
Wetlands	• Wetland systems reflect the ecological boundary where there is a close relation and interaction between water content and soil particles in the first 50 cm of the soil profile. The soil-water interaction in response influences the plant communities and soil properties, i.e. causing mottling and gleying in the soil. The wetland boundary, based on vegetation species composition and soil properties, can vary depending on historical rainfall conditions and introduce a degree of variability in the wetland boundary between years as well as sampling periods. • The scale of the remote imagery used (1:10 000 aerial photographs and Google Earth Imagery), as well as the accuracy of the handheld GPS unit used to delineate wetlands in the field, result in the delineated wetland boundaries being accurate to approximately 10-20m on the ground. Should greater mapping accuracy be required, the wetlands would need to be pegged in the field and surveyed using conventional survey techniques. • Natural reference conditions of the wetlands are unknown. This limits the confidence with which the present ecological category (PES) is assigned. • An impact assessment was undertaken, focusing on the proposed underground mining since there is no detailed information or certainty on the location of any other infrastructure, particularly linear infrastructure, in relation to the wetlands. It is only known that infrastructure will be confined to the area designated for infrastructure below the opencast highwall. Therefore, only the underground mining was assessed. However, if the feasibility phase reveals direct or indirect impacts, particularly for linear infrastructure, where no information is currently available, a wetland impact assessment may be required.
Hydropedology	• A third-party review of the rock engineering aspects for the Dispatch Rider Project was completed (Saxum Mining, 2024) and found no clear fatal flaw with the mine design and layout plan, with the exception of a few isolated areas of limited risk. This assessment is limited to a basic understanding of the potential impacts, the impacts have not been quantified through detailed modelling. • The background soil assessment was undertaken using the old soil classification system and has not yet included the new soil classification system families. To this end the soil families were matched with the van Tol and Le Roux 2019 hydropedological groupings to ensure alignment with the study. • The hydropedology assessment was undertaken by internal J&W soils and wetland specialists. Although undertaken prior to the publication of the most recent hydropedology guidelines (van Tol et al., 2023), the scope undertaken covered a Basic Hydropedology assessment as per the Hydropedological Assessment Guidelines (van Tol et al., 2023). • For the basic understanding two scenarios have been assessed. For these scenarios, the following assumptions have been made ◦ Scenario 1 – Hanging Wall Intact The hanging wall will remain intact and therefore no subsidence or sinkholes will occur and no loss of water to the wetlands due to the dewatering of the underground workings.

ASPECT	ASSUMPTIONS AND LIMITATIONS
	◦ Scenario 2 – Sinkholes and subsidence This scenario assesses the worst-case scenario where all the roofs have collapsed, and the sinkhole/cracks drain the water from the perched aquifer. The sinkholes, subsidence and cracking will result in both an alteration of the surface topography of the wetlands (areas of subsidence) and impact on the hydrological flow drivers of the wetlands.
Flora and fauna	• As per the scope of work, the fieldwork component of the assessment comprised of one assessment only, which was conducted during the dry season since it is an update to the previous assessment done in 2016. • This study has not assessed any temporal trends for the respective seasons. • It is assumed that the best practice and guidelines will be followed for underground mining activities, thus no subsidence is expected and thus no associated impacts have been assessed intensively. • Despite these limitations, a comprehensive desktop study was conducted, in conjunction with the detailed results from the surveys, and as such there is a high confidence in the information provided.
Aquatic Ecology	• Information contained within this report is based on a single field survey conducted following good rainfall within the area and does not account for the full range of biodiversity associated with each system. Instead, the study sought to characterise each pan in relation to each other during a single moment in time and establish baseline conditions against which future monitoring of potential impacts can be compared. • Most development impacts are indirect, subtle, and cumulative or unfold over several years following construction or commencement of mining. Whilst a possible mechanism for an impact to occur can usually be identified, the actual likelihood of occurrence and its severity are much harder to describe. • It should be further understood that while the present study was conducted independent of the wetland specialist study conducted for the project by Wetland Consulting Services, it should be seen as complementary to the study. • The heterogenous distribution of benthic macroinvertebrates within the water resource is a major limitation as this results in both spatial and temporal variability within the collected macroinvertebrates assemblages.
Soil, land capability and land use	• It has been assumed that the total area of possible disturbance was included in the area of study, that the mining plan as tabled, has documented and catered for all actions and activities that could potentially have an impact on the soils and land capability, and that the recommendations made and impact ratings tabled will be re-assessed if the development plan changes. • Limitations to the accuracy of the pedological mapping (as recognised within the pedological industry) are accepted at between 50% (reconnaissance mapping) and 80% (detailed mapping), while the degree of certainty for the soils physical and chemical (analytical data) results has been based on "composite" samples taken from the dominant soil types mapped in the study area. • The area in question has been mapped on a comprehensive reconnaissance base, the degree and intensity of mapping and geochemical sampling being considered and measured based on the complexity of the soils noted in field during the field mapping, and the interplay of geomorphological aspects (ground roughness, slope, aspect and geology etc.).

ASPECT	ASSUMPTIONS AND LIMITATIONS
Hydrogeology	• Specific assumptions related to the available field data include: ◦ The top of the aquifer is represented by the generated groundwater heads; ◦ The available geological / hydrogeological information was used to describe the different aquifers. The available information on the geology and field tests is considered as correct. ◦ Certain aquifer parameters have not been determined in the field and therefore have to be estimated • A numerical groundwater model is a representation of the real system. It is therefore, at best, an approximation and the level of accuracy depends 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. • A major limitation of the model is the lack of incorporation of Bankfontein Colliery and Goedehoop North Colliery. These mines are likely to have a notable influence on the expected inflow volumes to the Dispatch Rider underground and data from these mines should be incorporated, if at all possible, in future model updates. • The hanging wall stability analyses for Dispatch Rider were provided but not incorporated into the existing model. The reason for this is that the Saxum Mining Hanging Wall Stability Analysis Review Report (STP 2401-1065) indicated that the critical beam thickness to prevent subsidence, is sufficient above the No. 4 Seam and No. 2 Seam underground mining areas. Therefore, hanging wall subsidence and failure is not expected during- or post-mining, and the model results, therefore, remain unchanged.
Surface Water	• Final design and locations of infrastructure and water management measures have still to be completed. The adequacy of the measures detailed in this document has to be reviewed in the final designs and licensed as needed. • The integrated water balance as well as detailed storm water management plan is yet to be compiled. Monitoring of inflows, water use volumes and sump/tank water levels will be an important input to the water balance model and to ensuring that the risks associated with the water management system are adequately defined. • The final land use for the site is not certain at this stage. This may influence the rehabilitation strategy. • The water balance model and final water qualities are yet to be assessed. These will need to be assessed over the life of mine. The final land use for the site is not certain at this stage. The required post closure water management measures and monitoring may be influenced by the final land use.
Noise	• Prevailing ambient noise levels for the study area was created by far and near noise sources associated with traffic, mining activities and seasonal agricultural activities with the result that prevailing ambient noise levels may change at times. • Noise measurements in presence of winds in excess of 3.0 m/s may impact the outcome of environmental noise results. • Identification of noise measuring points may create a problem in terms of prevailing noise levels should it not be done with outmost care4 and in a scientific manner. • The influx of traffic into an area will influence prevailing ambient noise levels and should be considered during the impact assessment process. • Insect noise may inflate prevailing ambient noise levels during summer whereas prevailing ambient noise during winter may be lower.

ASPECT	ASSUMPTIONS AND LIMITATIONS
	• There will be no ventilation shafts in the underground section. • Coal will be transported from the coal transfer area at Dispatch Rider section along a gravel haul road (4 500 m to the west) to the processing plant.
Visual	• Information regarding the position of the proposed infrastructure was received from the client and J&W is not responsible for the accuracy of the data. • The powerline was assumed to be of a similar height and design as the current structures on site.
Air Quality	• Site-specific meteorological data was available from previous studies. • Archived measurements for January 2021 to January 2022 from the Mpumalanga Province Middelburg Air Quality Monitoring (AQM) and DFFE Middelburg Air Quality Monitoring Stations were analysed to establish background conditions. The monitoring stations are approximately 23 km from the study site and are thus deemed representative for the study area. It must be noted that the Middelburg AQM Stations are data deficient in some instances and data was only available as indicated in the specific data sets. • Additional information may become known or available during a later stage, which could not have been allowed for at the time of the study. • Technical and other information provided by the client is assumed to be correct. • Individuals view possible social impacts differently due to their association with the anticipated impact. Impacts could therefore be perceived and rated differently than those contained in the SIA Report.
Socio-economic	• The identified impacts are based on existing baseline information. There is always an uncertainty with regards to the anticipated impact actually occurring, as well as the intensity thereof. Impact predictions have been made as accurately as possible based on the information available at the time of the study. • The SIA relied on the information received during the EIA process. Sources consulted are not exhaustive and additional information can still come to the fore to influence the contents, findings, ratings and conclusions made, as the public participation process for the project should still commence. • Demographic information was dependent on statistics from StatsSA, as well as municipal documentation. The initial information was based on 2011 statistics, and as part of the updating of the baseline description in 2019, more recent statistics (where available) were included. Statistical information obtained from the Community Survey of 2016 were used for municipal, district and provincial level. The Community Survey of 2016 did not include ward-based statistics. Statistical information applicable to the wards still rely on the 2011 statistics.
Heritage	• Due to the fact that most cultural remains may occur below surface and low archaeological visibility, the possibility exists that some features or artefacts may not have been discovered / recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. • Only the surface infrastructure footprint area and open cast extension areas were assessed as indicated in the location map, and not the entire farms. • This study was a high level scan only as the survey was hindered by access restriction as well as poor visibility due to dense vegetation in the impact area. It is assumed that the results of the de Jon study are accurate and applicable to this study. • The surface impact areas in the Dispatch area were not available at the time of study. • It is possible that new information, which could change the recommendations, could come to light through the following:

ASPECT	ASSUMPTIONS AND LIMITATIONS
	• Exposure of archaeological and historical sites and objects that are hidden or are buried during site clearance activities; and • Exposure of hidden archaeological and historical sites and objects (obscured by tall grass etc.) • Although the area was surveyed as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as graves, stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.
Palaeontology	• Based on geology of the area and the palaeontological record, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and do contain fossil plant, insect, and invertebrate material. • The exposed and weathered shales and carbonaceous shales would not preserve fossils.

25. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

25.1 Reasons why the activity should be authorised or not

An impact assessment was undertaken, supported by relevant specialist studies to determine the impact of the proposed infrastructure and mining development on the environment.

The proposed Dispatch Rider Project will have an impact on the environment and therefore, mitigation, management and monitoring measures are required.

All significant impacts have been identified and sufficient mitigation, management and monitoring measures have been prescribed, as follows:

Many impacts rated as HIGH or MODERATE during the construction and operational phases can be mitigated to MODERATE or LOW if the prescribed mitigation measures are implemented.

There were a number of impacts that were still rated as HIGH in the specialist assessments, with the implementation of mitigation measures. These included the visual disturbance to static observers due to construction and operational activities, and potential loss of inherent species richness of pans due to loss of periodic inundation during operational activities. These specialist assessments were not updated to include the updated project description and outcomes of the stability assessment. The rating from the visual specialist can be assumed to be worst-case scenarios as the assessment included the ROM stockpiles. However, the ROM stockpiles were removed from the proposed infrastructure, and replaced with a coal transfer area[6]. The rating from the aquatic specialist in terms of loss of species richness can also be assumed to be a worst-case scenario[7], as the assessment did not take into account the updated project description which included the removal of pipelines which were located in the vicinity of the identified pans and the findings of the stability assessment which were as follows:

- No clear fatal flaw was identified in the latest mine design and layouts, with the exception of a few, isolated areas that have a possible, limited risk.
- Seriti has committed to excluding these areas from the mine plan in order to mitigate the risk.

Considering the changes to infrastructure and findings of the stability assessment post-specialist report compilation, these impacts are no longer rated as high.

A number of positive socio-economic impacts are expected as a result of construction and operational activities including employment opportunities, local procurement, increased business support within the local area, and capacity building.

Following the LOM, the decommissioning and closure of the mine will have a positive impact on soils, land capability and land use, and on visual observers as a result of rehabilitation activities.

[6] The EAP has adjusted the impact ratings based on the infrastructure revision, where appropriate.
[7] The EAP has adjusted the impact ratings based on the findings of the stability assessment, where appropriate.

25.2 Conditions that must be included in the authorisation

Based on the outcome of the Scoping and EIAr process, it is proposed that the Competent Authority include the conditions listed in **Section 23** in the authorisation, should the project be approved.

25.3 Specific conditions to be included into the compilation and approval of EMPr

Mitigation measures and monitoring requirements as recommended by the specialists have been incorporated into the EMPr.

Stakeholder engagement must be maintained during all project phases.

25.4 Rehabilitation requirements

The current planned sustainable end-state of the Dispatch Rider operations is to implement the closure objectives as per the Closure Costing report (J&W, 2024d) (**APPENDIX F**). These objectives include rehabilitation objectives. Rehabilitation costing for the Dispatch Rider Project is provided in **APPENDIX F.**

26. FINANCIAL PROVISION

Please refer to **APPENDIX F** for the Closure Costing report for Dispatch Rider. **Table 26-1** summarises the closure cost calculations for the Dispatch Rider Project.

The Mineral and Petroleum Resources Development Act (MPRDA), (Act No. 28 of 2002) came into effect on 1 May 2004. Financial provision for environmental rehabilitation and closure requirements of mining operations formed an integral part of the MPRDA, (as was also the case with the repealed Minerals Act, Act 50 of 1991).

Section 41 of the MPRDA and regulations 53 and 54 promulgated in terms of the MPRDA in 2004 dealt with financial provision for mine rehabilitation, management and remediation of negative environmental impacts (DMRE, 2004). The holder of a right, as described in the relevant sections of the MPRDA and its regulations, was required to provide the Department of Mineral Resources and Energy (DMRE) with cost estimates for the:

- Pre-mature closure of a mine,
- Decommissioning and final closure of the operation, and
- Post closure management of latent and residual environmental impacts (DMRE, 2004).

To assist the mines and the DMRE in developing cost estimates, the DMRE developed the “Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine” in 2005 (DMR, 2005), which was widely used by the mining industry.

With the implementation of the One Environmental System and the amendments to the NEMA to ensure that all activities, which may have a negative impact on the environment, are all controlled under the same system and treated in a similar manner, the DEA promulgated in November 2015 GNR 1147 “Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations” under the provisions of the NEMA (DEA, 2015a).

GNR 1147 requires of a prospecting, exploration, mining or production rights holder to, on an annual basis, determine the financial provision through a detailed itemisation of all activities and costs. As part of the transitional arrangements to the new regulations, existing mining rights holders were exempted from the requirements of the regulations. The deadline for submission has been extended several times since 2015, with the latest extension (Feb 2024) in GN 4296 extending the deadline indefinitely.

The Dispatch Rider mining area is being incorporated into the existing mining right for the Middelburg Mines (MP 30/5/1/2/2/379 MR) subject to the S102. As the mining right is currently exempt from compliance to the NEMA R1147, the closure costing for the right has been determined based on the MPRDA requirements. In order to align with the current approach, the cost estimate for the final rehabilitation, decommissioning and closure of the underground operations at Dispatch Rider is outlined based on the requirements of the MPRDA.

26.1 Explain how the aforesaid amount was derived

The closure cost estimate was based on the DMRE's Quantum for Closure (DMRE, 2005) method. This methodology is detailed below.

The level of information available or Dispatch Rider underground mining project can be considered limited, a detailed Closure Plan is not yet available, and a detailed breakdown of the costs envisaged for rehabilitation and closure has not yet been signed off by a competent person. The master rates will be escalated for the Level 2 "Rules-based" assessment of the quantum. The DMR's Quantum for Closure Level 2 "Rules-based" approach is summarized as follows (obtained from the DMR's Quantum for Closure, 2005, Table B.2):

- Step 1 - Determine mineral mined and saleable by-products
- Step 2A - Determine primary risk class (A,B or C)
- Step 3 – Determine environmental sensitivity of mine area (low, medium or high)
- Step 4.1 – Determine level of information available (extensive or limited)
- Step 4.2 – Identify closure components
- Step 4.3 – Identify unit rates for closure components
- Step 4.4 – Identify and apply weighting factors
- Step 4.5 – Identify areas of disturbance
- Step 4.6 – Identify closure costs from specialist studies
- Step 4.7 – Calculate closure costs

The above-mentioned approach was used to determine the Life-of-Mine closure quantum.

The guideline provides details on closure components methodologies and defines a Master Rate for each closure component which was based on the "generally accepted closure methods". The Master Rate is then multiplied by a factor as well as various weighting factors, depending on the risk class category of the mine.

A list of assumptions used in this calculation is provided in Appendix A of the closure costing report.

26.2 Confirm that this amount can be provided for from operating expenditure

Seriti hereby confirms that the closure costing amount can be provided for and proof thereof has been included in **APPENDIX F.**

Table 26-1: Dispatch Rider Quantum for Closure (J&W, 2024d)

CALCULATION OF THE QUANTUM							
Mine:	Dispatch Rider			**Location:**	-25.988218°S; 29.403425°E		
Evaluators:	Adriaan Oosthuizen			**Date:**	19/07/2024		
No	**Description**	**Unit**	**A Quantity**	**B Master rate (escalated to May 24)**	**C Multiplication factor**	**D Weighting factor 1**	**E=A*B*C*D Amount (rands)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m3	100 700	R 20.18	1	1.1	R 2 235 338.60
2(A)	Demolition of steel buildings and structures	m2	1 000	R 276.79	1	1.1	R 304 469.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	2 000	R 407.89	1	1.1	R 897 358.00
3	Rehabilitation of access roads	m2	5 000	R 49.54	1	1.1	R 272 470.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	-	R 480.73	1	1.1	R -
4(B)	Demolition and rehabilitation of non-electrified railway lines	m	-	R 262.22	1	1.1	R -
5	Demolition of housing and/or administration facilities	m2	600	R 553.56	1	1.1	R 365 349.60
6	Opencast rehabilitation including final voids and ramps	ha	12	R 281 734.66	0.55	1.1	R 2 045 393.63
7	Sealing of shafts, adits and inclines	m3	2 000	R 148.59	1	1.1	R 326 898.00
8(A)	Rehabilitation of overburden and spoils	ha		R 193 455.86	1	1.1	R -
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	-	R 240 945.78	1	1.1	R -
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	-	R 699 820.74	0.8	1.1	R -
9	Rehabilitation of subsided areas	ha		R 161 990.15	1	1.1	R -
10	General surface rehabilitation	ha	48	R 153 249.67	1	1.1	R 8 091 582.58
11	River diversions	ha	-	R 153 249.67	1	1.1	R -
12	Fencing	m	4 300	R 174.81	1	1.1	R 826 851.30
13	Water management	ha	-	R 58 269.84	0.67	1.1	R -
14	2 to 3 years of maintenance and aftercare	ha	180	R 20 394.45	1	1.1	R 4 038 101.10
15 (A)	Specialist study	Sum	1	R 6 800 000.00	1	1	R 6 800 000.00
15 (B)	Specialist study	Sum	-	R -	1	1	R -
Sub Total 1 (Sum of items 1 to 15 above)							**R 26 203 811.81**
1	Preliminary and General	12% of Subtotal 1			**Weighting factor 2 (Step 4.4)**		1.05
							R 3 301 680.29
Sub Total 2 (Subtotal 1 plus sum of management)							R 29 505 492.10
2	Contingency	10.0% of Subtotal 1					R 2 620 381.18
Sub Total 3 (Subtotal 2 plus contingency)							R 32 125 873.28
VAT (15%)							R 4 818 880.99
TOTAL (including VAT)							**R 36 944 754.27**

27. DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY

27.1 Deviations from the methodology used in determining the significance of potential environmental impacts and risks

The methodology used in determining the significance of potential environmental impacts and risks is described in **Section 12**.

27.2 Motivation for the deviation

There were no deviations from the methodology as detailed in the Scoping Report.

28. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

28.1 Compliance with the provisions of sections 24(4) (a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the following:-

28.1.1 Impact on the socio-economic conditions of any directly affected person

An assessment of the socio-economic impacts associated with the proposed infrastructure development was undertaken and is attached under **APPENDIX D.** A summary of this report is provided in **Sections 10.1.1.11** and **18.11**.

28.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

An assessment of the heritage impacts associated with the proposed infrastructure development was undertaken and is attached under **APPENDIX D**. A summary of the Heritage Assessment report is provided in **Sections 10.1.1.15** and **18.12**.

28.2 Requirements from the Competent Authority in accepting the Scoping Report

The Scoping Report and Plan of Study for the EIA Phase were accepted by the DMRE in March 2024. Specific requirements for the submission of the EIAr and EMPr are listed below:

- All activities to be undertaken on site must be described and the impacts that they will have on the physical, biological, social, economic and cultural aspects of the environment must be assessed.
- A description of the impact management objectives, including management statements identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the EIA process for all phases of the development and the method of monitoring of the implementation of the impact management actions.
- Feasible and reasonable alternatives based on the different types/categories of alternatives must be identified and assessed, so that the Department can be able to make an informed decision.

- PPP must be transparent and all comments received during the process must be incorporated into the CRR of the Final Environmental Impact Assessment report (Final EIAr).
- Proof of correspondence with the various stakeholders must be included in the EIAr. Should you be unable to obtain comments, proof of the attempts that were made to obtain comments should be submitted to the Department.
- All comments from I&APs must be adequately addressed in the Final EIAr.
- For linear activities such as roads and pipelines, a description of the coordinates of the corridor in which the proposed activities are to be undertaken must be provided. The impacts of these linear activities must be thoroughly assessed.
- A motivation for the need and desirability of the project must be included.
- The applicant is hereby reminded to comply with the requirements of Regulation 3 of the EIA Regulations, 2014 with regards to the time period allowed for complying with the requirements of the Regulations.
- Please ensure the EIAr includes the A3 size locality maps of the area and illustrate the exact location of the proposed development. The maps must be of acceptable quality and as a minimum, have the following attributes:
  - Maps are relatable to one another;
  - Co-ordinates;
  - Legible legends;
  - Indicate alternatives;
  - Scale; and
  - Vegetation types of the study area.

29. OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT

Alternatives were considered as part of the investigation as described in **Section 8**.

30. UNDERTAKING

The EAP herewith confirms

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

the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒

____

Signature of the EAP

DATE: 27/08/2024

31. REFERENCES

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Jacqui Hex
(Reg EAP, EAPASA; PriSciNat)
for Jones & Wagener

28 August 2024
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APPENDIX A

QUALIFICATION AND CV OF EAPS

Jacqui Hex

TECHNICAL DIRECTOR - HOD (Pr SciNat, Reg EAP)

Jacqui Hex completed her MSc in Environmental Management (cum laude) in 2006. She has 15+ years experience as an Environmental Scientist and is the HoD of the Env. Man. Department. Jacqui is responsible for the Health & Safety portfolio at J&W, ensuring the company achieves its first priority, which is the safety and wellbeing of their staff, families, and the community as a whole. Jacqui also serves as an EAPASA Board Member since 2017. Email: jacqui@jaws.co.za

KEY SKILLS

Environmental Regulatory Processes

Mine Closure Applications

ECO and Environmental Auditing

EDUCATION

MSc, UJ, 2006

BSc Hons, UJ, 2005

BSc, Rand Afrikaans Unv, 2004

PROF. REGISTRATION STATUS

PrNatSci (SACNASP) (400374/11)

Reg EAP (EAPASA) (2017/108)

EMPLOYMENT HISTORY

Jones & Wagener Int (2019 to date)

Jones & Wagener (2011-date)

Zitholele Consulting (2007-2011)

Univ of Johannesburg (2005-2006)

INDUSTRY INVOLVEMENT

EAPASA (2017 to date)
Board Member & Assessor (2017/108)

IAIAsa (2007 to date)
Member (2395)

SACNASP (2011 to date)
Member (400374/11)

Relevant Experience

Overall Experience

Jacqui's work experience in the Environmental Sector commenced in 2007. Her skills range from brownfields to greenfields sites and mine closure coordination. She has gained significant experience with:

- Environmental Regulatory Processes including EIAs and BAs
- Environmental Management Programs (NEMA) and Environmental Management Programs Reports (MPRDA)
- Water Use Licence Applications (WULAs), Integrated Water and Waste Management Plans (IWWMPs) and Waste Management Licence Applications (WMLAs).

Jacqui also undertakes Environmental Auditing, Environmental Control Officer (ECO) services, Pre-Feasibility and Feasibility Studies, Public Participation, GIS, Screening Assessments and Closure Reporting.

Auditing

Jacqui has led and conducted audits on various sites including waste disposal sites and mining sites. She has audited WMLs, EAs, WULs, EMPs. For these projects she is responsible from cradle to grave, i.e. proposal compilation, contractual arrangements, proforma development, info gathering, report compilation and client liaison. Jacqui has also undertaken monthly site supervision for the extension of a landfill site in Vereeniging. Some project examples include:

- Ashanti Gold - Auditing of Waste Disposal Sites, Carletonville.
- Emfuleni Local Municipality - Auditing of Boitshepi Waste Disposal Site, Vereeniging
- Rand Water - Auditing of Zuikerbosch Bank Stabilization Project along the Vaal River - Vereeniging.
- Glencore - ECO Component of the Impunzi Dragline Relocation Project - Mpumalanga.

Waste Management

Jacqui's experience in waste management started in 2007. Since then she has gained significant experience with legal reviews, cemetery master plans, site selection, licensing and strategy development. The following list of projects in the last few years in Jacqui's professional career involves various aspects of the above mentioned:

- Anglo Gold - Site selection process for a proposed new Tailings Facility in Guinea & Ghana
- Department of Environmental Affairs and Development Planning (DEADP) – Strategy for the diversion of Household Hazardous Waste to Landfill or Recycling Facility, Western Cape.
- Emfuleni Local Municipality – Cemetery Master Plan, Vanderbijlpark.
- Eskom – Strategy for the diversion of CFL's from the general waste stream and specific reference to recycling and material reclamation, Western Cape
- GDARD - Gauteng Waste Collection Standards, Gauteng.

Jones & Wagener
Engineering & Environmental Consultants

Jacqui Hex

Technical Director - HOD - (Pr SciNat, Reg EAP)

Relevant Experience

Water Use Licences

The following list of projects in the last few years in Jacqui's professional career involves various aspects of Water Use Licensing:

- Anglo American – Application for exemption from GN704 for horizontal prospecting – Kriel Colliery Block 7 Underground, Kriel, Mpumalanga.
- Anglo American – IWULA for a new Beneficiation Plant for the Kriel Lifex Projects, Kriel, Mpumalanga.
- Anglo American – IWULA for a new Block F underground mine for the Kriel Lifex Projects.
- Anglo American – IWULA for a new opencast mining of pit 11 and 13 and mini-pits for the Kriel Lifex Projects
- Kuyasa Mining (Pty) Ltd – IWULA for the new KiPower IPP Power Plant and Ash Facility, Delmas, Mpumalanga.
- Sasol - Integrated Water and Waste Management Plan for Sasol Operations, Sasolburg.
- Union Carbide – IWULA for a new water treatment plant, Verulam, Kwa-Zulu Natal.
- Xstrata Coal South Africa – IWULA for all infrastructure for new opencast pillar mining at ATCOM East, iMpunzi Complex, Mpumalanga.
- Xstrata Coal South Africa - IWULA for mining through wetlands at ATCOM East, iMpunzi Complex, Mpumalanga.

Integrated Regulatory Processes

Jacqui has several years experience in integrated regulatory processes where projects required an EIA / BA together with a WUL or WML or other approvals. Some examples of such projects include:

- BHP Billiton Energy Coal South Africa (BECSA) – EIA, WML, WULA and EMPR amendment for the proposed Middelburg Water Reclamation Project (Water Treatment Plant), Middelburg, Mpumalanga.
- Era Bricks - EIA, S102 application for amendment to mining right and IWULA for brick making quarry, Delmas, Mpumalanga.
- Enertrag - Several EIAs, WULA and AEL for Green Hydrogen, Green Ammonia Plants and Solar and Wind Energy Farms, Northern Cape.
- Sasol Mining - EIA, WML and IWULA for proposed new Alexander greenfields coal mine, Mpumalanga.
- South32 – EIA, WULA and EMPR amendment for the proposed extension of Klipfontein Mines, Middelburg, Mpumalanga.
- Xstrata Coal South Africa – Scoping and EMPR for a new mining right application for proposed new board and pillar mine on portions of Boschmanspoort, Hendrina, Mpumalanga.
- Kuyasa Mining - KiPower IPP Project - EIA, IWULA and IWWMP, Delmas, Mpumalanga.

Other Environmental Projects

Jacqui's experience is broad and also includes projects as listed below:

- Sasol Mining - Closure reporting for Sasol active mines in terms of GNR1147.
- Anglo America Thermal Coal - Environmental due diligence for Project Kabeljou, Environmental Consultant, Data Collection and Review, Report Compilation – Confidential.
- Nkomati - Lead mine closure specialist. Planning and coordination for closure of the Nickel Mine, Mpumalanga
- Eskom – Aquatic Monitoring for the Kusile Power Station Construction Site, Mpumalanga.
- Eskom – EIA for the proposed construction and operation of the Kappa Substation, Ceres, Western Cape.
- Eskom – Five EIAs for the Bravo (Kusile) Integration Project (various 400kV transmission lines), Gauteng and Mpumalanga.
- Eskom – EIA for the 360km 765kV powerline between Camden and Empangeni, Mpumalanga and KZN.
- Eskom – Search and Rescue of Rare and Endangered Plant Species along the proposed pipeline from Kendal Power Station to Kusile Power Station, Mpumalanga.
- Present lectures on environmental legislation - University of Pretoria – Pretoria, Gauteng.
- Roadshows across South Africa to educate and inform EAPs of the EAPASA registration system.

10/06/2022

Signature **Date**

Environmental Assessment Practitioners Association of South Africa

Registration No. 2017/108

Herewith certifies that

Jacqui Hex

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

Registrar

SAQA

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Jacqueline Sharon Hex

Registration Number: 400374/11

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **31 August 2011** Expires **31 March 2024**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

Gina Martin

Technical Director (PrSciNat; Registered EAP)

Gina has been working at Jones & Wagener since 2012, where she is a Technical Director in the Environmental Management Department. With 11+ years of experience, her skills include managing and conducting Environmental Authorisation and licensing processes, site selections, ECO work, and audits for companies in the mining, construction, chemical, power generation and waste management industries. Email: gina@jaws.co.za

KEY SKILLS

Integrated Regulatory Processes

Site Selections & GIS Screening

Environmental Audits & ECO work

EDUCATION

PGCE, WITS, 2012

BSc (Hons) Geography, WITS, 2011

BSc Geog. & Ecology, WITS, 2010

PROF. REGISTRATION STATUS

SACNASP PrSciNat (117341)

EAPASA Reg EAP (2019/775)

EMPLOYMENT HISTORY

Jones & Wagener (2012 to date)

Thandulwazi Maths & Science Academy (2012)

Parktown Girls High (2011)

INDUSTRY INVOLVEMENT

IAIAsa (2013 to date)

Member (3373)

WISA (2022 to date)

GP Branch Committee & Member

EAPASA (2020 to date)

Reg EAP and Assessor

Relevant Experience

Integrated Regulatory Processes

Gina’s experience in Integrated Regulatory Processes started in 2012. Since then, she has gained significant experience and her skills include undertaking MRAs, BAs, EIAs, EMPrs, WULAs, WMLAs, IWWMPs as well as the project management of such processes. The following select list of projects in Gina's professional career involves various aspects of the above mentioned:

- Glencore, Rhovan in-pit deposition of tailings, South Africa - in progress
- Seriti, Middelburg Water Reclamation Plant module and pipeline to Skietbaan Reservoir - in progress
- Mainstream, Tutuka Solar Energy Facility cluster and gridlines, South Africa - in progress
- Glencore, Rhovan TSF height increase and decommissioning, South Africa - in progress
- Sasol Mining, Alexander Mining Project, South Africa - in progress
- UCSA, Waste facility rehabilitation, South Africa - 2022
- Dow Agrisciences, Water treatment facility, South Africa - 2018
- Sibanye-Stillwater, Cessation of pumping operations, South Africa - 2017
- Sun International, Decommissioning landfill site, South Africa - 2017
- South32, Klipfontein opencast operations extension, South Africa - 2016
- Xstrata, Greenfields board and pillar mine South Africa - 2013

Environmental Audits and ECO work

Gina’s experience in auditing and as an Environmental Control Officer started in 2015. She has also conducted numerous audits of WULs, EMPrs, EAs and WMLs for the waste and mining industries. Since the publication of the GISTM Standard, Gina has also undertaken GISTM Conformance Audits for Tailings Storage Facilities’ disclosure requirements. The following list of projects are examples of the above mentioned:

- African Rainbow Minerals, GISTM conformance audits for Tailings Storage Facilities (Bokoni), South Africa - in progress
- Assmang, GISTM conformance audits for Tailings Storage Facilities (Khumani), South Africa - 2023
- African Rainbow Minerals, GISTM conformance audits for Tailings Storage Facilities (Modikwa, Nkomati, Two Rivers, South Africa - 2023
- Glencore, ECO for dragline relocations, South Africa - 2015, 2019, 2023
- Lonmin/Sibanye-Stillwater, Waste Management Facility Annual Audits, South Africa - 2015-2022
- Sasol Mining, Annual Water Use Licence Audits, South Africa - 2018, 2019, 2021
- Sasol Mining, Annual EMPR Audits, South Africa - 2018, 2021
- Confidential, Inspection for compliance with National Norms and Standards, South Africa - 2018

GMartin

Signature

16/05/2024

Date

Gina Martin
Technical Director

Jones & Wagener
Engineering & Environmental Consultants
59 Bevan Road PO Box 1434 Rivonia 2128 South Africa
tel 0027 11 519 0200 www.jaws.co.za email post@jaws.co.za

Relevant Experience

Route / Site Selection and Screening processes

Gina's experience in route / site selections using GIS started in 2015. Her skills range from GIS mapping to the screening of alternatives in terms of environmental, socio-economic and financial risks. The following list of projects involves various aspects of the above mentioned:

• African Rainbow Minerals, Modikwa Mine Tailings Storage Facility Site Selection, South Africa - in progress
• Assore, Dwarsrivier Chrome Mine Tailings Storage Facility Site Selection, South Africa - 2023
• NEXTEC, Site selection for proposed power plant, South Africa - 2019
• Glencore, Dragline walkway route identification, South Africa - 2018
• Confidential, Site selection for waste management facility, South Africa - 2018
• Siguiri Gold Mine, Site selection mapping for TSF, Guinea - 2015
• KiPower, Route selection and cost analysis for IPP connection to power grid, South Africa - 2015

Other

Gina's experience is broad and also includes projects as listed below:
• Northam Platinum, Thabazimbi Landfill design and authorisation gap analysis, South Africa - in progress
• Sasol Operations, General Authorisation for Sasolburg Solar project, South Africa - 2023
• Sasol Mining, Syferfontein Interim EMPr amendment, South Africa - 2023
• Sasol Mining, Syferfontein and Alexander General Authorisations (various) for geotechnical investigations, South Africa - 2018 to 2023
• Sasol Operations, Zuikerbosch pipeline emergency protocol application, South Africa - 2022
• African Rainbow Minerals, Nkomati Nickel Mine closure applications, South Africa - 2022
• AngloGold Ashanti, Iduapriem GTSF Closure Design gap analysis, Ghana - 2022
• Sasol Mining, Middelbult EMPr amendment, South Africa - 2022
• Glencore, MRF Consequence Classification rating in terms of GISTM, South Africa - 2022
• Eskom, Duvha Power Station General Authorisation, South Africa - 2021
• Sasol Operations, Professional Opinion on Borrow Pit authorisation requirements, South Africa - 2020
• Averda, Landfill closure provisions review, South Africa - 2019
• Sasol Mining, AFAD Alternative Ash Deposition investigation, South Africa - 2019
• Harmony, Professional Opinion regarding Environmental Sensitivities of a Pipeline, South Africa – 2018
• South32, Annual Rehabilitation Reports, Financial Provision, Decommissioning and Closure Reports and Latent Risk Assessments (Khutala Mine), South Africa - 2018
• Sasol Mining, Annual Rehabilitation Reports, Financial Provision, Decommissioning and Closure Reports and Latent Risk Assessments, South Africa - 2017

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/775

Herewith certifies that

Gina Martin

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

Registrar

SAQA

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Gina Katelyn Martin

Registration Number: 117341

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **19 July 2017** Expires **31 March 2025**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

Daniella Kristensen

Junior Environmental Scientist

Daniella is a Junior Environmental Scientist in the Env. Man. Department. She has one year of experience as a research intern and is building her experience through employment at J&W (since January 2022). Her key focus areas at J&W include assisting with the compilation of environmental impact assessments, environmental management programmes, conducting environmental auditing and participating in research projects.
Email address: daniella@jaws.co.za

KEY SKILLS

Scientific Research

Report Writing

Data analysis

EDUCATION

MSc Geography, Wits, 2021 (in progress)

BSc (Hons) Geography, Wits, 2021

BSocSc, Monash, 2020

PROF. REGISTRATION STATUS

Candidate EAP (EAPASA): 2022/4615

EMPLOYMENT HISTORY

Jones & Wagener (2022 to date)

North-West University (2021)

INDUSTRY INVOLVEMENT

IAIAsa
Member since 2022

Relevant Experience

Environmental Authorisation and Licensing processes

Daniella's experience in Environmental Impact Assessments started in January 2022. She has and continues to gain experience in Environmental Impact Assessments, Environmental Management Programmes, Basic Assessments and Water Use Licence / General Authorisation Applications. She is currently assisting with projects that involve various aspects of the above mentioned, with a few of these mentioned below:

• ENERTRAG South Africa, Green Hydrogen & Ammonia and Solar & Wind Energy Farms, Northern Cape - In progress
• Seriti Power, Dispatch Rider Mining Project, Mpumalanga - In progress
• South Africa Mainstream Renewable Developments, Majuba and Tutuka Solar Energy Facilities, Mpumalanga - In progress
• Glencore Rhovan PSV - In-pit disposal of tailings material, North West - In progress
• Sasol Mining, General Authorisation for geological investigations (2023), Mpumalanga

Environmental Audits

Daniella's experience in Environmental Auditing started in 2022. She is currently assisting with a Waste Management Licence audit for the mining industry given below.

• Sibanye-Stillwater, Waste Management Facility Annual Audits 2022, North West
• Glencore, iMpunzi Dragline Railway Crossing WUL and EA/EMPr audit 2023, Mpumalanga
• African Rainbow Minerals, GISTM Audit for 3 operations 2023, Mpumalanga and Limpopo
• Assmang Limited, GISTM Audit for Khumani Mine 2023, Northern Cape

Scientific Research

Daniella's experience in scientific research began with her Honours degree in 2020, through her internship at the NWU and continuing with J&W. She is currently assisting with the Nexogenesis research project where J&W is the case study lead for the Inkomati-Usuthu Catchment Management Area ,funded by the European Union's Horizon 2020 research and innovation programme listed below.

• Nexogenesis Research Project, South Africa and Europe - In progress
• University of the Witwatersrand, Honours project (*cum laude*): Carbon storage within the uMhlanga Lagoon, South Africa, 2020
• University of the Witwatersrand, Masters thesis (in progress): The holiday climate index: Applicability and suitability for the South African context, 2024

01/02/2024

Signature **Date**

Environmental Assessment Practitioners Association of South Africa

Registration No. 2022/4615

Herewith certifies that

Daniella Kristensen

is registered as an

Candidate Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

APPENDIX B

MOTIVATION FOR NOT CONSIDERING ALTERNATIVES

Not applicable

APPENDIX C

PUBLIC PARTICIPATION

APPENDIX C - Table of Contents

Appendix C. 1

I&AP DATABASE

H236 - Dispatch Rider

Title	Last name	First name	Organisation
Directly Affected & Surrounding Landowners			
Mr	Allen	Michael	GM Farming
Ms	Shaakira	Akhalwaya	Seriti Power (Pty) Ltd
Mr	Ezekiel	Monyamane	Transnet: Environmental and Sustainable Management
Mr	Felix	Nel	Transnet: Integrated Management Systems
Mr	Eric	Theron	Transnet: Business Continuity Management
Mr	Anton	Kotze	Eskom: Distribution
Mr	Livhuwani	Mashamba	Eskom: Land, Development and Environment
Mr	de Klerk	Jan	Eskom
Ms	Moshokwa	Kgaowelo	Anglo Operations Pty Ltd
Mr	Zama	Marcus	Anglo Operations Pty Ltd
Mr	Matlonya	Elias	Anglo Operations Pty Ltd
Ms	Bargiacchi	Ansie	Anglo Operations Pty Ltd
Ms	Mabuza	Marcia	Anglo Operations Pty Ltd
Mr	Langanani	Nemugavhini	Anglo Operations Pty Ltd
Ms	Tshehla	Daphney	Anglo Operations Pty Ltd
Mr	Martin	John	Anglo Operations Pty Ltd
Mr	Wessels	Wessel	Anglo Operations Pty Ltd
Ms	Van Wyk	Leonore	Anglo Operations Pty Ltd
Mr	Fourie	Johan	Anglo Operations Pty Ltd
Mr	de Beer	JM (Johannes Mattheus)	Private Landowner
			Wianna Property Inv Cc
Authorities			
Ms	Charity	Mthimunye	Mpumalanga Department of Agriculture, rural Development, Land and Environmental Affairs (MDARDLEA)
Ms	Tswai	Dineo	MDARDLEA
Ms	Luyt	Robyn	MDARDLEA
Mr	Eksteen	Johan	Mpumalanga Tourism and Parks Agency (MTPA)
Ms	Sithole	Doreen	Department of Agriculture Forestry and Fisheries (DAFF) Directorate: Land Use and Soil Management
Ms	Khumalo	Nokukhanya	South African Heritage Resources Agency (SAHRA)
Ms	Maduka	Mashudu	Department of Mineral Resources
Mr	Macevele	Stanford	Department of Water and Sanitation
Ms	Betty	Mnguni	Department of Water and Sanitation
Mr	Skosana	MM	Nkangala District Municipality
Cllr	Nkwanya	AB	Nkangala District Municipality
Ms	Silinda	Susan	Nkangala District Municipality
Mr	Mahlangu	Vusi	Nkangala District Municipality
Mr	Risimate	Ntekele	Nkangala District Municipality
Mr	Zimbwa	AG	Nkangala District Municipality
Mr	Mayisela	HS	eMalahleni Local Municipality
Ms	Maseko	SF	eMalahleni Local Municipality
Ms	Moswathupa	Pearl	Steve Tshwete Local Municipality
Mr	Khenisa	B	Steve Tshwete Local Municipality
Mr	Madamalala	Aubrey	Steve Tshwete Local Municipality
Ms	D	Lambrechts	Steve Tshwete Local Municipality
Mr	Wonderboy Sizwe	Zulu	Steve Tshwete Local Municipality
Mr	Paul Elias	William	Steve Tshwete Local Municipality
NGOs/ CBOs/ Parastatals			
Mr	Robert	Davel	Mpumalanga Landbou/Agriculture Union
Mr	Hlatshwayo	Bafana	Middelburg Environmental Justice Network
Mr	Shongwe	Vusi	Middelburg Employable Peoples Structures (MEPS)
Mrs	Otto	Anna	Middelburg Chamber of Commerce
Mr	Bester	Coen	Middelburg Chamber of Commerce
Mr	Bosman	N.L.	Mpumalanga AgriSA
Mr	Suttill	Malcolm	Wildlife and Environmental Society of SA (WESSA)
Libraries			
Ms	Rozmiarek	J	Witbank Public Library
Ms	Xulu	Shirley	Middelburg (Gerard Sekoto) Public Library
Media			
Mr	van den Berg	Tobi	Middelburg Observer
Mr	Khan	Zaheeb	Middelburg Herald
Ms	Tarina	Coetzee	Mpumalanga News
Ms	Botha	Amanda	Witbank News

Appendix C. 2

BID, REPLY SHEET & STAKEHOLDER NOTIFICATION

Dispatch Rider Underground Mine

Notice of an application for Environmental Authorisation for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North section for Seriti Power (Pty) Ltd in Steve Tshwete Local Municipality, Mpumalanga

BACKGROUND INFORMATION DOCUMENT

March 2022

CONTENT AND PURPOSE OF THIS DOCUMENT

This document provides background information regarding the proposed Dispatch Rider underground mine which is part of the Middelburg Mine Services North section. The application is undertaken by Seriti Power (Pty) Ltd (Seriti).

Seriti has appointed Jones & Wagener (Pty) Ltd Engineering and Environmental Consultants (J&W) as the independent Environmental Assessment Practitioner (EAP) to undertake the required Scoping and Environmental Impact Reporting (S&EIR) process. The Department of Mineral Resources and Energy (DMRE) is the competent authority in terms of the required environmental authorisation.

The purpose of this document is to announce the proposed project to assist stakeholders to:

- Register as Interested and Affected Parties (I&AP) to be kept informed about further opportunities to participate in the proposed project; and
- Raise any concerns they may have regarding the proposed project.

Seriti will, in future, apply for the required Water Use Licence associated with the proposed development.

REGISTRATION AS AN I&AP

As an I&AP, you will be included in the stakeholder database and receive further documents for comment. Your comments will ensure that all relevant issues are incorporated. Please complete and submit the enclosed registration/comment sheet, call or email J&W if you wish to raise any concerns regarding the proposed project. All documents will be available on the internet at www.jaws.co.za. *As per the requirement of the Protection of Personal Information Act (POPI), Act No.14 of 2013 you are herewith notified that you may exercise your right to leave the Interested and Affected Party (I&AP) List. Should you elect to remain as part of the I&AP List for the study, it will be accepted that you have consented to being a part of the list and that your personal information will be noticeable to employees of J&W engaged with the public participation process. All such employees agree not to make use of such personal information for whatsoever reason, without obtaining the consent of the relevant person(s). As such, by participating in this process, you consent to the use of your contact information and comments for the purposes of the study as per the regulations.*

YOUR OPPORTUNITY TO REVIEW THE CONSULTATION SCOPING REPORT

The Consultation Scoping Report (CSR) will be available for your review from **28 March to 4 May 2022** at public places (see page 5) or on the website – www.jaws.co.za.

PUBLIC PARTICIPATION ENQUIRIES: Anelle Lötter / Tolmay Hopkins
Jones & Wagener Engineering and Environmental Consultants,
P O Box 1434, Rivonia, 2128, Tel: 011 519 0200,
Email: anelle@jaws.co.za / tolmay@jaws.co.za

Jones & Wagener
Engineering & Environmental Consultants

LOCALITY

The proposed Dispatch Rider project is located within the existing Middelburg Mine Services (MMS) mining right boundary, except a portion of the area to be mined to the east, which forms part of the Dispatch Rider prospecting right area. The project is located between the towns of eMalahleni, Middelburg and Kriel, within the jurisdictional area of the Steve Tshwete Local Municipality (STLM) and the Nkangala District Municipality (NDM) of the Mpumalanga Province. The mine is situated approximately 18 km south of the town of Middelburg.
Ingwe Surface Holdings (Pty) Ltd, owned by Seriti, is the surface rights owner for the largest part of the project area. The area of land on which the proposed infrastructure will be developed is owned by Ingwe Surface Holdings.The surface rights for the proposed underground mining area are owned by Ingwe Surface Holdings, and a part belongs to private landowner (RE/2 of Hartbeesfontein 399 JS).

PROJECT BACKGROUND AND DESCRIPTION

MMS North is an existing opencast mine, which supplies coal to Eskom's Duvha Power Station. Seriti is contracted to supply thermal coal to this power station until 2034 in terms of their current Coal Supply Agreement. The Life of Operation Plan (LoOP) for the MMS North has confirmed a future shortfall of coal production.

This necessitates the development of additional reserves in order to minimise buy-in coal and supplement the current volume of coal to supply the Duvha Power Station.

Seriti therefore proposes to mine the No. 1, No. 2 and No. 4 seam coal at the Dispatch Rider section, (which is located in the south of the Hartbeesfontein section) using underground mining methods. This is expected to extend the current life of mine (LOM) and ensure that the Coal Supply Agreement is met.

Dispatch Rider Project

Mining of the opencast area (DW pit) in the southern portion of the Hartbeesfontein section was approved in an amendment of the Environmental Management Programme Report (EMPR) in 2007. The Dispatch Rider project entails the following:

- Changing the mining method of the existing EMPR approved opencast area (pit DW) to underground mining;
- Extending the underground mine to the adjacent property to the east within the Dispatch Rider prospecting right area; and
- Development of infrastructure in support of the Dispatch Rider underground mine, including:
  - Adit/portal;
  - Portal sump (5 Mℓ);
  - Vent fans;
  - Electrical substation and overhead line (33 kV unit diverted from existing power line);
  - Mine service water reservoir (15 Mℓ) receiving water from existing mine voids. Water from the Mine Service Water Reservoir will be pumped and distributed to the underground mine, as well as to the dust suppression system. This reservoir will also feed the Wash Bay Storage Tank and Fire Water Tanks;
  - Control room, lamp and crush room, offices and parking, change house and security;

- Above ground steel water tank for the storage of mine impacted water with an estimated capacity of 10 Mℓ (referred to as the mine impacted water steel tank);
- Two steel fire water tanks (expected capacity of 2 Mℓ each);
- Potable water tank (expected capacity of 6 Mℓ) supplied from the existing Usuthu pipeline;
- Break test ramp;
- Fuel and lube bay for the expected storage of 50 000ℓ diesel, 30 000 ℓ hydraulic oil and 10 000 ℓ engine oil;
- Wash bay, workshop and stores and a water filtration plant.

Stockpiles: Two Run of Mine (ROM) coal stockpiles (with a footprint of approximately 0.25 ha and capacity of 12 000 tons each) will be developed in the area assigned for the stockpiles, or within the infrastructure area.

Roads: No new haul roads will be developed since existing haul roads will be used. Road development will be limited to service roads (±8 m wide). The exact position of the infrastructure components and the service roads will be determined during the feasibility phase.

Shafts and portals: Mining will be done using continuous miners. No shafts will be sunk for the project and the adjacent high wall of an old opencast pit will be used to gain access to the underground.

Access to the No. 2 seam coal will be via an adit or portal to be established at an existing highwall. Areas of the highwall area will be backfilled through the normal opencast rehabilitation procedure, to create a portal area where infrastructure will be established for the underground mine.

Ventilation will be self-contained units and at this stage, it is assumed that emergency exit points are not needed. A decline conveyor will be developed to transport coal from the underground operations to the ROM stockpiles on surface.

Mined coal: The coal from the stockpiles will be loaded into trucks via front end loaders (FELs). If the raw coal is of acceptable quality and no washing is required, it will be transported to the existing South Eskom Plant which feeds directly to the Duvha Power Station. If, however, the coal does not meet the required quality and requires washing, it will be trucked to the existing North Middlings Plant Tip. Here the coal will be washed and processed and then transported via an internal rail line to the South Eskom Plant feeding Duvha Power Station or the existing loadout area for export if required.

Power: A 33 kV electrical unit will be connected to existing powerline infrastructure.

Water: Initially, mine water from the underground mine will be directed to a dewatering sump and pump area which will be located within the underground mining area at each of the seam workings. Water will be pumped from the dewatering sump and pump areas to the portal sump. From here, the water will be pumped to the above ground steel tank for the storage of mine impacted water to be developed on surface in the infrastructure area. When the worked-out areas underground have been created, two dewatering dams will be developed underground. Water collected from the No. 4L Seam sections will be pumped to an underground dewatering dam in the 4L Seam area. Water collected from the No. 2 Seam and No. 1 Seam sections will be pumped to a second underground dewatering dam in the No. 2 Seam area. From each of the dewatering dams, water will be pumped to the mine impacted water steel tank.
The portal sump will collect dirty water runoff from portal drains as well as water pumped from the underground as described above. Water from the portal sump will be pumped to the mine impacted water steel tank via a high density polyethylene (HDPE) pipeline with diameter less than 360 mm.
Two water pipelines will be developed:

- The raw/dirty water pipe will have an internal diameter of 450 mm or less, and will be used to pump water from one of the existing mine voids to the mine service reservoir. This pipeline will be bi-directional and will therefore also be used to pump water back from Dispatch Rider to one of the voids in the case of excessive water make. This pipeline will be established on surface, mainly along existing haul roads and will be covered with a topsoil berm for protection;
- The potable water pipeline will have a 110 mm diameter and will link to the existing potable water supply at the rail loadout area.

The mine service water reservoir will be a steel tank. Provision has been made for the treatment of water through a filtration unit, should it be needed. Waste generated from the unit will be managed according to the mine's existing waste management system.

LEGAL REQUIREMENTS

The following authorisations will be required for the proposed Dispatch Rider underground mine project:

- An application in terms of section 102 of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) to amend the mining right to include the Dispatch Rider prospecting area;

- Environmental Authorisation in terms of the National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998) for activities listed in the Environmental Impact Assessment (EIA) Regulations promulgated in December 2014 in terms of the NEMA, as amended. A Scoping and Environmental Impact Reporting (S&EIR) process is foreseen;

- A Water Use Licence for the water uses as defined in Section 21 of the National Water Act, 1998 (NWA) (Act 36 of 1998). The application for and Integrated Water Use Licence will be supported by an Integrated Water and Waste Management Plan (IWWMP). Consideration also has to be given to the requirements of GNR 704, Regulations on the use of water for mining and related activities, aimed at the protection of water resources as published in terms of the NWA, and will be addressed in the Integrated Water Use Licence Application.

The current application is limited to the NEMA application, which will be used in support of the section 102 application in terms of the MPRDA. The applicant will directly apply for the section 102 application. The application for a water use licence will follow at a later stage and a separate public participation process will be conducted.
The proposed additional infrastructure will likely trigger the activities below which are listed in the EIA Listing Notices published under Government Notice 325 and 327 of 7 April 2017.

Activity	Description of Activity	Comment
Listing Notice 1 of 2014, as amended (GNR 327 dated 7 April 2017)		
10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	Development of dirty water pipelines with an internal diameter of 450 mm diameter in excess of 1 000 m in length: • Pipeline between one of the mine voids and the mine service water reservoir (length to be confirmed pending a decision on which void will be used, but could exceed 1 000 m); • Pipeline between portal sump and mine impacted water steel tank could be in excess of 1 km, depending on final position; • Pipelines between the active workface underground and the underground sumps.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	A fuel and lube bay will be developed at the workshop for the storage of 50 000 ℓ diesel, 30 000 ℓ hydraulic oil and 10 000 ℓ engine oil.

Activity	Description of Activity	Comment
Listing Notice 2 of 2014, as amended (GNR 325 dated 7 April 2017)		
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding: (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	Infrastructure such as the ROM coal stockpiles, sumps, as well as dust suppression with mine impacted water will require a Section 21(g) water use licence.
17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including - (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing.	An application for the amendment of the MMS mining right area in terms of section 102 of the MPRDA to include the Dispatch Rider prospecting right area will be submitted to the Department of Mineral Resources and Energy.
Listing Notice 3 of 2014, as amended (GNR 324 dated 7 April 2017)		
10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. (aa) A protected area identified in terms of National Environmental Management: Protected Areas Act (NEM:PAA), excluding conservancies;	A fuel and lube bay with a combined capacity of 80 m3 will be developed at the workshop and will be located within an Ecological Support Area (ESA) identified by the Mpumalanga Biodiversity Sector Plan. It should, however, be noted that this ESA is based on a 100 m bufferzone around a Private Nature Reserve proclaimed in 1956 (therefore regarded as a Protected Area in terms of NEMPAA), but which has not been managed as a protected area.

The EA application entails a S&EIR process. During scoping, issues for investigation during the EIA phase are identified. This information is compiled into a Consultation Scoping Report (CSR) which will be available for public comment from **28 March 2022**. The Final Scoping Report will be submitted to the DMRE Mpumalanga Regional Office for approval in order to continue with the EIA phase.

During the EIA phase, potential impacts are determined and management measures are proposed to mitigate negative impacts and enhance positive impacts. The Consultation EIA report, including an Environmental Management Programme (EMPr) will be made available for public comment and submitted to the DMRE for decision making.

The EIA report will contain the results of specialist assessments, including studies on:

- Socio-economic conditions
- Biodiversity (fauna, flora and aquatics)
- Agricultural Potential Assessment
- Closure liability assessment and closure plans
- Surface water assessment
- Wetland assessment and hydropedology
- Groundwater assessment (geohydrology)
- Air Quality

The information obtained through the specialist assessments will be used as a basis for the EA and any future applications.

HOW CAN YOU BECOME INVOLVED?

Stakeholders are invited to contact J&W to register as an I&AP for the EA application process and to comment on any of the reports that will be produced as part thereof. Comments raised during the process will be recorded in a Comments and Responses Report, which will form part of the reports that will be submitted to the authorities. The contributions made by stakeholders from all sectors of society will ensure informed decision-making. You are invited to participate freely and to submit any comments or information you feel may be useful to the process in writing. To ensure that you are registered as an I&AP and that you receive updated project information please complete the attached registration and comment form.

Availability of the Consultation Scoping Reports for your review

The Consultation Scoping report is available for public review from 28 March to 4 May 2022 at the public places listed below.

eMalahleni Library, 28 Hofmeyer St, eMalahleni, Ms J Rozmairek, Tel: (013) 699 1057 (printed copy)
Gerhard Sekoto Public Library, Wanderers Avenue, Middelburg; Tel: (013) 249 7314
Please visit: www.jaws.co.za/public documents (electronic copy)

You are encouraged to comment on the Consultation Scoping Report by sending an email or to contact the public participation practitioner by telephone.

Notice of an application for Environmental Authorisation for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section for Seriti Power (Pty) Ltd in Steve Tshwete Local Municipality, Mpumalanga

REGISTRATION AND COMMENT SHEET

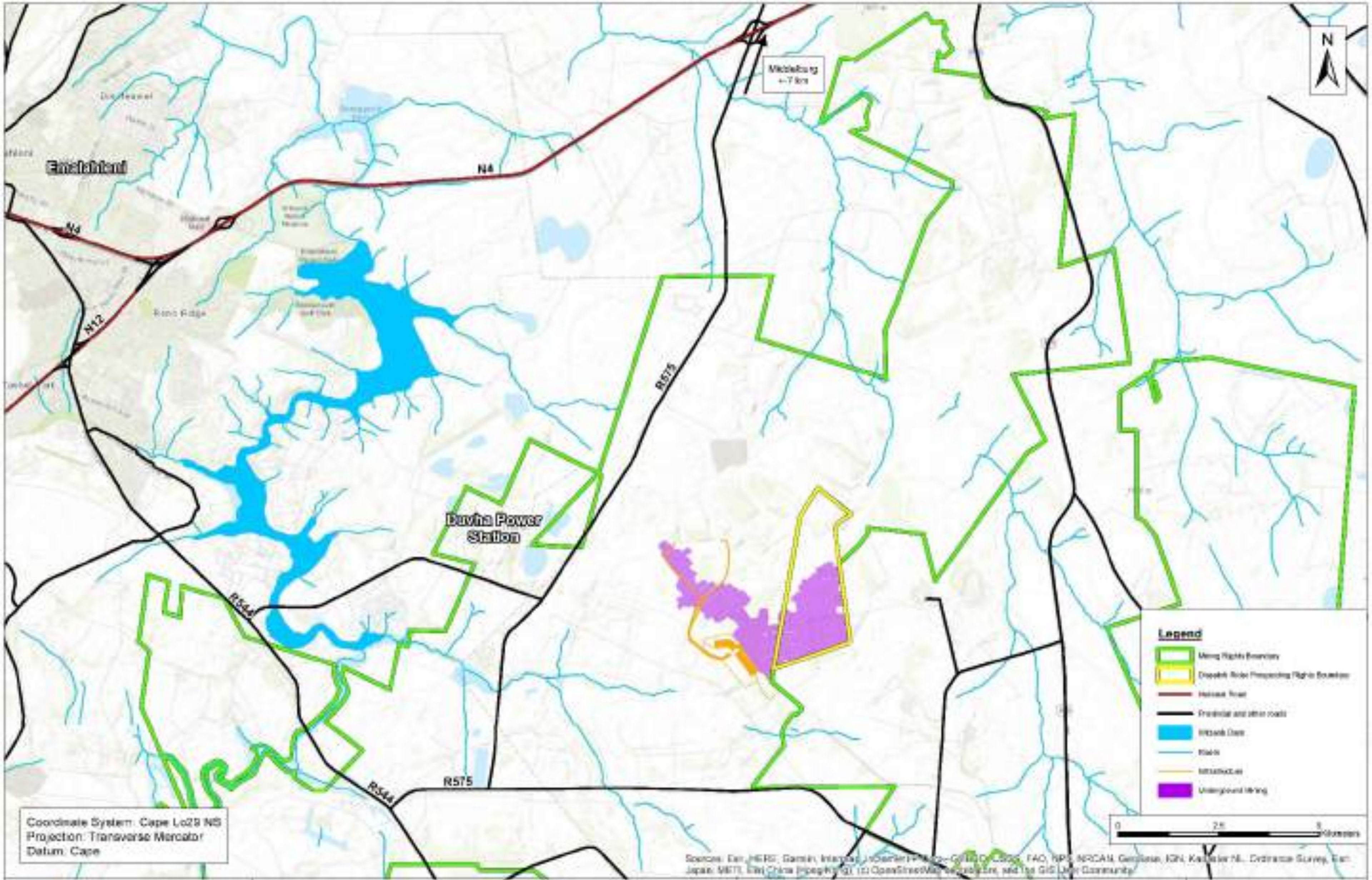
Please complete this form and return it to Jones & Wagener by 4 May 2022 to ensure that you are registered as an Interested and Affected Party. By answering the questions below you will help us to develop a better understanding of your information requirements and concerns regarding the proposed project. Additional pages may be attached to the form.

Personal information	
First Name and Surname:	
Please indicate whether you are registering as a Community / Organisation / Farm or Business and provide the name:	
Physical address:	
Telephone / Cell:	
Email:	
General interest in the project	
Do you have any specific comments regarding the proposed project to develop the Dispatch Rider underground mine?	

If you know of anyone who should be informed about the project, please provide their contact details:		
First Name and Surname:		
Community / Organisation / Farm:		
Address:		
	Telephone:	
	Cell:	
	Email:	

Please record the following comments I have on the Consultation Scoping Report:

Kindly complete this form and return to: Anelle Lötter, Jones & Wagener Pty) Ltd Engineering & Environmental Consultants, P O Box 1434, Rivonia, 2128, Tel: (011) 519 - 0200, Email: anelle@jaws.co.za



Jones & Wagener

Seriti Power (Pty) Ltd
Dispatch Rider Project
Locality Plan

Job No: H236-06

Figure 1

From: Anelle Lotter
Cc: Anelle Lotter; Gina Martin
Bcc:

Subject: FW: CEIR and EMPr available for the proposed Dispatch Rider underground mine
Date: Monday, 12 August 2024 12:21:00
Attachments: image001.png

Dear stakeholders

We would like to remind you of the availability of the Consultation Environmental Impact Report (CEIR) and Environmental Management Programme (EMPr) for the Scoping & Environmental Impact Assessment (S&EIA) process for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section.

The report ill be available until 27 August 2024 and we are looking forward to your comments.

Copies can be accessed as follows:
Printed copies:

- eMalahleni Library, 28 Hofmeyer St, eMalahleni Tel: (013) 699 1057
- Gerhard Sekoto Public Library, Wanderers Avenue, Middelburg Tel: (013) 249 7314

Electronic copy:
https://www.jaws.co.za/public-document/**dispatchrider_eir_empr**/

Should you wish to discuss the contents of the CEIR and EMPr or register as an I&AP please contact:
Jones & Wagener Engineering & Environmental Consultants
Anelle Lötter / Gina Martin,
Tel: (011) 519-0200,
Email: anelle@jaws.co.za / gina@jaws.co.za
P O Box 1434, Rivonia, 2128

Kind regards
Anelle Lötter
Public Participation, Jones & Wagener

Jones & Wagener
Engineering & Environmental Consultants
T +27 11 519 0200 | anelle@jaws.co.za
P O Box 1434 Rivonia 2128 South Africa | www.jaws.co.za

From: Anelle Lotter <anelle@jaws.co.za>
Sent: Wednesday, July 24, 2024 5:05 PM
Cc: Anelle Lotter <anelle@jaws.co.za>; Gina Martin <gina@jaws.co.za>
Subject: CEIR and EMPr available for the proposed Dispatch Rider underground mine

Dear stakeholders

The Consultation Environmental Impact Report (CEIR) and Environmental Management Programme (EMPr) for the Scoping & Environmental Impact Assessment (S&EIA) process for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section is available for public review.

The CEIR and EMPr is available for public review following the acceptance of the Final Scoping Report by the Department of Mineral Resources and Energy (DMRE) in March 2024. The Final Scoping Report was submitted to the DMRE on 26 May 2022, but processing was delayed pending alignment with the Section 102 application. Following acceptance of scoping by the DMRE, Seriti submitted a notification of extension to the timeframe for submission of the CEIR in terms of Regulation 23(1)(B) of the EIA Regulations (2014, as amended). This extension allows for the submission of the Final Environmental Impact Report towards the end of August 2024.

Seriti will, in future, apply for the required Water Use Licence in terms of the National Water Act (NWA) (Act 36 of 1998) for the proposed development. Seriti is also in the process of undertaking a Section 102 application in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) to amend the mining right to include the Dispatch Rider prospecting area.

The CEIR and EMPr are available from **26 July to 27 August 2024** as follows:
Printed copies:
- eMalahleni Library, 28 Hofmeyer St, eMalahleni Tel: (013) 699 1057
- Gerhard Sekoto Public Library, Wanderers Avenue, Middelburg Tel: (013) 249 7314

Electronic copy:
https://www.jaws.co.za/public-document/**dispatchrider_eir_empr**/
Interested and Affected Parties (I&APs) are invited to participate by providing comments and raising issues of concern regarding the proposed project.

Should you wish to discuss the contents of the CEIR and EMPr or register as an I&AP please contact:
Jones & Wagener Engineering & Environmental Consultants
Anelle Lötter / Gina Martin,
Tel: (011) 519-0200,

Email: anelle@jaws.co.za / gina@jaws.co.za
P O Box 1434, Rivonia, 2128

Kind regards
Anelle Lötter
Public Participation, Jones & Wagener

Jones & Wagener
Engineering & Environmental Consultants
C +27 82 804 5890 | T +27 11 519 0200 | anelle@jaws.co.za
P O Box 1434 Rivonia 2128 South Africa | www.jaws.co.za

From: Anelle Lotter <anelle@jaws.co.za>
Sent: Monday, May 30, 2022 1:58 PM
Cc: Anelle Lotter <anelle@jaws.co.za>
Subject: Final Scoping Report available for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section

Dear stakeholders

We would like to thank you for your comments received on the Consultation Scoping Report which has been available for comment from 28 March to 4 May 2022.
Your comments and contributions were considered in the finalisation of the Scoping Report.

This email serves to notify all stakeholders that the Final Scoping Report was submitted to the competent authority, the Department of Mineral Resources and Energy (DMRE) on Thursday, 26 May 2022.

You are welcome to follow the link below to download a copy of the Final Scoping Report:
https://www.jaws.co.za/public-document/wpdm_package-id8703/

The outcome of the DMRE review of the Final Scoping Report will be communicated to all stakeholders.

Should you have any questions, please contact us.

Kind regards
Anelle Lötter
Public Participation, Jones & Wagener

Jones & Wagener
Engineering & Environmental Consultants
C +27 82 804 5890 | T +27 11 519 0200 | anelle@jaws.co.za
P O Box 1434 Rivonia 2128 South Africa | www.jaws.co.za

From: Anelle Lotter <anelle@jaws.co.za>

Sent: Monday, 28 March 2022 14:02
Cc: Anelle Lotter <anelle@jaws.co.za>; Tolmay Hopkins <tolmay@jaws.co.za>
Subject: Consultation Scoping Report available from 28 March 2022 for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section

Dear stakeholders

The Consultation Scoping Report for the S&EIR process is available for public review as of today until 4 May 2022.

You are welcome to follow the direct link below to download the report:
https://www.jaws.co.za/public-document/notice-of-an-application-for-environmental-authorisation-for-the-proposed-dispatch-rider-underground-mine-at-the-middelburg-mine-services-north-section-for-seriti-power-pty-ltd-in-steve-tshwete-loca/

Kindly note that the eMalahleni Library is currently not accessible to the public due to construction activities.

Attached the registration and comment sheet which you may use to register and comment on the report and project.

Kind regards
Anelle Lotter

From: Anelle Lotter
Sent: Tuesday, 22 March 2022 13:04
Cc: Anelle Lotter <anelle@jaws.co.za>; Tolmay Hopkins <tolmay@jaws.co.za>
Subject: Consultation Scoping Report available from 28 March 2022 for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section

Dear stakeholders

Seriti Power (Pty) Ltd (Seriti) has appointed Jones & Wagener (Pty) Ltd Engineering and Environmental Consultants (J&W) as the independent Environmental Assessment Practitioner (EAP) to undertake the required Scoping and Environmental Impact Reporting (S&EIR) process for the proposed Dispatch Rider underground mine at the Middelburg Mine Services North Section in Steve Tshwete Local Municipality, Mpumalanga.

Please find attached a Background Information Document (BID) which provides more information about to proposed project, the application process and how stakeholders can participate in the process. A Registration and Comment Sheet is also attached which stakeholders may use to register as an Interested and Affected (I&AP) and to provide comments. Stakeholders are welcome to visit https://www.jaws.co.za/public-document/popi/ with regards the requirement of the Protection of Personal Information Act (POPI), Act No.14 of 2013.

The Consultation Scoping Report for the S&EIR process is available for public review from **Monday, 28 March to Wednesday, 4 May 2022** as follows:
Printed copies:

eMalahleni Library, 28 Hofmeyer St, eMalahleni Tel: (013) 699 1057

- Gerhard Sekoto Public Library, Wanderers Avenue, Middelburg Tel: (013) 249 7314

Electronic copy:

- https://www.jaws.co.za/

Interested and Affected Parties (I&APs) are invited to participate by providing comments and raising issues of concern regarding the proposed project.

To register as an I&AP, please contact:
Jones & Wagener Engineering & Environmental Consultants
Anelle Lötter / Tolmay Hopkins,
Tel: (011) 519-0200,
Email: anelle@jaws.co.za / tolmay@jaws.co.za
P O Box 1434, Rivonia, 2128

Kind regards
Anelle Lötter
Public Participation, Jones & Wagener

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